

An Approach to the Sublime of Death

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Submitted to the Department of Architecture on January 15, 2010 in Partial Fulfillment of the Requirements for the Degree of Master of Architecture

ABSTRACT

Death is an unknown and it is final. This makes it sublime. The sublime as an aesthetic category is experienced emotionally as the moral certitude of having embraced the absolute. In that sense, the nervous system is capable of the exact same physiological responses in life. It is these responses to the sublime that I wish to explore as the basis for an architectural iconology with the hope that the iconography and the design will create an acute aesthetic response in an intelligent viewer.

My aim has not been so much to design a cemetery, and much less a crematorium. I wanted to go beyond the banality of physical function and design an environment that would invite visitors to ponder on issues of death and life. Without death, no life is possible, and yet, if we consider our planet in a cosmic sense, the birth or the death of a human being on this speck of dust is irrelevant. However, since biblical times, we humans have confused earth with the cosmos and the end of things equivalent to the destruction of the planet. In that sense, life tends to deny death. My task then has been to create an environment that would foster thoughts of remembrance, and through remembrance, bring back to life, as it were, someone we have loved. I like the idea of people pondering uplifting thoughts there on a bright summer day and also being crushed by the awesome sublimity of contemplating the sea at the end of a dark walk on a dreary snowy winter day with razor-sharp snow burning their faces in a high wind.

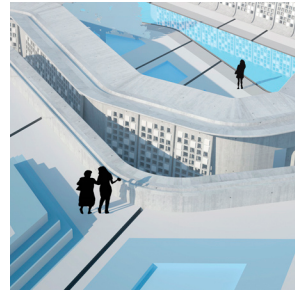
As humans, death is a destination we all share, and there exists in architecture a special place devoted to the understanding and contemplation of this condition. These places are constructed and conceived for both the living and the dead. They are very public and yet intimately private and personal. They bridge the divide of existence, and become sacred spaces because they touch on the sublime of the absolute, but paradoxically, remind us as well of the fragility of life.

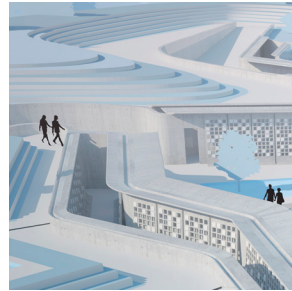
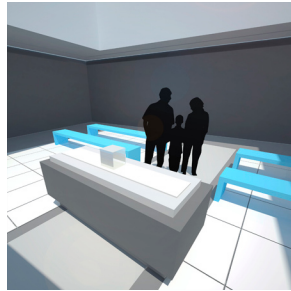
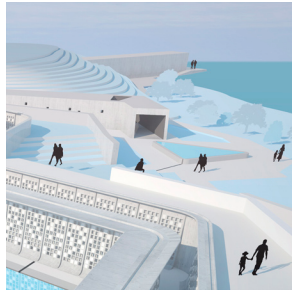
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“How accidental our existences are, really, and how full of influence by circumstance.”

Louis I. Kahn





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BACKGROUND

INTRODUCTION

There have been approximately 106 billion people born on the earth, while an estimated 6.7 billion people are currently alive today. Thus, a mere 6.3% percent of people who have ever been born are alive today. In other words, over 93% of the people who have ever lived are now dead, and that percentage will only increase.

Cemeteries are typically the final resting place for the dead. They are in effect the parallel projection of a city for the living.¹ The word *cemetery* comes from the Greek *koimêterion*, which means *place where one sleeps*. Hypnos, the god of sleep, is the twin brother of Thanatos, god of death - both are sons of Night.²

Death is an important topic because through its understanding and acceptance we come to the realization of our own mortality. Death is also a cultural event through which societies reveal themselves in the treatment of the dead.³ How a society deals with their dead is significant from many perspectives. Death is often studied by historians, philosophers, psychologists, sociologists, semiologists, seldom studied from the point of view of the architecture.⁴ "It seems to have been forgotten that the first known architect, Imhotep, who built King Zoser's stepped pyramids during the third Egyptian dynasty, the only architect to be deified, was above all the creator of a tomb."⁵

While understood scientifically and physically, death is still mysterious and elusive. It is an unknown and it is final, and this makes it sublime. The sublime as an aesthetic

1 Ragon, Michel. *The Space of Death: A Study of Funerary Architecture, Decoration, and Urbanism*. Charlottesville: University Press of Virginia, 1983, p. 25.

2 Ibid., p. 207.

3 Farrell, James J. *Inventing the American Way of Death, 1830–1920*. Philadelphia: Temple University Press, 1980, p. 3.

4 Ragon, p. 21.

5 Ibid.

category is experienced emotionally as the moral certitude of having embraced the absolute. The feelings the sublime elicits are practically the same as those produced by sex or mystical prayer: we have only one nervous system and its physiological response is the same to different stimuli.

In almost every human society the living care for the corpse, who themselves can ask no questions, but prompt many.⁶ Historians can discover important patterns and examine cultures based on how they deal with the dead. Civilizations have worshiped their dead, build tombs and monuments, preserved, buried, burned, and even consumed their dead. The corpse is thus a “powerful symbol charged with meanings as many and varied as human cultures and individual personalities.”⁷

This thesis explores the typology of death architecturally. My aim is not to reinvent the cemetery typology, or simply design a crematorium or chapel. My goal is to go beyond the banality of physical function and design an environment that would invite visitors to ponder on issues of death - the state of non-being - and life. A life spent without any contemplation of death is, in a sense, a denial of life,⁸ since it is the destination we all share. Without death, no life is possible, and yet, if we consider our planet in a cosmic sense, the birth or the death of a human being on this speck of dust is irrelevant. However, since biblical times, we humans have confused earth with the cosmos and the end of things equivalent to the destruction of the planet. In that sense, life tends to deny death. My task then has been to create an environment that would foster thoughts of remembrance, and through remembrance, bring back to life, as it were, someone we have loved. I like the idea of people pondering uplifting thoughts there in a bright summer day and also being crushed by the awesome sublimity of contemplating the sea

6 Prothero, Stephen. *Purified by Fire: A History of Cremation in America*. Berkeley: University of California Press, 2001., p. 1.

7 Ibid.

8 Curl, James Steven. *Death and Architecture*. Phoenix Mill: Sutton Publishing Ltd., 2002., p. 1.

at the end of a dark walk in a dark and dreary snowy winter day with razor-sharp snow burning their faces in a high wind.

The cemetery does not simply mirror a society's understanding about death. Its architecture and landscape play a role in crystallizing potential emotions and ideas.⁹ While in the twentieth century cemeteries were still placed at a distance from towns and cities, it was done to protect the dead from being polluted by the living.¹⁰ Conversely, the environmental impact of the dead - the space they take up and the ecological harm caused by dealing with their remains - seems more relevant than ever.

As humans, death is a destination we all share, and there exists in architecture a special place devoted to the understanding and contemplation of this condition. These places are constructed and conceived for both the living and the dead. They are very public and yet intimately private and personal. They bridge the divide of existence, and become sacred spaces because they touch on the sublime of the absolute, but paradoxically, remind us as well of the fragility of life.

9 Etlin, Richard A. *The Architecture of Death*. Cambridge, MA: MIT Press, 1984., p. ix.

10 Ragon, p. 300.

THE REMAINS OF THE DEAD

Burial and cremation are the two main competing methods for disposing of the dead in the United States. “Both accomplish what anthropologists have long recognized as the key tasks of funeral rites. They assist the dead in their otherworld journeys, and they help the living find their way back to everyday life.”¹¹

Both burial and cremation deal with the process decay. With burial the goal is to prevent decay, while with cremation the goal is to accelerate it. In burial, the body is preserved, embalmed, coffined, and buried to stop the process. It also prevents decay in a social sense by providing a physical connection between the living and the dead through the preservation of the body at a particular place.¹²

With cremation, the process of decay is accelerated.¹³ “Rather than preserving the corpse through embalming, cremationists annihilate it through incineration. Confident that the true self is spiritual rather than material, they welcome the swift fragmentation of the body into ashes.”¹⁴ The majority of cremated remains are scattered and buried in the environment, with only a small percentage permanently kept in a cemetery.

Other methods that deal with the remains of the dead include green burial (where the body is placed un-preserved in a shallow grave). This method is gaining popularity because of its minimal environmental impact. Other methods such as resomation and promession (which return the body back into its natural elements) are also at the forefront of ecological burial techniques.

11 Prothero, p. 4.

12 Ibid.

13 Ibid., p. 4 - 5.

14 Ibid., p. 5.

ENVIRONMENTAL IMPACT OF BURIAL

There are a number of factors that have contributed to the increasing rate of cremation which include: the rising cost of funerary services and burial, changing attitudes and acceptance of cremation (religious and otherwise), and the decrease in available land suitable for burial cemeteries. The most recent trends that are turning people to cremation are cost and environmental benefits.

From an environmental standpoint, cremation is energy intensive and emissions can contain high amounts of mercury if not filtered properly. The overall environmental impact of cremation, however, is considerably lower than traditional burial when the methods are compared. Traditional burial requires energy for preservation and harmful embalming fluids to prevent decay of the corpse. Following a service, the corpse is sealed in a casket and typically placed in an underground concrete vault. The vault is then covered with earth and marked with a monument or headstone. There are approximately 22,500 cemeteries in the United States, and each year they will bury with the dead,¹⁵

827,060 US gallons (3,130 m³) of embalming fluid
90,272 tons of steel (caskets)
14,000 tons of steel (vaults)
2,700 tons of copper and bronze (caskets)
30 million board feet (70,800 m³) hardwoods (caskets)
1,636,000 tons of reinforced concrete (vaults)

Traditional burial also occupies increasingly large areas of land which require continuous maintenance and upkeep. Additionally, embalming chemicals have been found to leech from cemeteries into underground water sources which feed rivers and lakes.

¹⁵ Compiled from statistics by the Casket and Funeral Association of America, Cremation Association of North America, Doric Inc., The Rainforest Action Network, and Mary Woodsen, Pre-Posthumous Society.

CREMATION

Cremation is the process and method by which the corpse is reduced to bone fragments (ashes) by way of incineration. Cremation has ancient origins, and has been practiced in varying forms by cultures throughout history.

After the seventeenth century, cremation became more difficult as Christian ideals forbid the practice. The early Christian beliefs (of Judaic origin) forbid the burning of the body “on the grounds that it might make the resurrection of the flesh more difficult.”¹⁶

As long as burial and cremation have existed, there has been debate:

Whether to bury or to burn is, therefore, no trivial matter. It touches on issues as important as perceptions of the self, attitudes toward the body, views of history, styles of ritual, and beliefs in God and the afterlife. In other words, it amounts to a choice of worlds to inhabit. Do we owe of principle allegiance to the dead, to the living, or to the not-yet-born?¹⁷

Early cremationists associated burial with pollution (on both sanitary and ritual grounds), and cremation with purity.¹⁸ This point of debate is even more relevant today given the environmental impact of burial.

First performed in 1876, modern cremation is still a relatively new procedure in the United States when compared to burial. However, the percentage of corpses cremated over the past seventy years has increased steadily, from 3.2% in 1940 to 36.0% in 2008. See appendix for additional cremation statistics and figures.

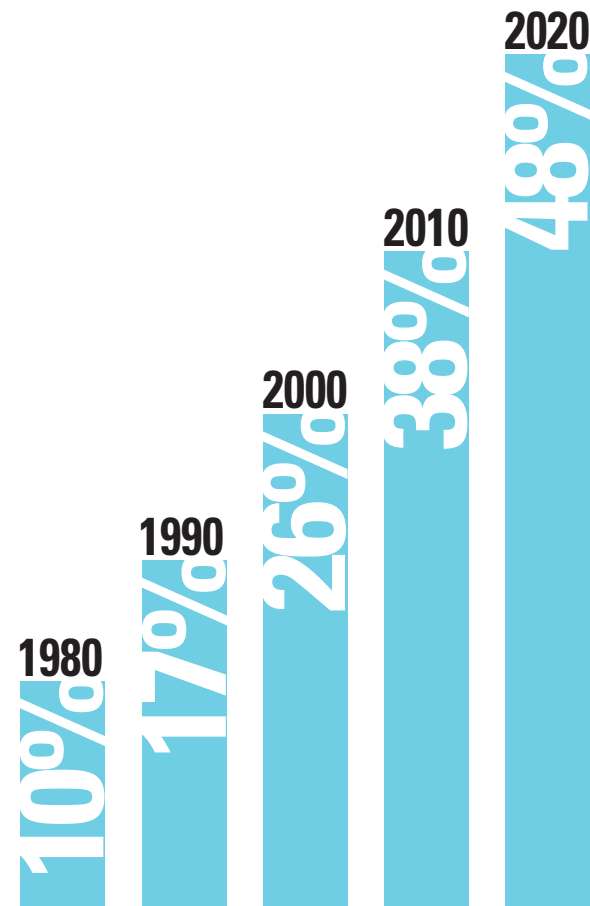


Figure 1: Percentage of deaths cremated by year in the U.S.

16 Ragon, p. 12.

17 Prothero, p. 5.

18 Ibid., p. 96.

CREMATION PROCESS

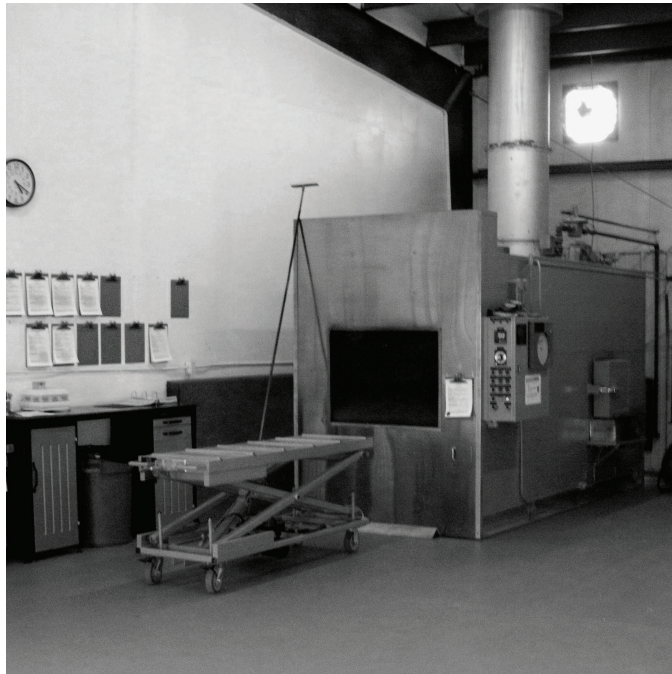


Figure 2: Typical crematorium retort.

BODY PREPARATION

Authorization to cremate, forms, waiting period
Personal items removed, body placed in cremation casket (wood, cardboard, etc.)

THE CREMATION (all substances consumed (vaporized) except bone fragments)

Casket container placed in chamber (retort)
Main burner ignites and starts to incinerate the body (heat blast aimed at the chest)
Temperature of chamber reaches 1800 to 2000 °F (natural gas or propane burners)
Cremation process takes one-and-a-half to two hours

PROCESSING THE ASHES (BONE FRAGMENTS)

Thirty minute cool down
Cremation remains / bone fragments removed from the chamber
Remains (ashes) are further processed by pulverizing the bone fragments to powder
Ashes are placed into a container and returned

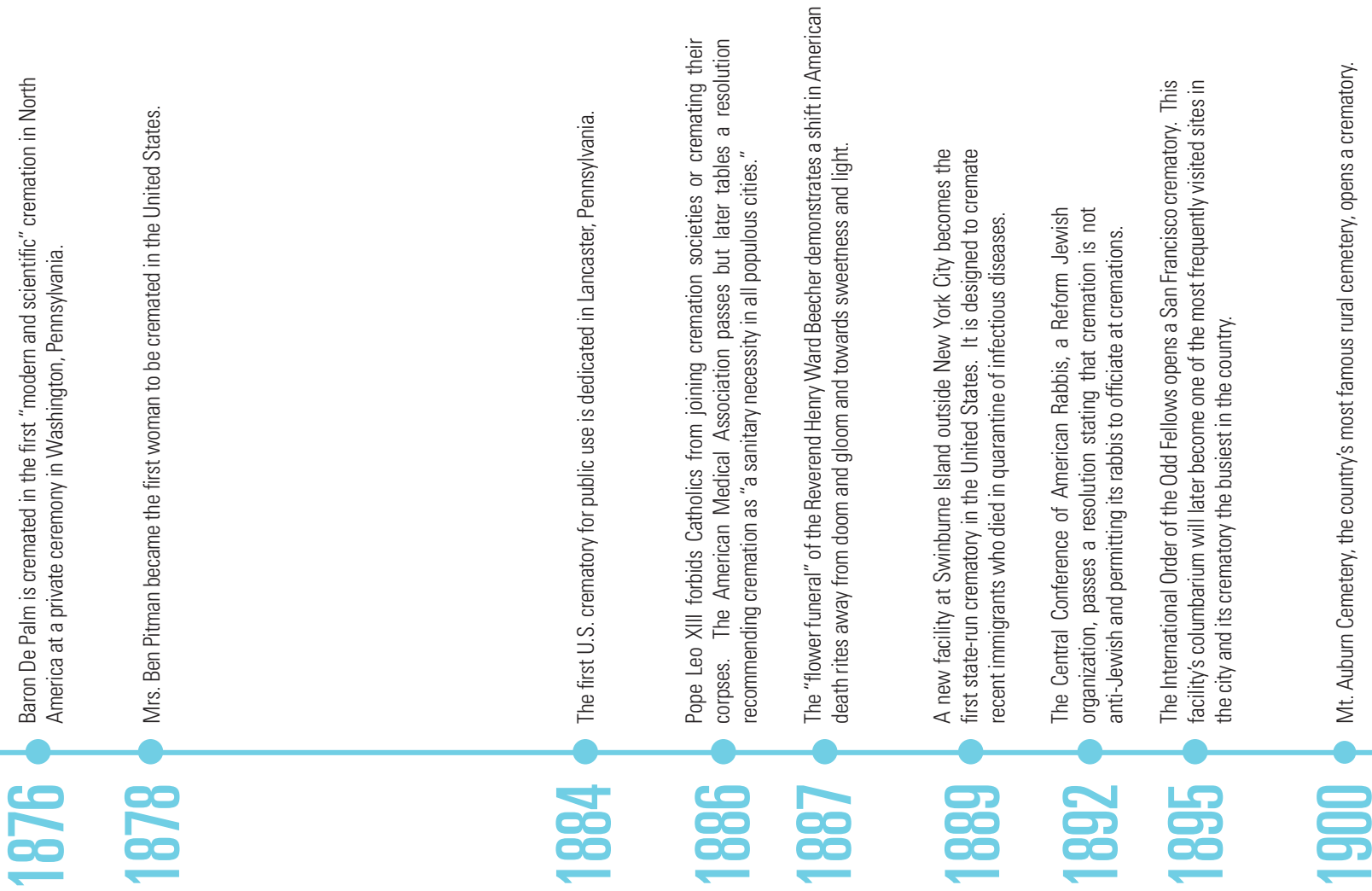
PLANS FOR CREMATED REMAINS¹⁹

Scatter remains	40%
Bury ashes	16%
Keep at home/family decides	15%
Columbarium/cemetery	8%
Disposed	3%
Other/unknown	18%

¹⁹ "2007 Statistics and Projections to the year 2025, 2008 Preliminary Data," Cremation Association of North America (CANA), p. 22.

HISTORY OF CREMATION IN AMERICA - TIMELINE

Source: Prothero, p. 213-217.



1913

The Cremation Association of America (later the Cremation Association of North America (CANA)) is founded.

1920s

The U.S. cremation rate (ratio of cremations to deaths) reaches one percent for the first time

1934

Mount Auburn Cemetery signals the migration of the columbarium out of dark basements when it retrofits the first floor of its crematory chapel for niches. It will add niches on the second floor two years later.

1963

Pope Paul VI approves an instruction liberalizing cremation in some circumstances, effectively lifting the Roman Catholic ban on cremation instituted in 1886.

1974

The National Funeral Directors Association issues "Considerations concerning Cremation," its first pamphlet on the subject.

1978

The Federal Trade Commission issues a 526-page report accusing the funeral industry of a series of abuses and proposes new federal regulations.

1981

The U.S. cremation rate tops ten percent for the first time.

1990

Michael Kubasak's *Cremation and the Funeral Director* urges funeral directors to profit from cremation rather than oppose it.

1997

U.S. Catholic bishops receive from the Vatican a special dispensation that allows them the discretion to permit cremated remains to be present at funeral masses in their dioceses.

1999

The U.S. cremation rate increases past 25 percent.

RESOMATION

Source: Parmalee, Thomas A. "Going Green - Resomation: Green Hype of the Next Big Thing?" American Funeral Director, April 2008.

Resomation is a method of reducing the body to its natural elements by means of a water-based chemical process. This process is very similar to what would happen to the body if left to decompose via soil bacteria in nature, but is accomplished at a faster rate. Thomas Parmalee explains that "the word 'resomation' comes from the Greek word 'resoma,' which means 'rebirth of the human body.'"²⁰ The process involves placing the corps in a chamber which is then filled with a strong alkali (potassium hydroxide) and water. The chamber is heated between 150 and 170 degrees Celsius, and the body dissolves in approximately three hours.

There are many environmental benefits to resomation. The water yielded at the end of the process is rich in organic nutrients and amino acids, and can be used for horticultural applications, as plant fertilizers, or recycled via a standard waste water management treatment system. Thus, the organic nutrients are not lost, as they would be in cremation or burial.

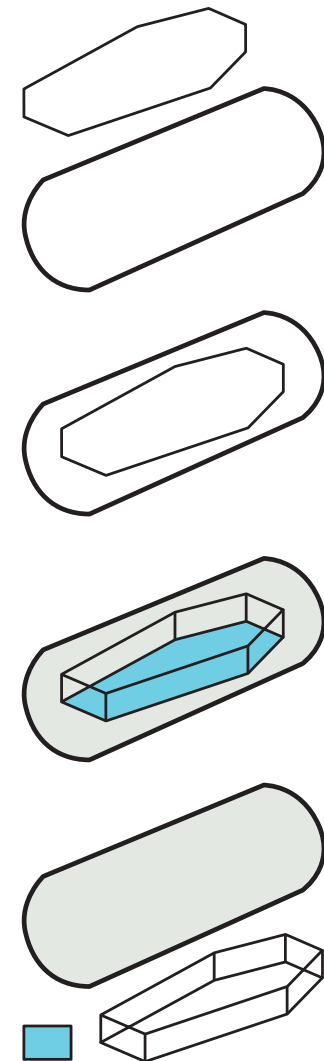
Compared to cremation, the resomation process has a smaller carbon footprint, and a longer unit of life at thirty years. No casket is required with resomation because a reusable coffin cover and basket are used. The process uses approximately one-sixth the amount of electricity as cremation, and dangerous mercury is removed from the remains prior to their return. The process also neutralizes embalming fluids, while destroying diseases and drugs that remained in the body. Medical implants such as titanium joints are left in a pristine condition, from which the metals can be recycled.

STEP 1: Resomation chamber is prepared while body (wrapped in silk or other cloth) is placed into a reusable stainless steel coffin.

STEP 2: The coffin is placed into the chamber to begin the Resomation process.

STEP 3: Potassium hydroxide and water are introduced into the chamber which is heated to 150 degrees Celsius and pressurized. The processtakes about three hours to dissolve the corpse.

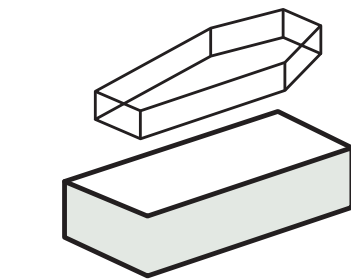
STEP 4: The process yields two substances. The first is a liquid that contains amino acids, peptides, sugar, and mild soap, while the second is pure calcium phosphate or bioash. The water-based liquid can be sent for regular treatment, or used in horticultural applications while the bioash can be crushed into powder and returned to the family.



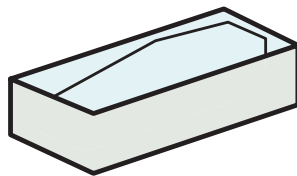
20 Parmalee, p. 47.

PROMESSION

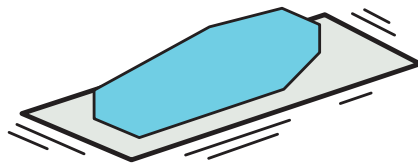
Source: "Promession: How it's done," http://www.promessa.se/sagardettill_en.asp



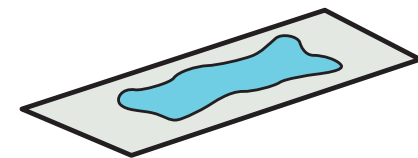
STEP 1: The corpse is frozen down to minus 18 degrees Celsius.



STEP 2: The coffin with the deceased is lowered into liquid nitrogen.



STEP 3: The body becomes firm and brittle and is removed from the liquid nitrogen. The coffin and the body are then exposed to a light vibration, disintegrating into dust.



STEP 4: Mercury and other metals are separated using an induced magnetic field. 25 - 30 kg of the powder now remains, and is put into a coffin made from maize or potato starch.



STEP 5: The starch coffin is buried shallowly and will turn into compost in 6 - 12 months' time. A tree can be planted at the burial site, and will absorb the nutrients.

Promession was invented in 1999 by the Swedish biologist Susanne Wiigh-Mäsak. The method reduces human remains to a fine powder by a process of freeze drying. Liquid nitrogen is used to lower the temperature of the remains to a point at which they are brittle enough to shatter upon vibration. The powder (approximately thirty percent of the original body weight) is then dried, and metals are removed and recycled. The powder is then placed into a biodegradable casket and buried in the earth. The reduction of the body into an organic powder allows for subsequent decomposition to be aerobic in nature.

The promession process has many environmental benefits similar to those of resomation. The use of embalming fluid is not necessary, and there are no smoke or mercury emissions. The energy required to complete the process is much less than that required for cremation or burial. The use of liquid nitrogen reduces the need for energy derived from fossil fuels, while the powder created is organic, odorless, and hygienic. The biodegradable coffin and powder transform back into their elemental and natural resource form in as little as six months.

SITE ANALYSIS

PROJECT SITE: EAST POINT, NAHANT, MA

The town of Nahant is located approximately eight miles northeast of Boston, and is situated on a small peninsula at the end of a narrow causeway. Nahant has a population just over 3,600, and a land area of 1.2 square miles (3.2 km²).

The project site, East Point, is located on the very southeast tip of the peninsula. This site was chosen primarily for its characteristics of place, and proximity to the greater Boston area. East Point is defined by its rocky coastline, contains a diverse range of natural landscape typologies, and has a dynamic topography. The site commands expansive views of the open ocean, the Massachusetts coastline, and the Boston skyline.

While the current condition of the site appears mostly natural and somewhat untouched, East Point is not a pristine landscape, and there is a long history of building on the site. The majority of the site is an artificial landscape that has been modified and reconfigured throughout the years. The most significant changes occurred during WWII when the site was transformed into a defensive fortification for the city of Boston. During the Cold War, the site was transformed into a NIKE missile installation.

Currently, the Town of Nahant owns part of the site, while Northeastern University owns the rest. The Town has a designated portion named Lodge Park, and Northeastern University operates research laboratories at their Marine Science Center.



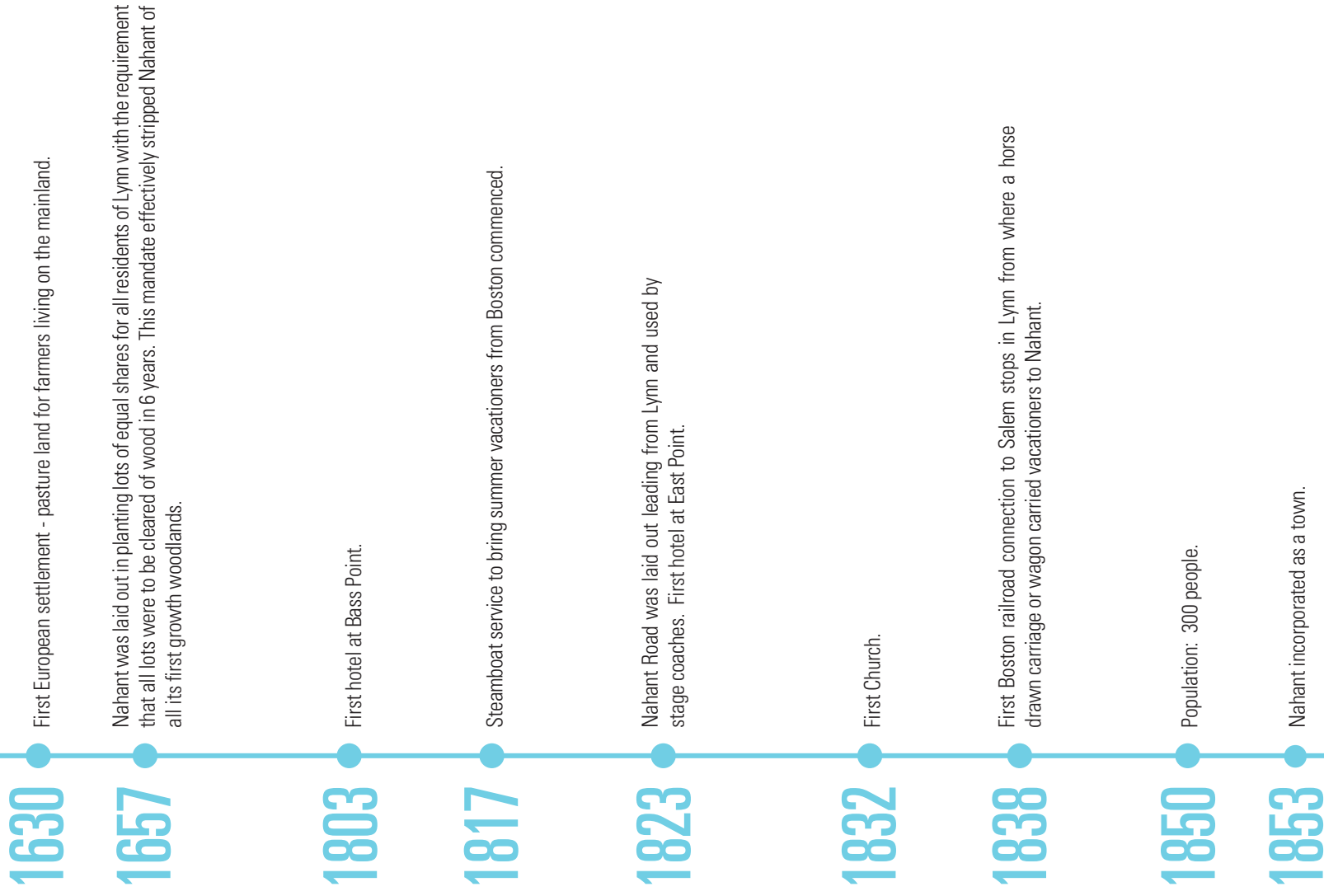
Figure 3: Map of Boston, Massachusetts and vicinity.



Figure 4: Aerial photograph of East Point, Nahant, MA.

TIMELINE OF MAJOR EVENTS FOR NAHANT, MA

Source: MHC Reconnaissance Survey Town Report, and "All About Nahant, A Brief History."





BRIEF HISTORY OF NAHANT

The following is a brief history of the Town of Nahant.¹

The Town of Nahant is a resort town of rocky coasts in the southernmost part of Essex County. Used in early colonial days as a grazing areas for cattle, sheep and goat flocks owned by Lynn residents, Nahant very soon became a maritime community with a small population devoted to fishing. Settlers were granted land for homesites but only if they also spent time fishing and smallboat fishing developed before 1640. Disputed land claims were the hallmark of the town's early years since the Indian Sagamore George apparently sold the same town site to three different sets of people.

By 1657, Nahant was laid out in planting lots of equal shares for all residents of Lynn with the requirement that all lots were to be cleared of wood in 6 years. This mandate effectively stripped Nahant of all its first growth woodlands.

The town became a resort mecca very early on with chaises coming from Lynn. Visitors stayed in boarding houses or private homes and the first hotel was built by 1803. In 1817 a steamboat sailed from Boston to Nahant daily and by 1826 a stage from the Nahant Hotel connected twice a day with coaches running between Boston and Salem. Fishing and several shoe shops were the major businesses aside from agriculture and tourism and even up to 1830 year-round residents were very few. Thomas Handyside Perkins, a



Figure 5: William Stanley Haseltine, *After a Shower, Nahant, MA*, 1864.

¹ Town of Nahant, Massachusetts. "All About Nahant, A Brief History." Available at: <http://www.nahant.org/community/about.shtml>. 13 September 2009.



Figure 6: Kenneth M. Evans, *Egg Rock, Nahant*, N.D.

prominent Boston businessman, built a hotel in Nahant in 1823 which featured a bowling alley and by the 1840's the town was already celebrated as the summer resort of Boston's elite.

Incorporated in 1853, the town was the site of the most massive hotel complex on the Atlantic Coast and the location of an annual regatta. By the end of the 19th century, there was a visible shift away from hotels and toward residences. An era of skyrocketing growth began about 1870 and continued unabated for the next four decades with construction firms putting up hundreds of summer homes for visitors to the town. In the modern era, Nahant has protected its residential status and farming and industrial activity have disappeared.

PLANTATION PERIOD (1620 - 1675)

Water travel was still the fastest and most convenient way to get between Nahant and the surrounding areas (Lynn, Salem, Marblehead, Greater Boston, etc.). Travel to Nahant by land followed present-day Nahant Road, and was only accessible during low tide.

Throughout this period, four or five Colonial families likely inhabited Nahant, although they were not permanent settlers. Fishermen were also present, while the Native Americans had abandoned the area by this time.

Nahant was designated as a common lands to be used by the settlers of Lynn around 1630. In 1635, up to nine fisherman were allowed to settle in Nahant to promote the industry.

Three groups claimed rights to the land of Nahant. Thomas Dexter was said to have purchased Nahant from the Native Americans, and claimed the title for the entire area. The second group was of Lynn residents who claimed they had the rights, having been the first settlers. A third group claimed the rights, and consisted of the first individuals to actually settle and live in Nahant.

By 1657, Nahant was split into equal plots and shared for all residents of Lynn. Within a decade, all of the lots were cleared of wood, and many became pastures for sheep, cattle, goats, and swine owned by the Lynn residents. Other lots were dedicated to growing crops such as corn, wheat, barley, and rye.²



Figure 7: William Stanley Haseltine, *Rocks at Nahant*, N.D.

² Nahant historical information paraphrased from: MHC Reconnaissance Survey Town Report, Nahant, 1985, p. 5 - 6.

COLONIAL PERIOD (1675 - 1775)



Figure 8: Hendricks A. Hallett, *Nahant*, 1885.

During this period, Native American trails were upgraded to horse paths and cartways. The path in and out of Nahant (which was called the road to Lynn) was still just a thin strip of sand accessible only during low tide.

There was little increase in population during this period, and still no permanent inhabitants before 1717. It is possible that up to twenty individuals lived on Nahant towards the end of the period.

Nahant was mainly used for pasturage and woodcutting during this time. In 1706, Nahant was divided into 208 lots and split among Lynn inhabitants. The Breed, Hood, and Johnson family houses were the only three known to exist in Nahant around 1770.

For the duration of the period, Nahant continued to be used primarily for grazing, farming, and fishing.³

³ Nahant historical information paraphrased from: MHC Reconnaissance Survey Town Report, Nahant, 1985, p. 6 - 7.

FEDERAL PERIOD (1775 - 1830)

Due to the increasing popularity of Nahant as a recreational area, the transportation linkages to Lynn, Salem, and the Boston area greatly and quickly improved. Steamboat service began runs to Nahant in 1817, with daily service starting in 1818. By 1926, a stagecoach made two trips per day to Nahant from Boston and Salem. By 1830, Nahant Road stretched from Lynn to the Nahant Hotel on the eastern most point of the island.

The population of residents grew to 75 by 1825, while summer visitors began staying as boarders. In 1821, Thomas Perkins and William Paines purchased land to develop the first resort aimed at attracting wealthy Bostonians.

The first hotel was established in 1803 at Bass Point. There was rapid growth during this period as the town realized the potential for Nahant as a place of recreation. Fishing was still the primary industry while a number of shoe shops opened across the town.

There were still only a few people who inhabited Nahant on a year-round basis, while farmers from Lynn continued to graze animals and grow crops on much of the land. During the later part of the period, the economic shift to tourism (from the Boston region) began.⁴

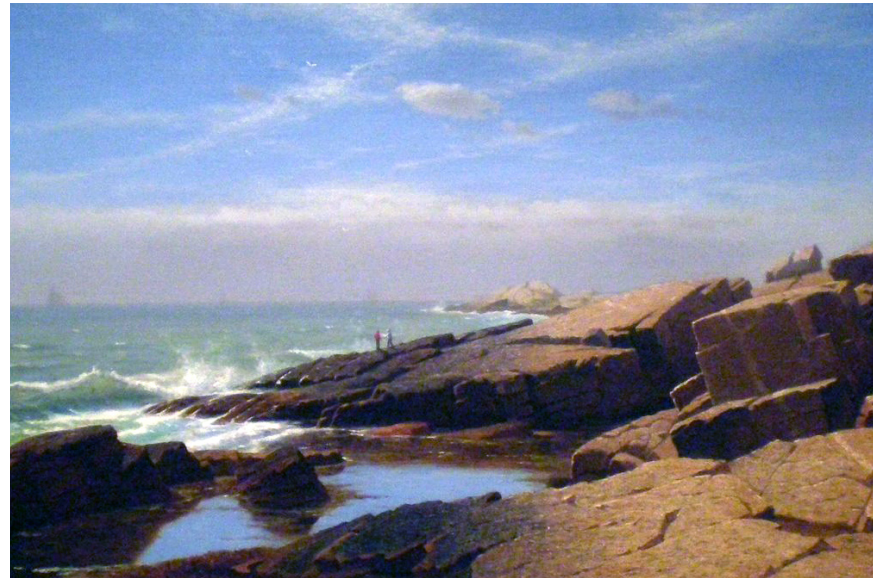


Figure 9: William Stanley Haseltine, *Rocks at Nahant*, 1864.

⁴ Nahant historical information paraphrased from: MHC Reconnaissance Survey Town Report, Nahant, 1985, p. 7 - 10.

EARLY INDUSTRIAL PERIOD (1830 - 1870)



Figure 10: Clement Drew, *Schooner on a Lee Shore off Nahant*, 1883.

Continued improvements to existing roads occurred throughout this period while new roads were also added. The causeway was stabilized with 300 cedar posts in 1841, and 1000 more in 1842. Public transportation availability increased as the town became a recreational resort destination. Daily steamboat service was maintained while rail service was introduced (via Lynn) in 1838 between Boston and Salem. A barge which ran every half hour, transported people easily from Lynn to Nahant.

By 1847 the town included 197 residents from approximately 33 families. In 1853, Nahant was incorporated as a town. The population rose to 270 in 1855, and to 313 in 1865. With the increase in population, the fishing industry saw growth as well, however, tourism continued to dominate economically.

By 1840 Nahant was celebrated as summer resort for elite Bostonians, and continued to grow. A second school was built in 1832 while a grocery store and post office followed in 1847. After the Nahant Hotel and Nahant House burned down in 1861, emphasis shifted from hotel service to summer cottages. In the late 1860s an amusement park was constructed at Long Beach.⁵

⁵ Nahant historical information paraphrased from: MHC Reconnaissance Survey Town Report, Nahant, 1985, p. 10 - 12.

LATE INDUSTRIAL PERIOD (1870 - 1915)

A wharf was constructed at Bass Point in 1892, which had become the most popular area of Nahant. In 1903, residents approved an electric streetcar which connected to the local trolley lines of Lynn.

The population of Nahant increased to 475 in 1870, and to 1387 in 1915. In 1876, a high school was created, only to close in 1914 and reopen as a junior high school.

During this period settlement grew rapidly. The transformation from a hotel industry to a cottage community continued. The town was becoming a more popular, rather than elite resort area, although the eastern third of the town remained in the private hands of wealthy Bostonians. With a new amusement park and attractions at Bass Point, Nahant residents saw their quiet peninsula become an unstoppable playground for vacationers. Coming by steamer, barge, and trolley, visitors numbered up to 40,000 on a given summer Sunday.

By this time, the resort sector was the most significant economic entity of Nahant. By 1895 only two farms of 18 acres remained.⁶



Figure 11: "A foggy day along a rock-bound coast, Nahant, Mass., Aug 9, 1914."

⁶ Nahant historical information paraphrased from: MHC Reconnaissance Survey Town Report, Nahant, 1985, p. 13 - 14.

EARLY MODERN PERIOD (1915 - 1940)

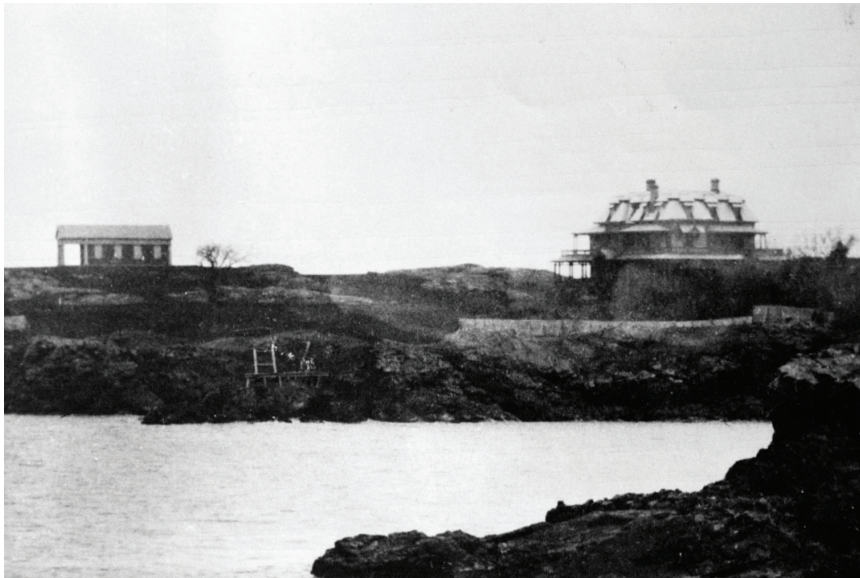


Figure 12: Henry Cabot Lodge estate, East Point, Nahant.

In 1916, street railway and steamboat service ended, but the roadway networks were improved to handle the increase in automobile usage. The Lynnway opened in 1906 and Interstate 95 in 1950, making access to Nahant even easier.

The population growth of Nahant slowed during this period, rising from 1387 to 3231 at the rate of 133% (down from 192% in the last period).

The amusements at Bass Point went out of business as the steamer and trolley service ended, but the town's popularity as a summer resort continued. Little Nahant was developed into an area of small cottages, while residential density intensified throughout the rest of Nahant.

By this period, the entire Nahant economy was based almost exclusively on the summer resort industry with fishing and farming contributing only slightly.⁷

⁷ Nahant historical information paraphrased from: MHC Reconnaissance Survey Town Report, Nahant, 1985, p. 16 - 17.



Figure 13: Lodge estate (former Nahant Hotel billiard room is the left structure).



Figure 14: Lodge estate as seen during high tide.

BRIEF HISTORY OF EAST POINT



Figure 15: Nahant Hotel, East Point, Nahant.

East Point, Nahant was clear cut of trees and used as pasture for the Ram farm until the early 1800s. The site was sold to Boston businessman Thomas Handyside Perkins who opened the Nahant Hotel there in 1823. The hotel was one of the largest structures on Nahant. Originally three-and-a-half stories, the hotel expanded to contain over 30 bays in width.⁸ In 1861, the hotel caught on fire and burned to the ground.

John Ellerton Lodge, who returned to Boston in 1840 to retire, bought the land where the hotel stood, and returned to Nahant, the place he spent his childhood summers. Lodge married Anna, the only surviving daughter of prominent Bostonian Henry Cabot. John Lodge started building houses on the site for his two children, but died in 1862. His son, (Senator) Henry Cabot Lodge and daughter Elizabeth Cabot James (wife of George Abbot James) retained the estate.⁹

East Point was used as a defensive fortification for Boston Harbor starting in 1941. In 1954, the site was converted to a NIKE missile installation. The property was partially acquired by Northeastern University in 1967, becoming home to the Marine Science Center.¹⁰

8 MHC Reconnaissance Survey Town Report, p. 9.

9 Schrifgiesser, Karl. *The Gentleman From Massachusetts: Henry Cabot Lodge*. Boston: Little, Brown and Company, 1944., p. 12.

10 Northeastern University Marine Science Center. "History of the Marine Science Center." Available at <http://www.marinescience.neu.edu/mschistory/> 15 August 2009.



Figure 16: View of NIKE missile installation at East Point.



Figure 17: Close-up view of NIKE missile launch area.

MILITARY HISTORY OF EAST POINT



Figure 18: NIKE missiles arrive at East Point, Nahant.

In 1941 the site was used by the U.S. military for the construction of defensive fortifications of Boston Harbor. The fortifications consisted of a 5-inch cannon bunker as well as a larger 16-inch Coastal Defense cannon bunker, and the associated plotting rooms and triangulation towers. A Magnetic Loop station to detect submarines was housed in two smaller bunkers near the tip of East Point.¹¹

In 1954 during the Cold War, a NIKE missile site was installed at East Point to defend Boston and the surrounding areas from a nuclear attack. The missile silos were constructed in three rows on the large plateau of the site.

Some of the original WWII bunkers and fortifications exist on the site today (including the underground bunker - Battery Number 104). Paths and roads near the plateau of East Point from the NIKE installation also remain.

¹¹ "Nahant, MA - East Point,"
Available at: <http://grafikjack.com/nahant/>. 25 July 2009.

EAST POINT WWII MILITARY LAYOUT 1943 - 1956

Layout and diagram adapted from *Military Annals of Nahant*, 1996, by Gerald W. Butler, Captain, Massachusetts State Guard, Retired.

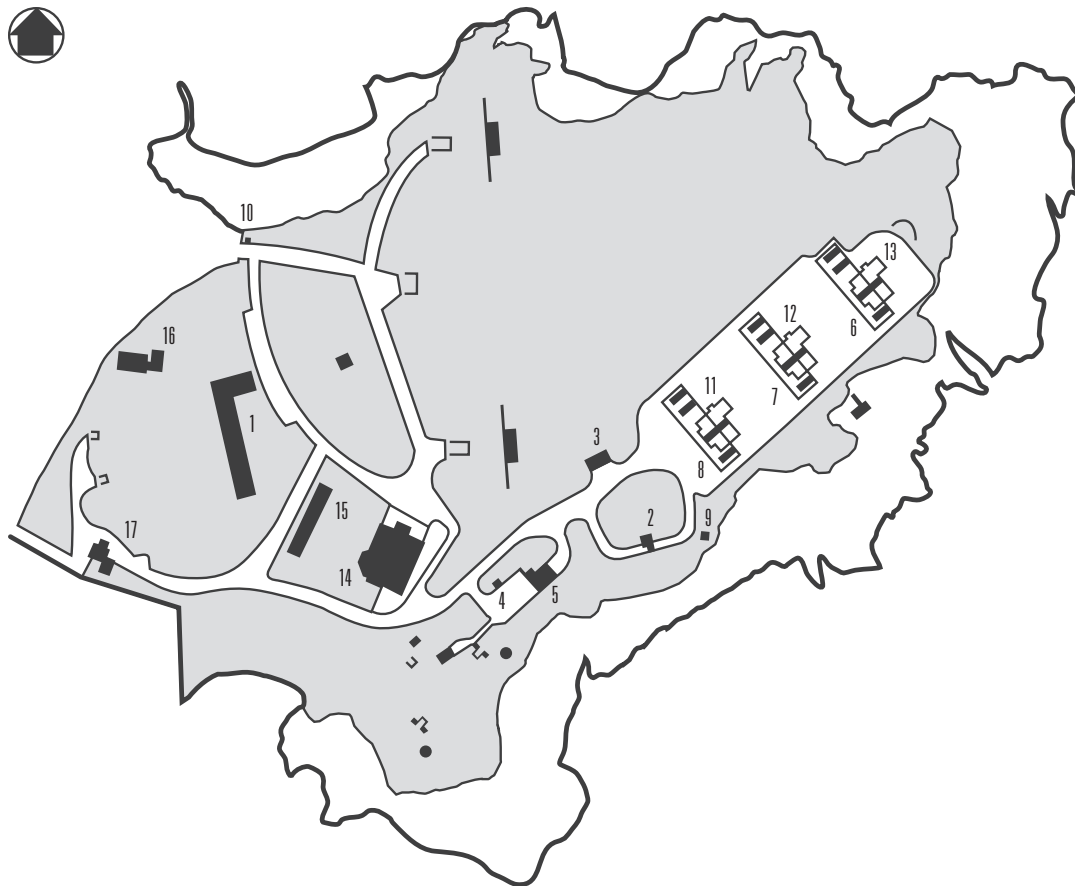


LISTING OF STRUCTURES

- 1 Headquarters Building
- 2 Officer's Quarters
- 3 Carpenter Shop
- 4 Recreation Building
- 5 Reservoir
- 6 Storage Building
- 7 Pump Chamber and Well
- 8 Pump Chamber and Well
- 9 Well
- 10 Reservation Fence
- 11 Seawall
- 12 Flagpole
- 13 Naval Operations Building
- 14 Naval Administration Building
- 15 Battery Commander's Station
- 16 Mess Hall
- 17 Sentry Box
- 18 Plotting Room 104
- 19 Reservoir Number 104
- 20 Battery Number 206
- 21 Battery Number 104

BATTERY LAUNCHER AREA LAYOUT 1957-1961

Layout and diagram adapted from *Military Annals of Nahant*, 1996, by Gerald W. Butler, Captain, Massachusetts State Guard, Retired.



LISTING OF STRUCTURES

- 1 Enlisted Men's Barracks
- 2 Missile Fuelling Station
- 3 Generator Building
- 4 Storage Building
- 5 Missile Assembly and Test Building
- 6 Underground Missile Storage "C"
- 7 Underground Missile Storage "B"
- 8 Underground Missile Storage "A"
- 9 Acid Storage Shed
- 10 Sentry Box
- 11 Frequency Changer Pad "A"
- 12 Frequency Changer Pad "B"
- 13 Frequency Changer Pad "C"
- 14 Storage
- 15 Carpenter and Storage Building
- 16 Post Exchange
- 17 Quarters

CURRENT MILITARY PRESENCE AT EAST POINT



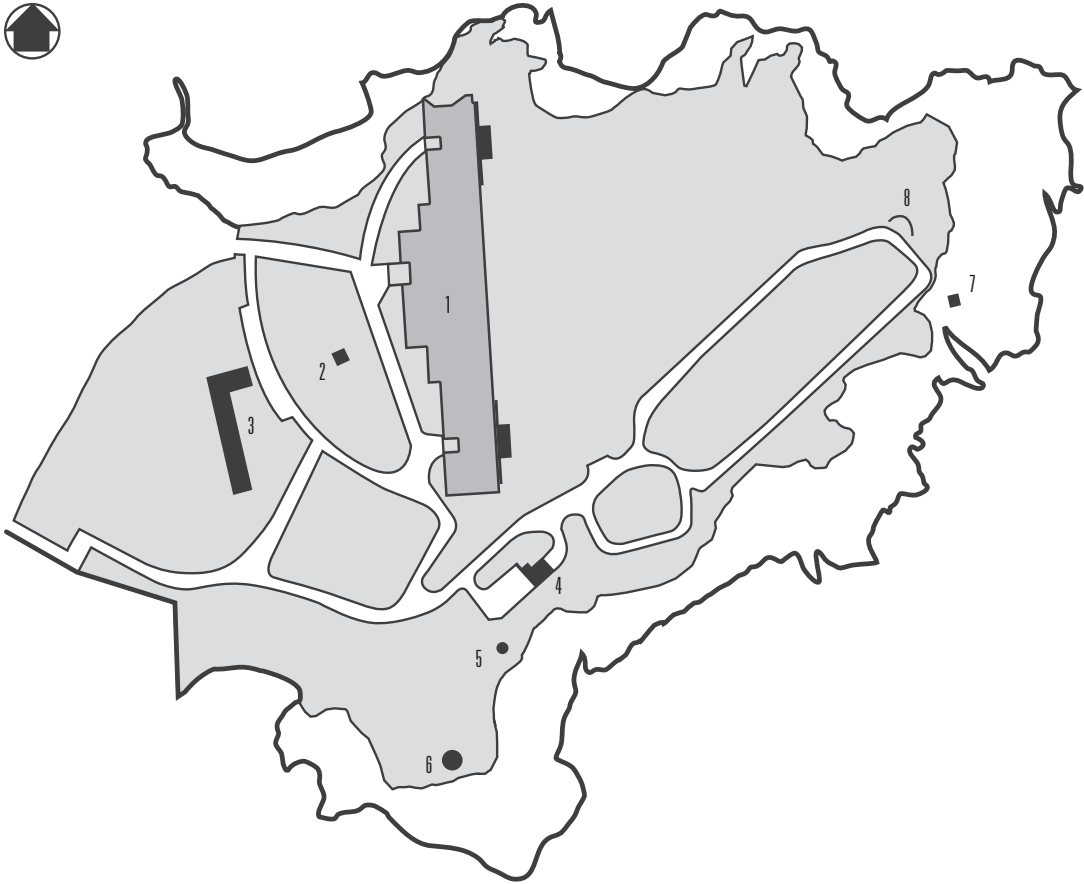
Tunnel through underground bunker (battery number 104).



Current view inside the underground bunker looking north.

REMAINING MILITARY BUILDINGS/STRUCTURES

Layout and diagram adapted from *Military Annals of Nahant*, 1996, by Gerald W. Butler, Captain, Massachusetts State Guard, Retired.



LISTING OF STRUCTURES

- 1 Battery # 104 (Underground Bunker)
- 2 Storage Building
- 3 Barracks
- 4 Missile Assembly and Test Building
- 5 Battery # 206 Gun Emplacement (1)
- 6 Battery # 206 Gun Emplacement (2)
- 7 Command Station
- 8 Artillery Guide Rail



HISTORY OF NORTHEASTERN UNIVERSITY MARINE SCIENCE CENTER

The Northeastern University Marine Science Center (MSC) is located on the southeast portion of Nahant near East Point. The MSC is only a short distance from the former summer cottage and laboratory of Harvard Professor Louis Agassiz, who founded American marine biology in the mid 19th century.¹²

The Nahant Hotel occupied the site where the MSC is now located from 1823 to 1859. The property was purchased by John E. Lodge after the Nahant Hotel burned down in 1861. On the site Lodge built two houses for his children Senator Henry Cabot Lodge and Elizabeth Cabot Lodge.¹³

Northeastern University purchased some of the property in 1967 and the Marine Science Center was constructed under Dr. Nathan “Doc” Riser who directed the institute until 1985. The Center utilizes a WWII era building originally constructed as barracks.¹⁴

The current MSC research areas include: marine ecosystems, evolutionary, physiological, molecular and community ecology, marine genomics, neurophysiology and behavior, microbial ecology, biological oceanography, vertebrate systematics and ecology, macroalgal biotechnology and marine pollution remediation.¹⁵



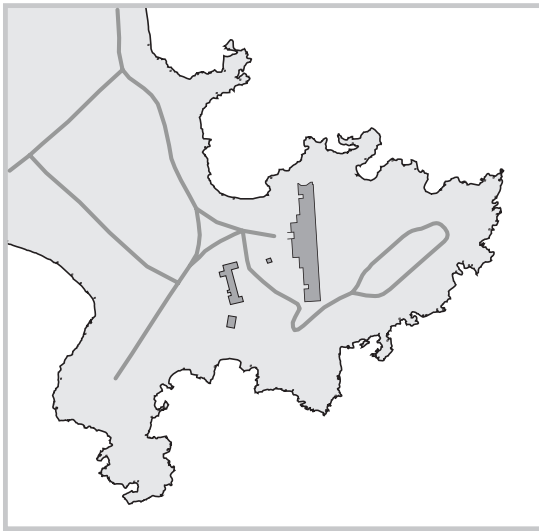
12 “History of the Marine Science Center.”

13 Ibid.

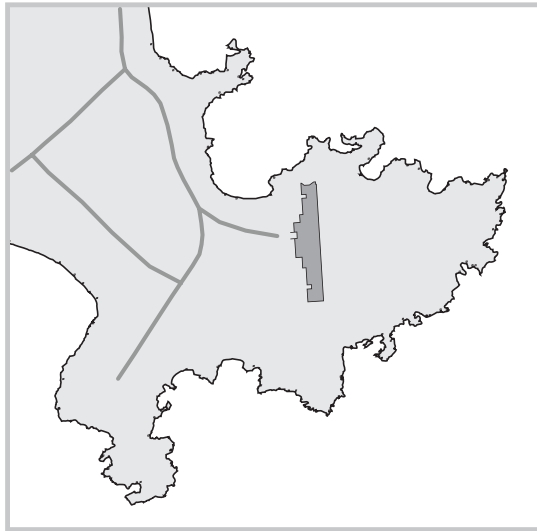
14 Ibid.

15 Ibid.

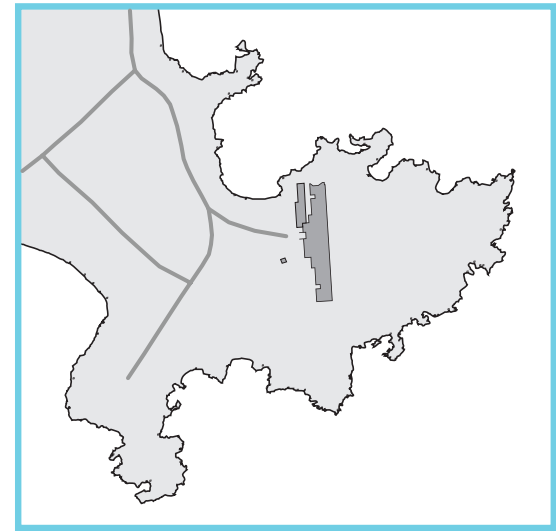
DESIGN OPTIONS FOR THE NORTHEASTERN UNIVERSITY MARINE SCIENCE CENTER



Leave the Northeastern University Marine Science Center as is.



Demolish the Marine Science Center.



Relocate the Marine Science Center in closer proximity to the underground bunker.

SITE MAPPING - NAHANT AND VICINITY



BOSTON AREA HIGHWAYS



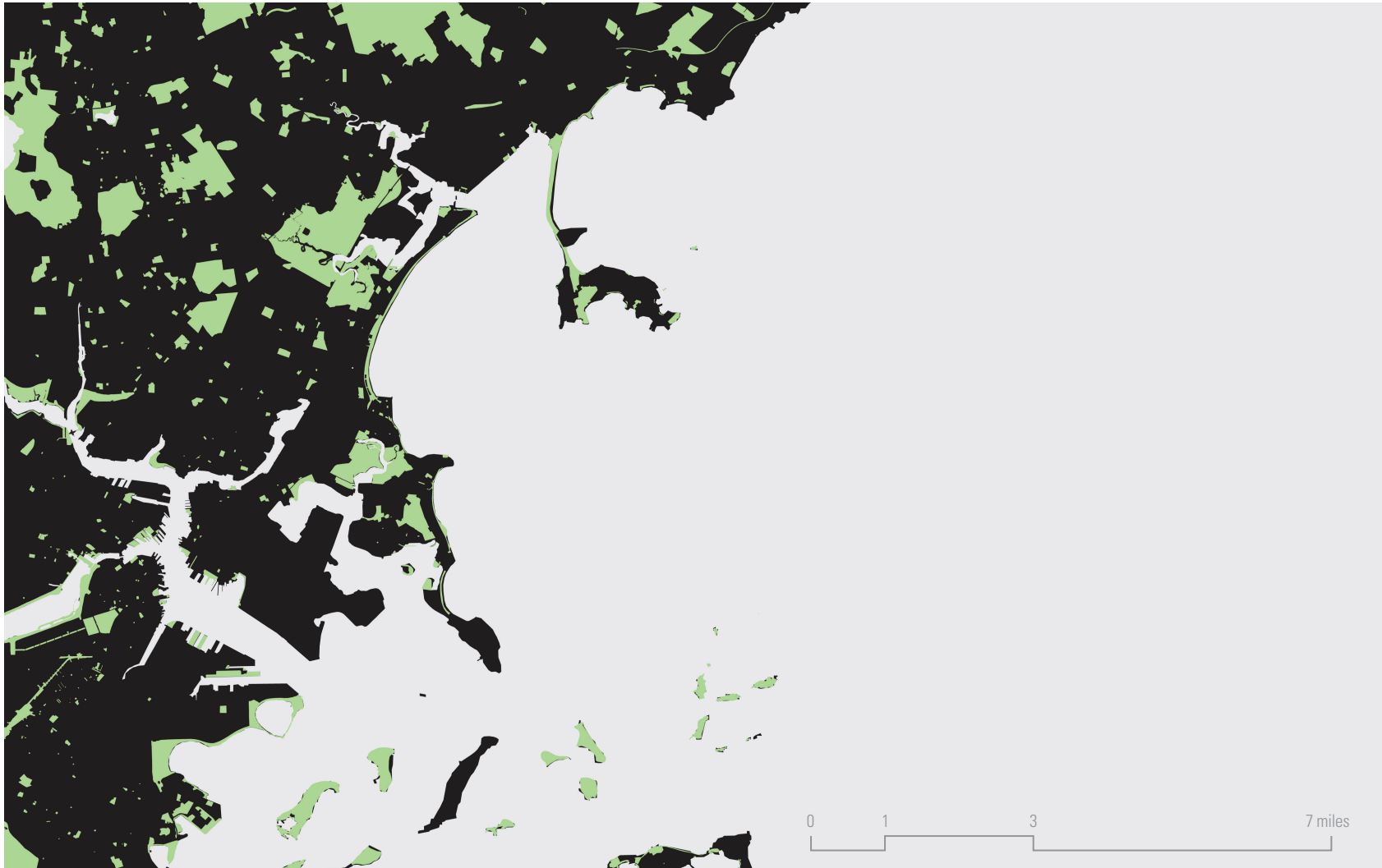
HIGHWAYS AND MAJOR ROADWAYS



ALL ROADWAYS



PARKS AND GREEN SPACE IN THE VICINITY

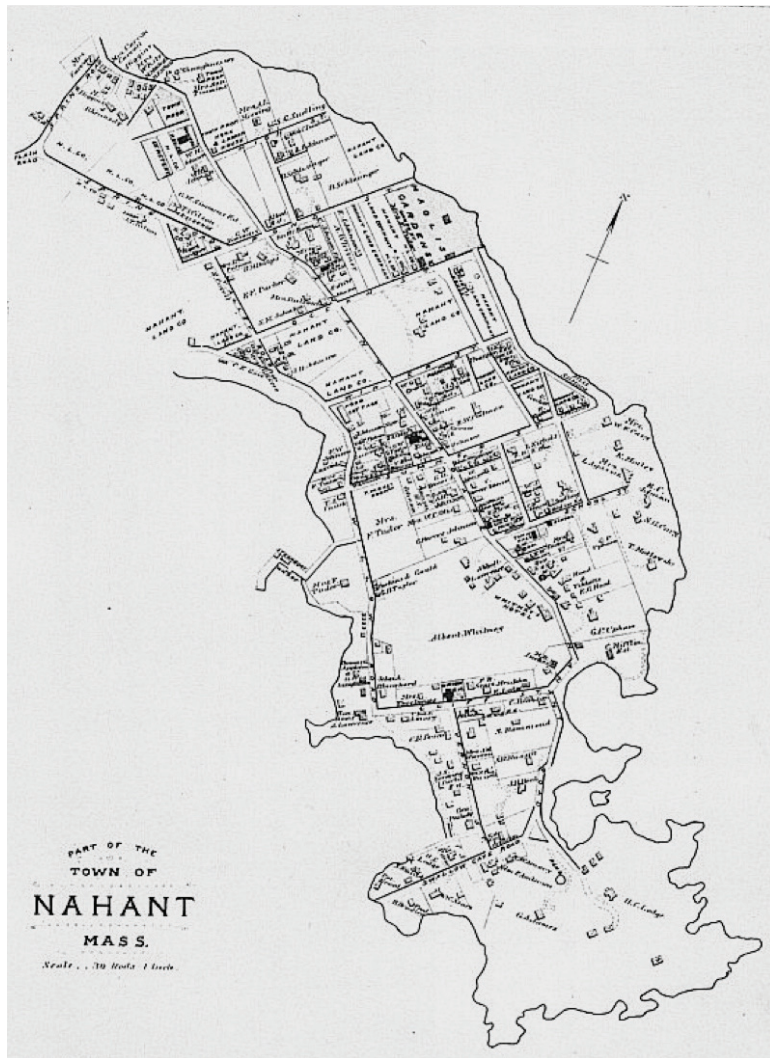


ROADWAYS SERVING NAHANT AND VICINITY



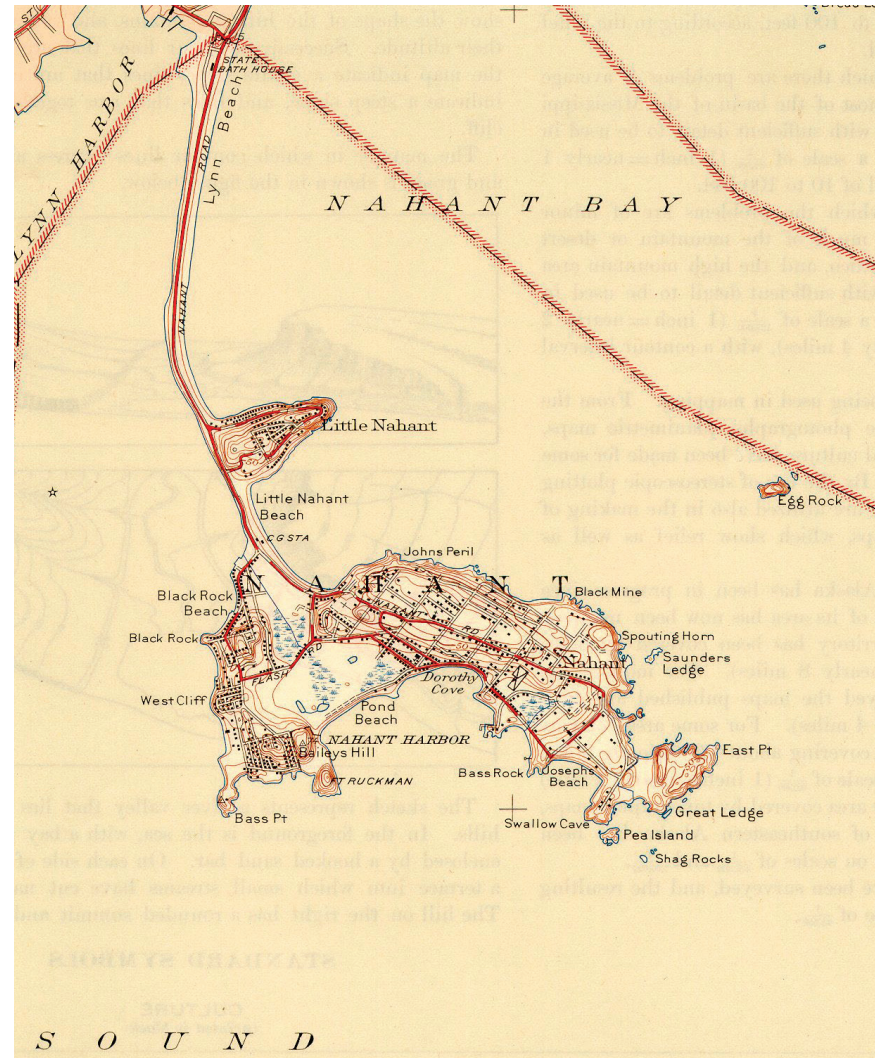
HISTORICAL MAP (1884)

Figure 19: 1884 map of Nahant resort development.



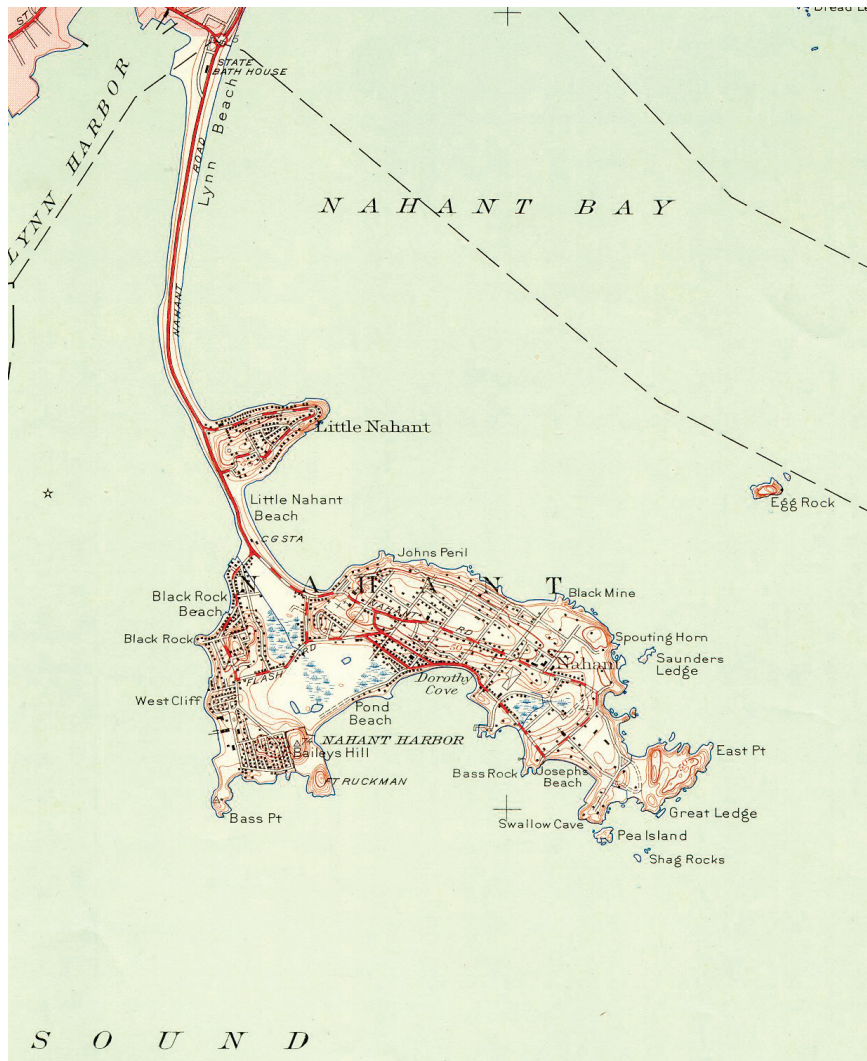
HISTORICAL MAP (1946)

Figure 20: 1946 Map of Nahant with topography.



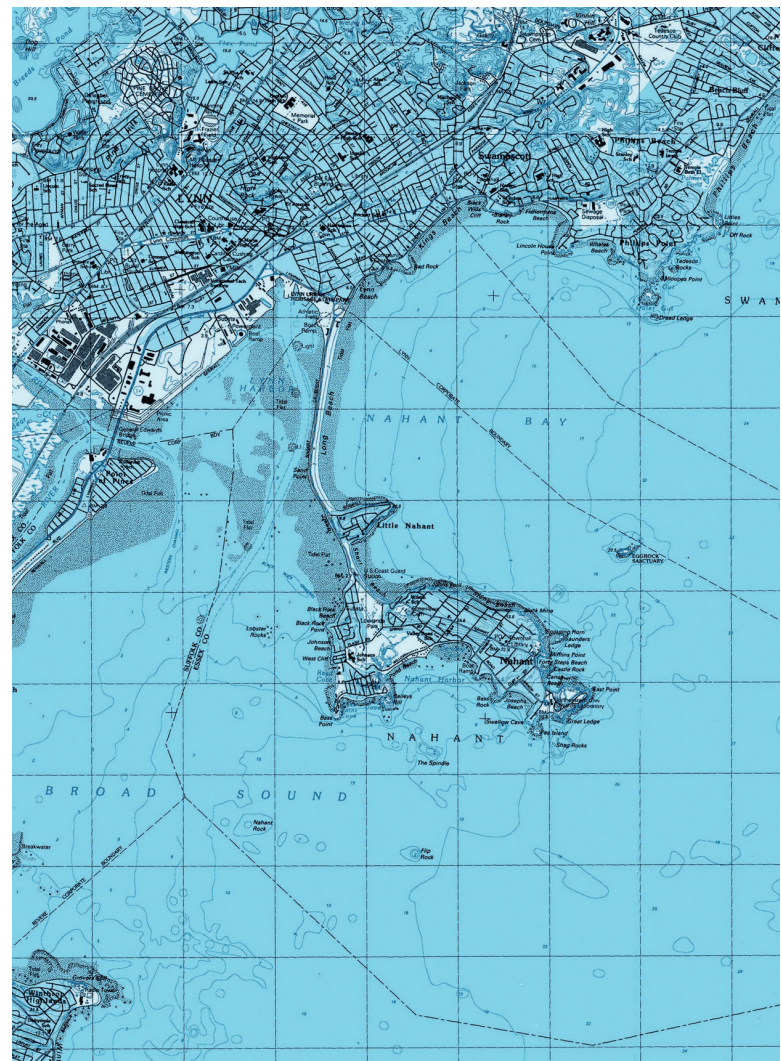
HISTORICAL MAP (1949)

Figure 21: 1949 Map of Nahant with topography.

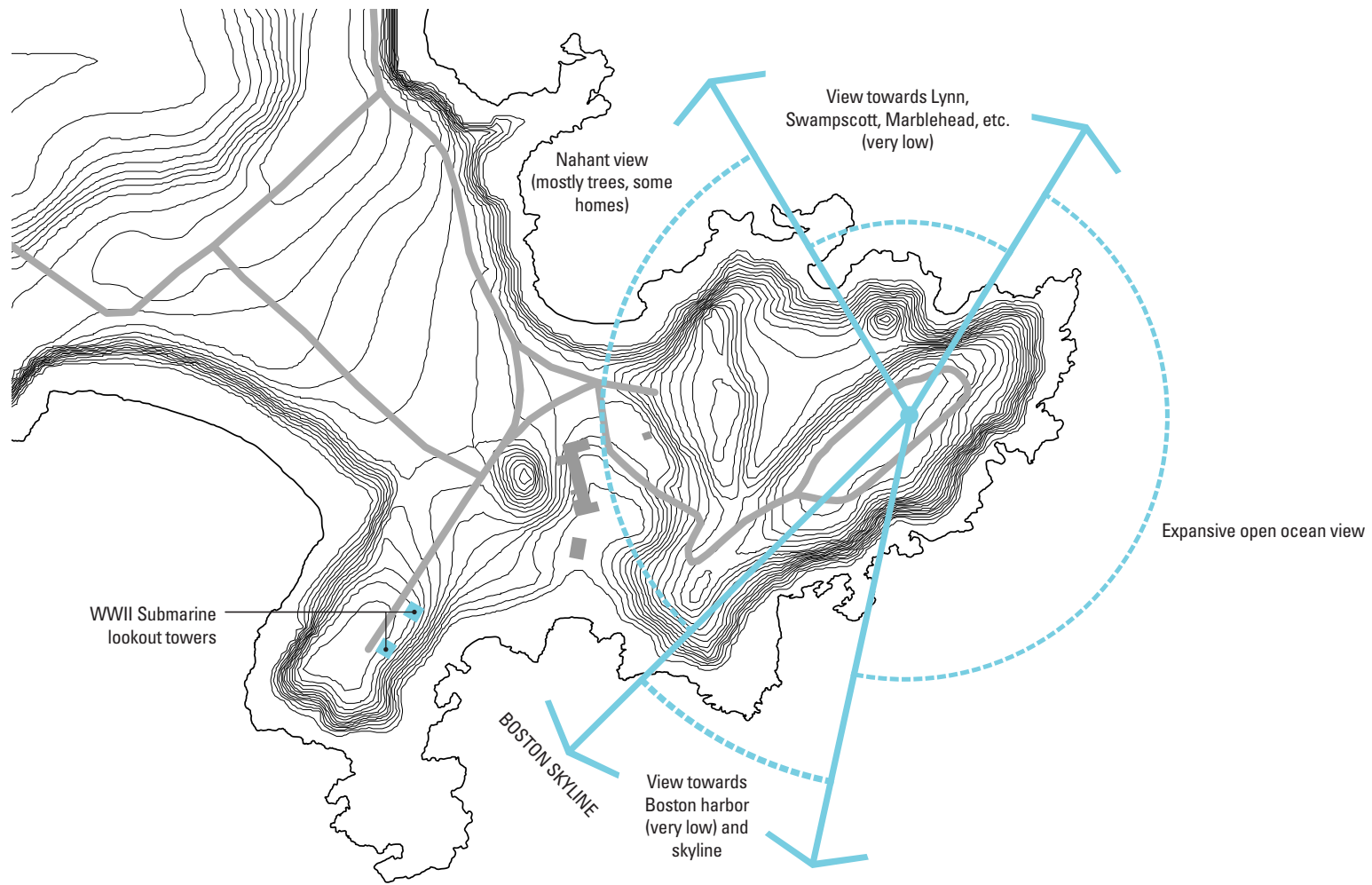


USGS MAP (1997)

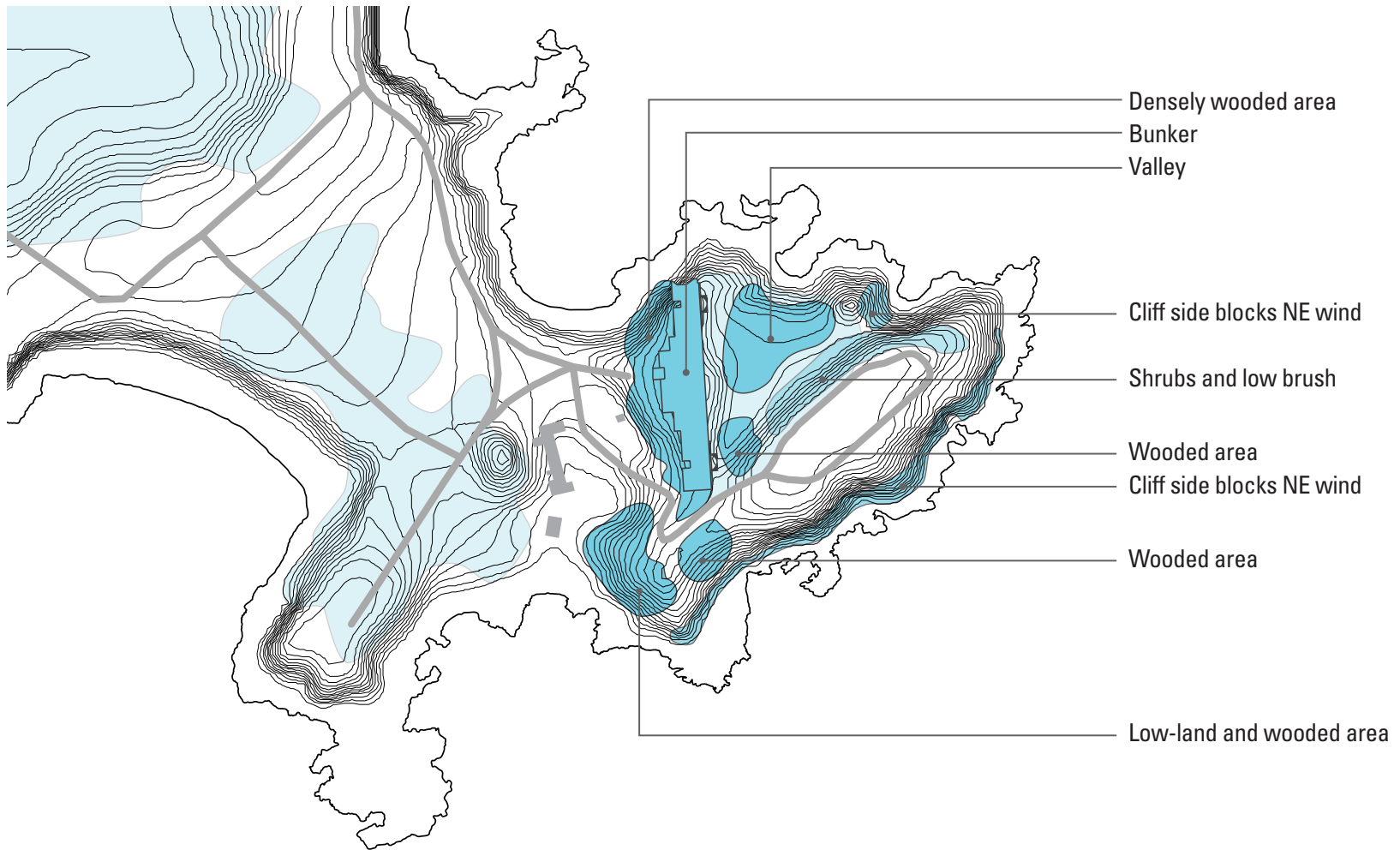
Figure 22: 1997 United States Geological Survey map.



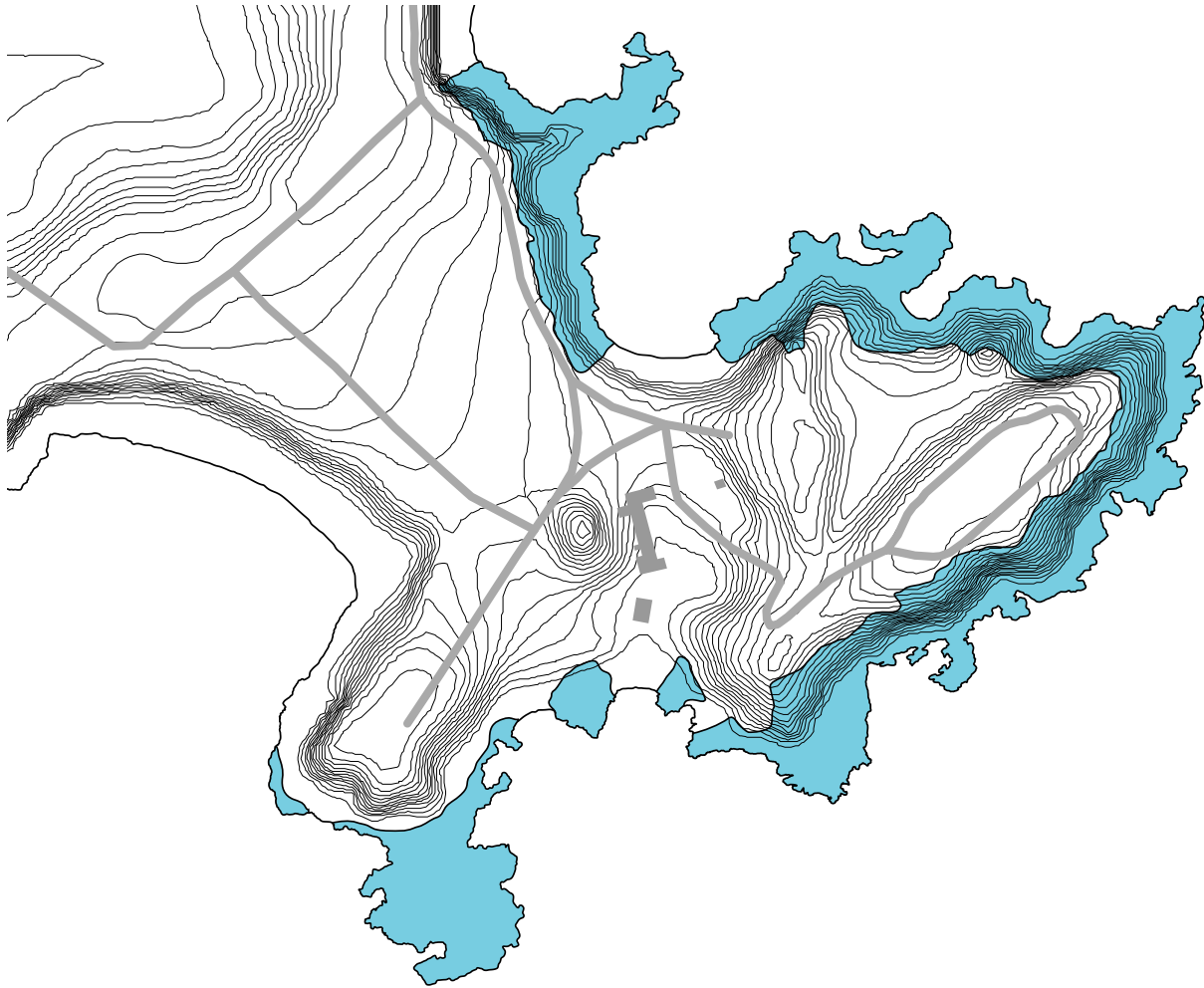
PRIMARY VIEWS FROM EAST POINT



AREAS OF SHELTER FROM THE WIND



EXPOSED ROCK OUTCROPPINGS



POTENTIAL FERRY / BOAT ROUTE FROM BOSTON



STEREOGRAPHIC SUNPATH DIAGRAM

Data Source: <http://www.timeanddate.com/worldclock/>

SPRING EQUINOX (MARCH 20)

Sun Rise: 6:47 AM - Azimuth: 99°
 Sun Set: 6:57 PM - Azimuth: 271°
 Solar Noon: 12:52 PM @ 47.8°
 Length of Day: 12 h and 9 m

SUMMER SOLSTICE (JUNE 21)

Sun Rise: 5:08 AM - Azimuth: 57°
 Sun Set: 8:25 PM - Azimuth: 303°
 Solar Noon: 12:46 PM @ 71.1°
 Length of Day: 15 h and 16 m

FALL EQUINOX (SEPTEMBER 22)

Sun Rise: 6:32 AM - Azimuth: 89°
 Sun Set: 6:41 PM - Azimuth: 271°
 Solar Noon: 12:37 PM @ 47.8°
 Length of Day: 12 h and 9 m

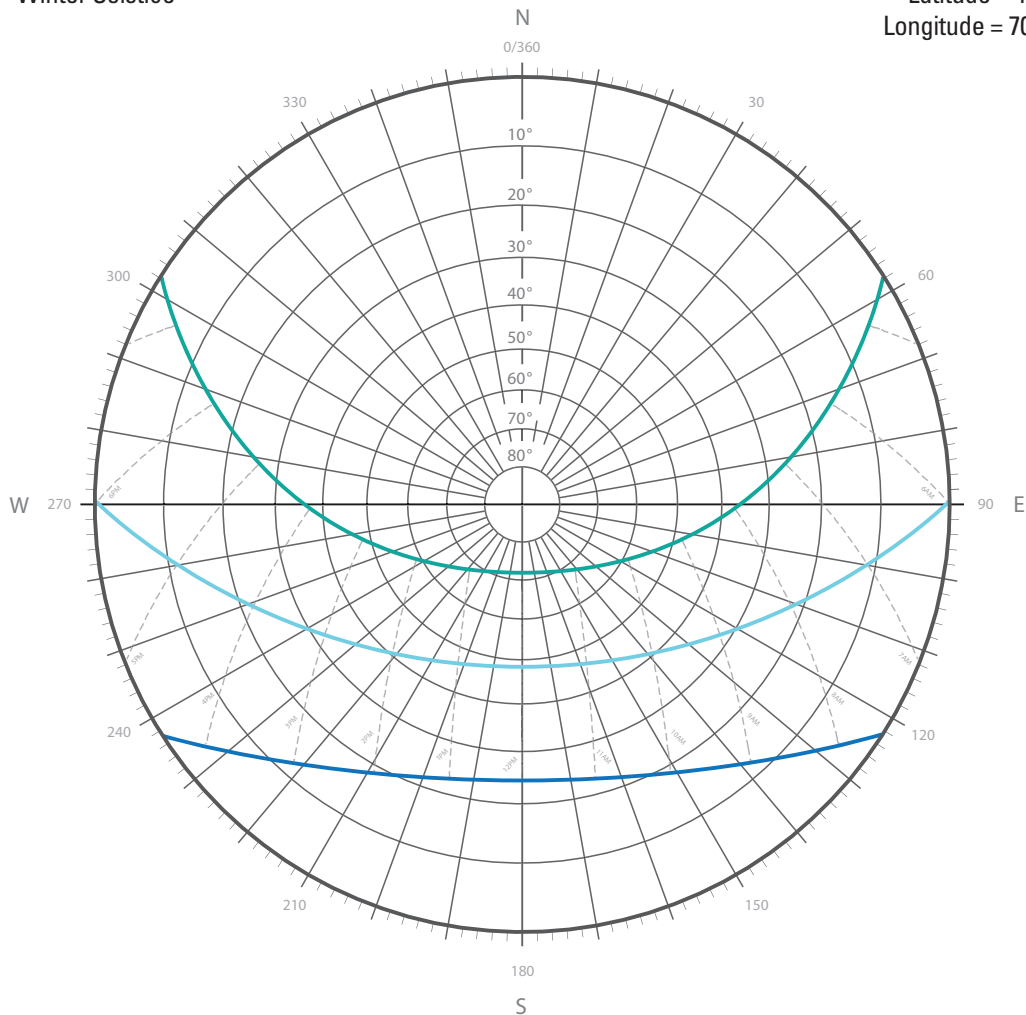
WINTER SOLSTICE (DECEMBER 21)

Sun Rise: 7:10 AM - Azimuth: 121°
 Sun Set: 4:15 PM - Azimuth: 238°
 Solar Noon: 11:43 PM @ 24.3°
 Length of Day: 9 h and 5 m

- Spring/Fall Equinox
- Summer Solstice
- Winter Solstice

NAHANT, MASSACHUSETTS

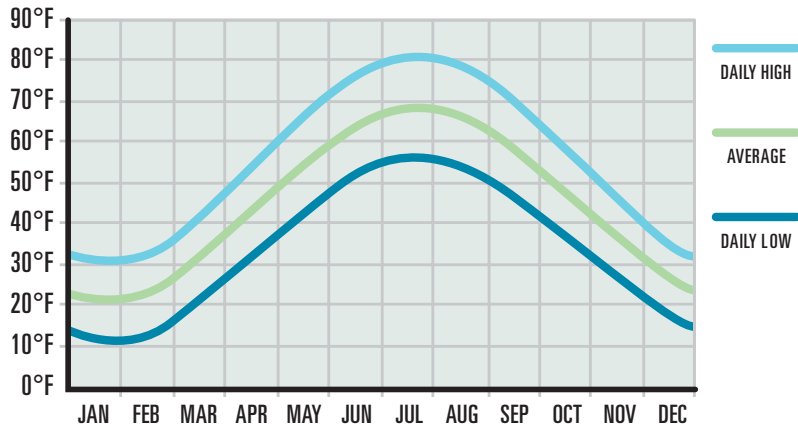
Latitude = 42° 25' N
 Longitude = 70° 55' W



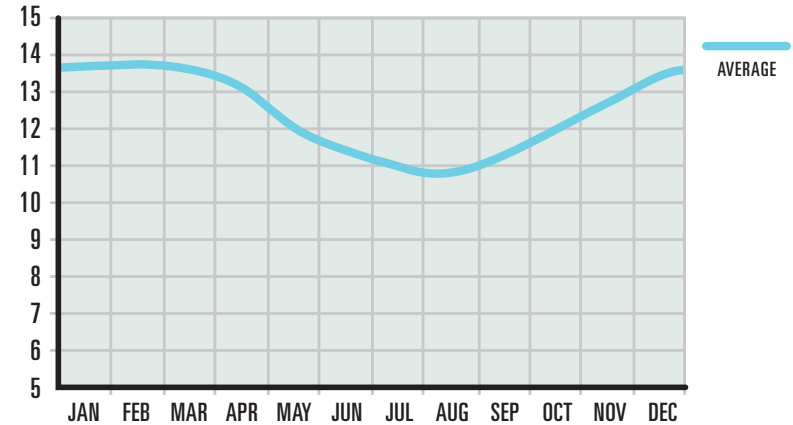
AVERAGE WEATHER CONDITIONS

Data Source: <http://www.city-data.com/city/Nahant-Massachusetts.html>

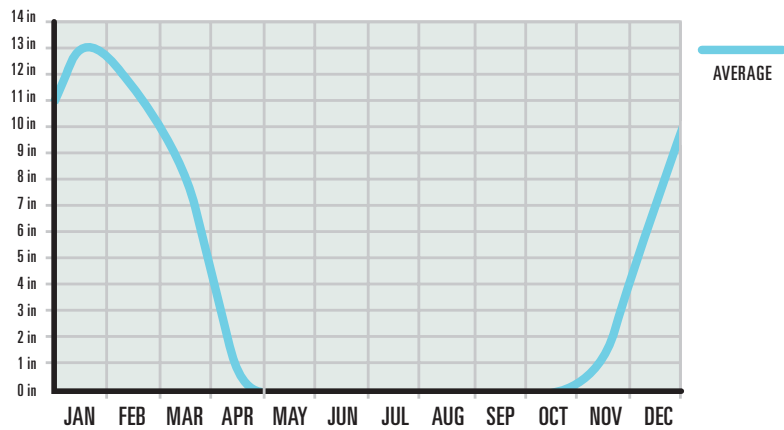
AVERAGE TEMPERATURE



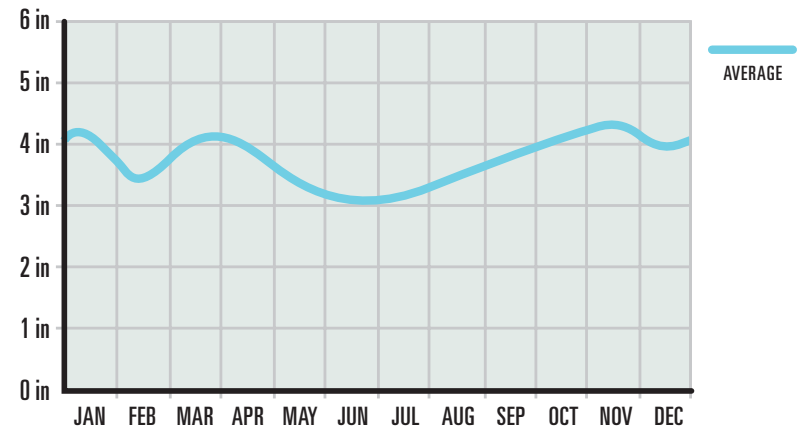
WIND SPEED (MPH)

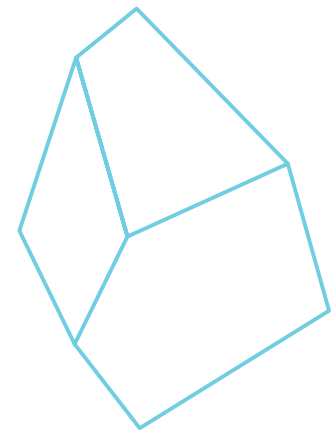
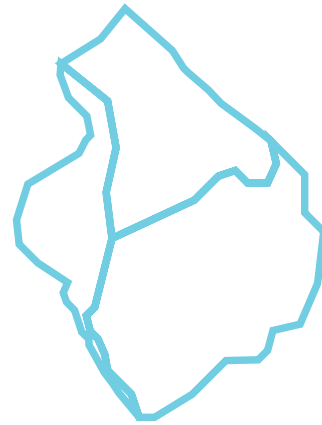
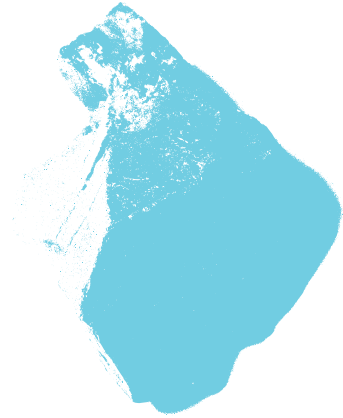
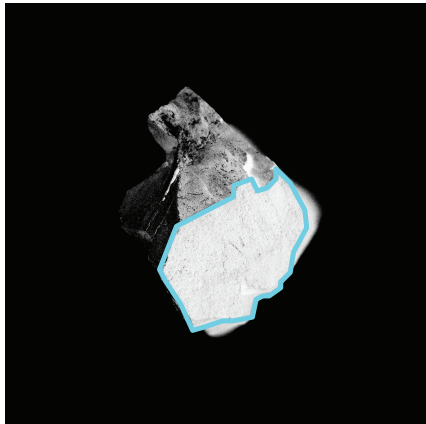


SNOWFALL

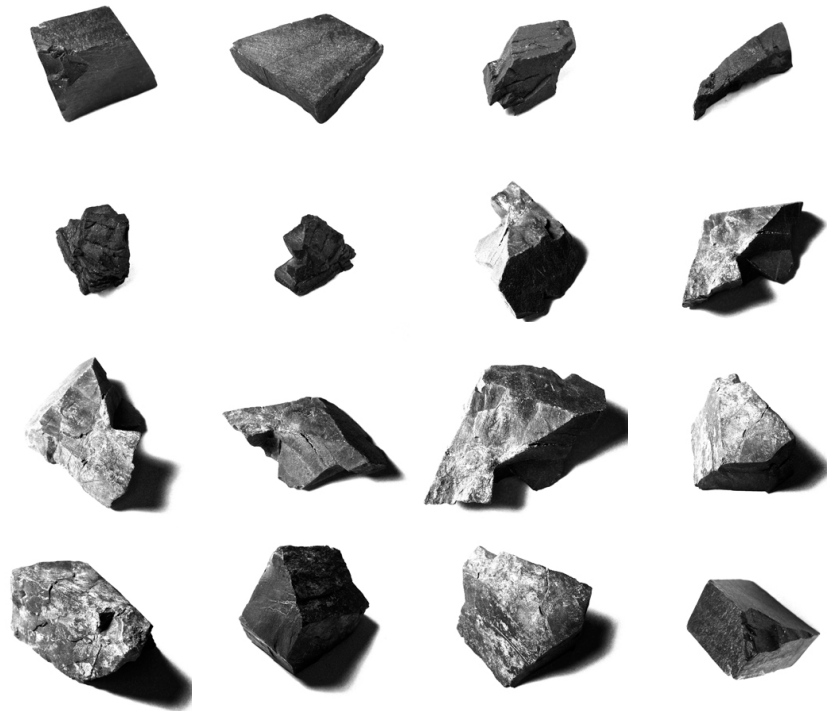


PRECIPITATION





EAST POINT, NAHANT GEOLOGY



BRIEF GEOLOGICAL TIMELINE¹⁶

553 million years ago Nahant consisted primarily of quartzites (a metamorphic rock converted from sandstone). 460 - 490 million years ago Nahant gabbro rock (course grain igneous (intrusive)) was formed, at which time basalt dikes crosscut the gabbro.

Faulting and folding of the rock occurred for millions of years, while sills and dikes continue to form. This folding and faulting can be observed in the way that the Weymouth formation of sedimentary rocks tilts on edge.

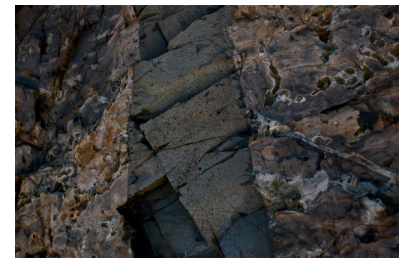
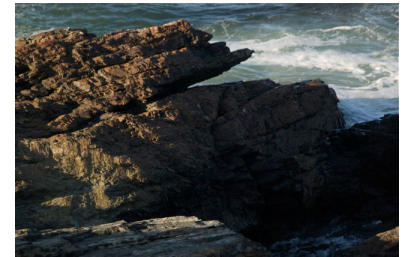
Approximately 200,000 years ago a glacier over 900 feet high covered Nahant, which itself was still below sea level. When the glacier melted 10,000 years ago, the release in pressure caused Nahant to rise above sea level for the first time.

GEOLOGICAL ABSTRACTION

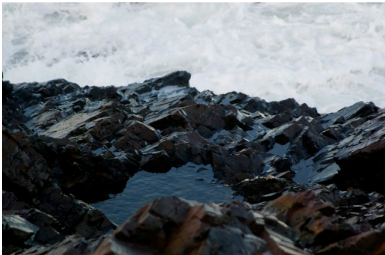
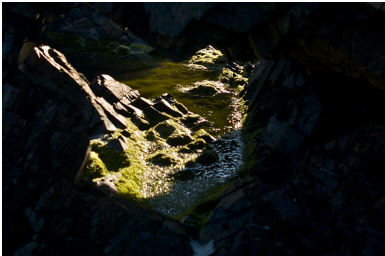
The geology of the site greatly influenced my project through a process I describe as geological abstraction - using the rock formations and characteristics to inform the design. Taken at the site on East Point, the photographs on the following pages illustrate many of these characteristics and qualities.

¹⁶ Paraphrased from: Hill, Malcolm. "Geology of Nahant. 1999. Originally prepared for Mrs. Steven's Sixth Grade Class . . . Updates added in 2004," Nahant Historical Society: 2004, p. 1.

FOLD / LIFT / RUPTURE



CONTAINER / ECOSYSTEM



CUT / CRACK / FISSURE



STRIATION / SHEAR



SITE PHOTOGRAPHS

Figure 23: Bird's eye view of East Point, Nahant.



Figure 24: Aerial image of East Point, Nahant, manipulated to remove roads, buildings, and objects on the site.



SITE PANORAMAS

View of southwest coastline during low tide.



View from Nahant Road looking southwest with East Point in the background.



SITE PANORAMAS

Top: View looking southeast towards the valley between the hill of the plateau and the bunker.

Bottom: View looking north from the south-most point on the site.



Top: 360-degree panorama from atop the plateau at the highest elevation of the site.
Bottom: View looking northeast from the edge of the plateau.

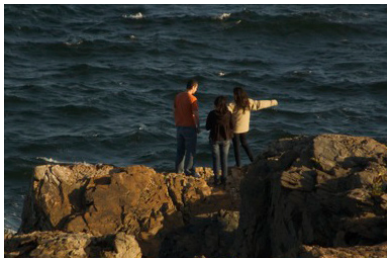
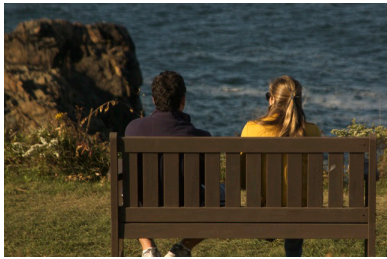
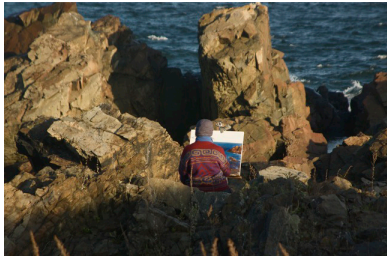


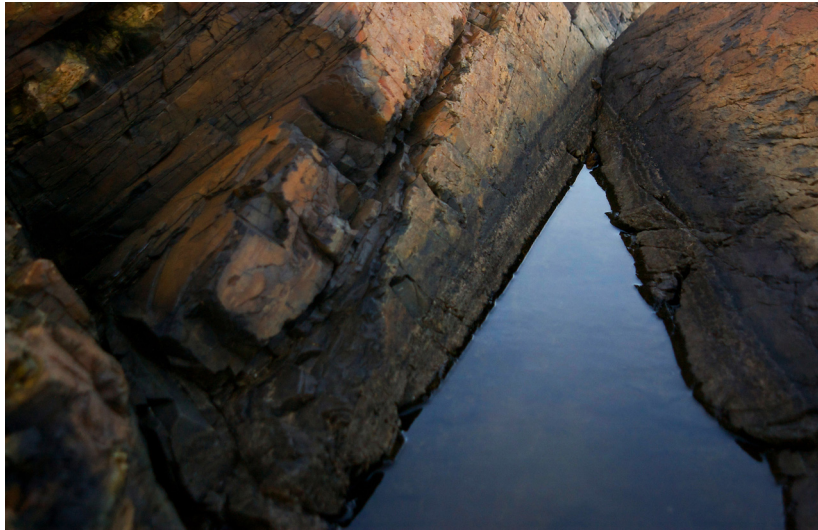
SITE PHOTOGRAPHY

I used the camera as a mode of investigation. I was able to study places on the site for both their emotional and material qualities. The photographs helped me understand the underlying nature of the site – how tidal pools become containers of life – why the trees and grasses grow where they do – how the rocks have been forced from the earth, folded and shaped over time.

The photographs also helped me find views and vantage points of the site. This is an important component to my project, as I am moving the visitors through a sequence of spaces around the site. The images help me determine which views to allow, and which to suppress. I am thus able to partially control where someone is looking to, and where they are looking from.

Lastly, I use the photographs to explore metaphors. Through the images I am able to compare places on the site that are transitory or enduring, violent or static, fragile or persistent, calm or turbulent, etc. The horizon of the sea, for example, becomes a registration, a stable constant. The tidal pool, on the other hand, is a place of refuge, replenishment, temporality, and renewal. The water contained in the pool is often still, reflective, and comes and goes with the cyclic nature of the tides.



















FINAL DESIGN

SITE PLAN

The site is experienced sequentially, and designed with three primary types of visitors in mind: those who are coming for a memorial service of a loved one, those making return visits, and those who are coming to enjoy the site as a landscape and park. Walking is the primary method of movement throughout the site, however, certain pathways have been designated to accommodate small vehicles, allowing everyone access to the entire site.

A dock is provided for ferry boat service from the Boston area along the south edge of the site. Boat service would also be available to provide burial at sea of cremated remains, which per EPA regulations, must be dispersed at least three miles off-shore.

Visitors who arrive by car from Nahant Road park in an area that is surrounded by trees. A gate house (visitor's center) designates the actual entry into the site (accessible via path from the boat dock as well). This area of the site is the lowest in elevation, and is bordered by Canoe Beach to the north, and Pumphouse Beach to the south. The gate house contains the front offices, cremation, resomation, and promession facilities, restrooms, and gathering areas. It is constructed into the hill such that upon arrival from the parking area, visitors can only see an upward tilted roof plane that holds the horizon below a spectacular view back to the Boston skyline. Entry is by ramp through the building, and reveals an all-glass south facade at the bottom of the hill.

Large meadows surround the gate house to the north and south, while densely forested areas are found to the east and west. Paths leave the gate house and traverse through the woods towards the rest of the site.

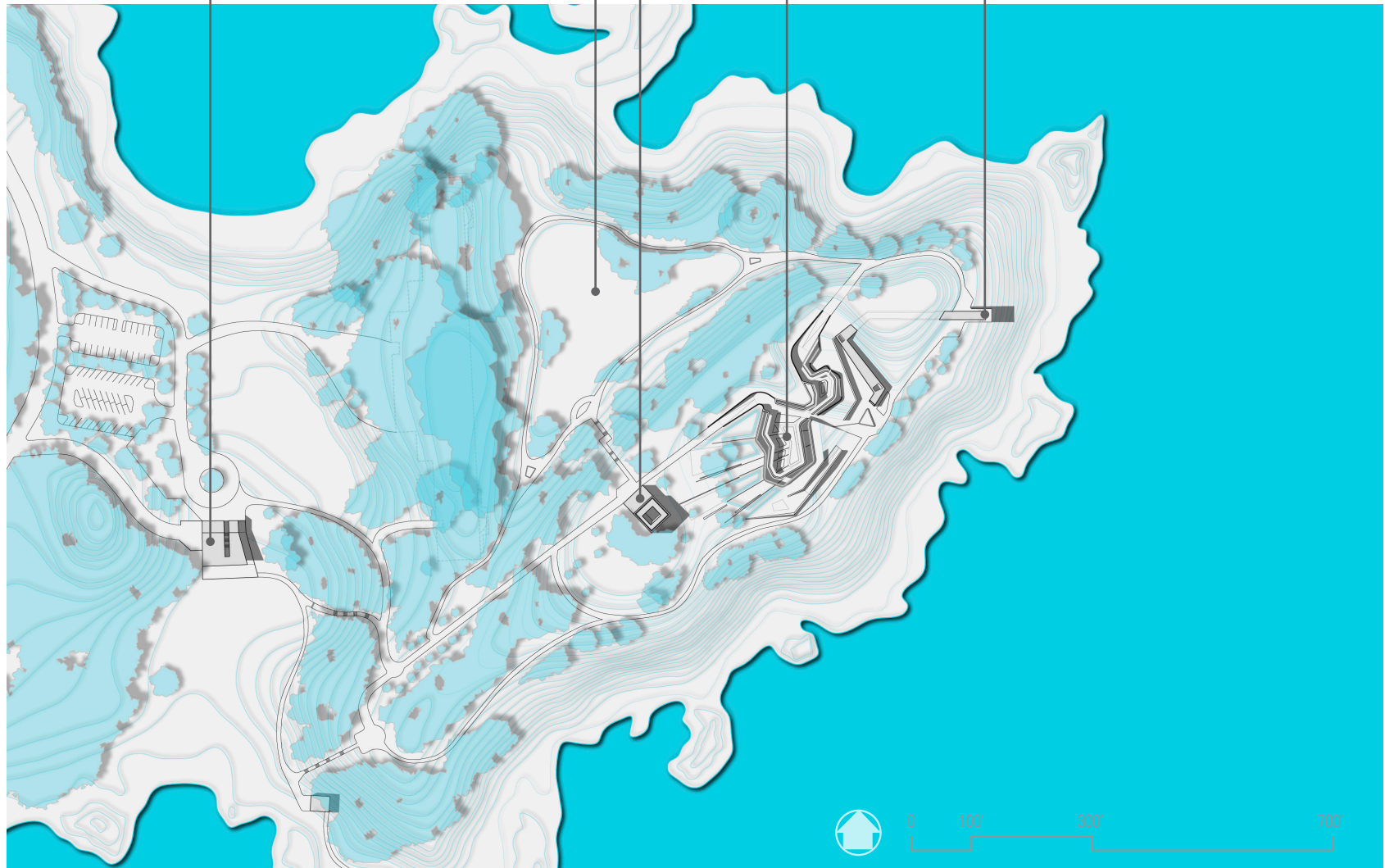
Gate House and
Visitor's Center

Natural Burial Meadow

Chapel

Columbarium

Tunnel



COMMON NATURAL LANDSCAPE TYPOLOGIES



1. Managed meadow and transition to larger trees and wooded areas.



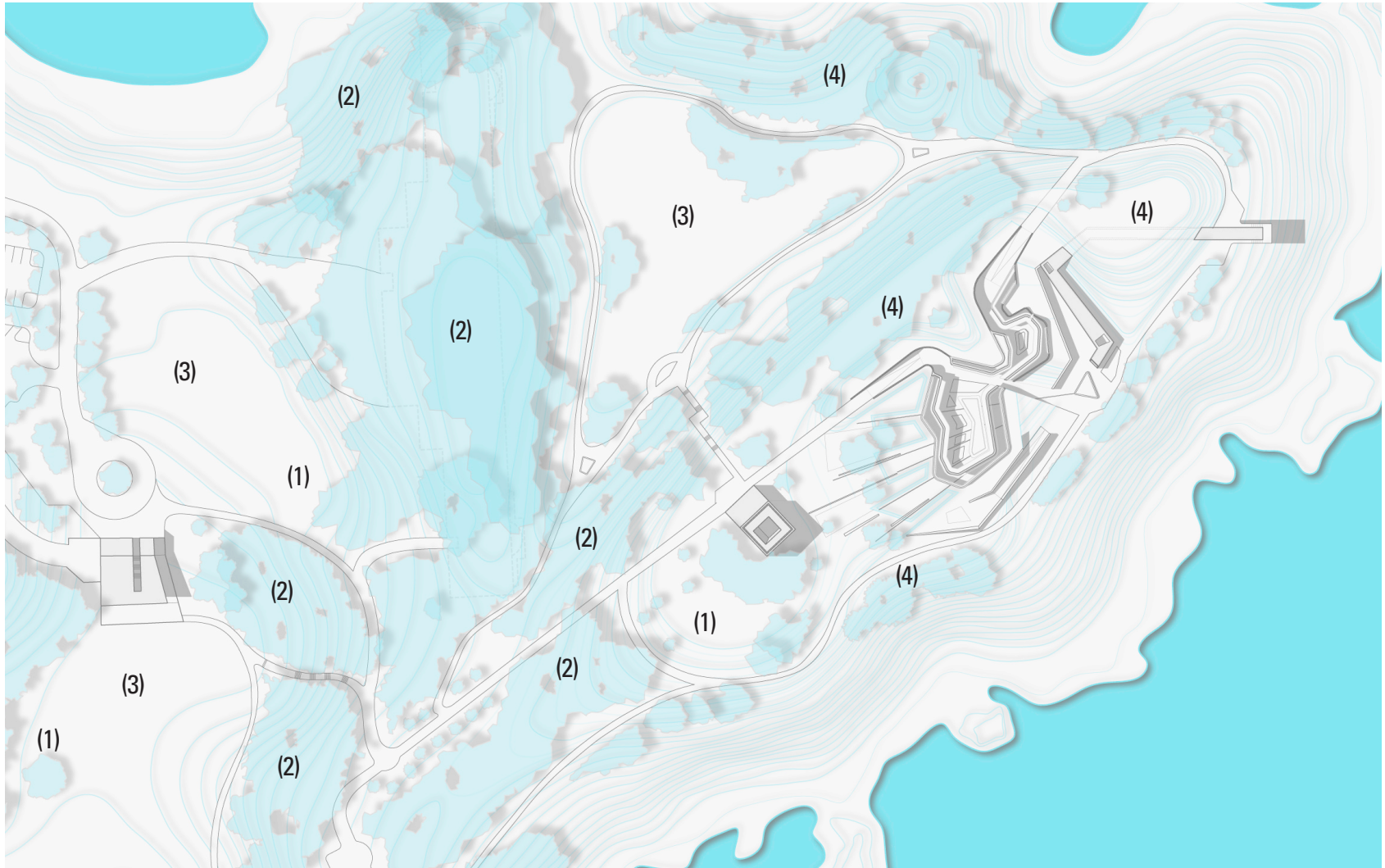
2. Densely wooded areas with tall trees.



3. Managed meadow and native grasses.



4. Native plants, low shrubs and trees.



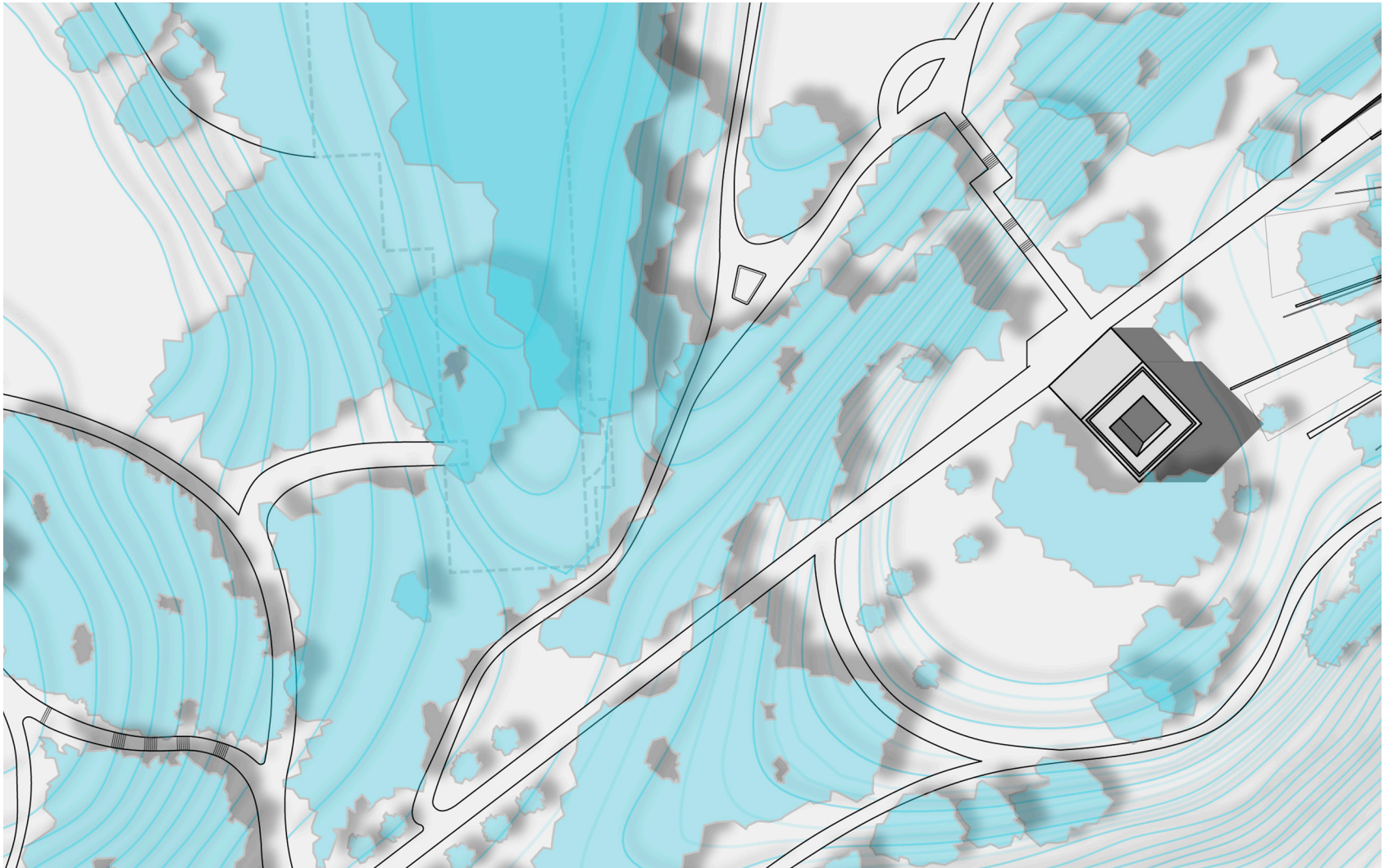
CHAPEL

The main pathway which leads visitors to the chapel starts from the gate house and boat dock, and traverses up a hill (approximately forty feet in elevation) to the start of the plateau. From there, the path climbs another ten feet in elevation to the chapel located at the highest point of the site.

The chapel, striped of religious iconography, is a non-denominational space that can be configured for all types of services and memorials. Skylights allow light into the chapel from above, while the absence of windows to the outside allows inward focus and reflection on the services occurring in the space. The cubic form of the chapel foreshadows the shape of the columbarium slots, the tunnel section, and recalls ideas of containment and embrace.

Following a service or memorial, visitors proceed from the chapel to either the natural burial meadow or the columbarium if the remains are to permanently reside at the site. The natural burial meadow is a large area to the northwest of the chapel that is contained by an expansive valley. Visitors descend down the side of the hill to an area of remembrance where the names of the deceased are engraved into a stone monument. No graves or artifacts mark the actual location of remains buried in the memorial meadow. A path follows along the perimeter edge of the meadow from which visitors can reflect and remember those who are buried there. Open areas, places of shade, and areas of rest are among the various environments found along this path.

Visitors with cremated remains proceed from the chapel to the northeast where the columbarium is located. The transition between chapel and columbarium is a landscaped area which steps down in elevation and reveals the rest of the site.



PATHWAY TO CHAPEL

The final pathway to the chapel is straight in geometry but is not regular in experience, demonstrating how various types of landscape can shape outdoor spaces. The path slowly climbs up to the top of the plateau and envelops visitors in the nature of the site.

The first part of the path (Section A) is the most formal and symmetric. Flowering trees such as red buds or dogwoods line the path before opening to larger trees and patches of forest. Portions of the pathway would also be enclosed or covered over with the canopies of large trees (Section B). Among the densely wooded areas, a clearing allows for the condition (Section C) where a managed meadow transitions to a larger grouping of trees. Individual placement of trees for shade occurs throughout the clearing as well.

Pathway Section A.



Pathway Section B.



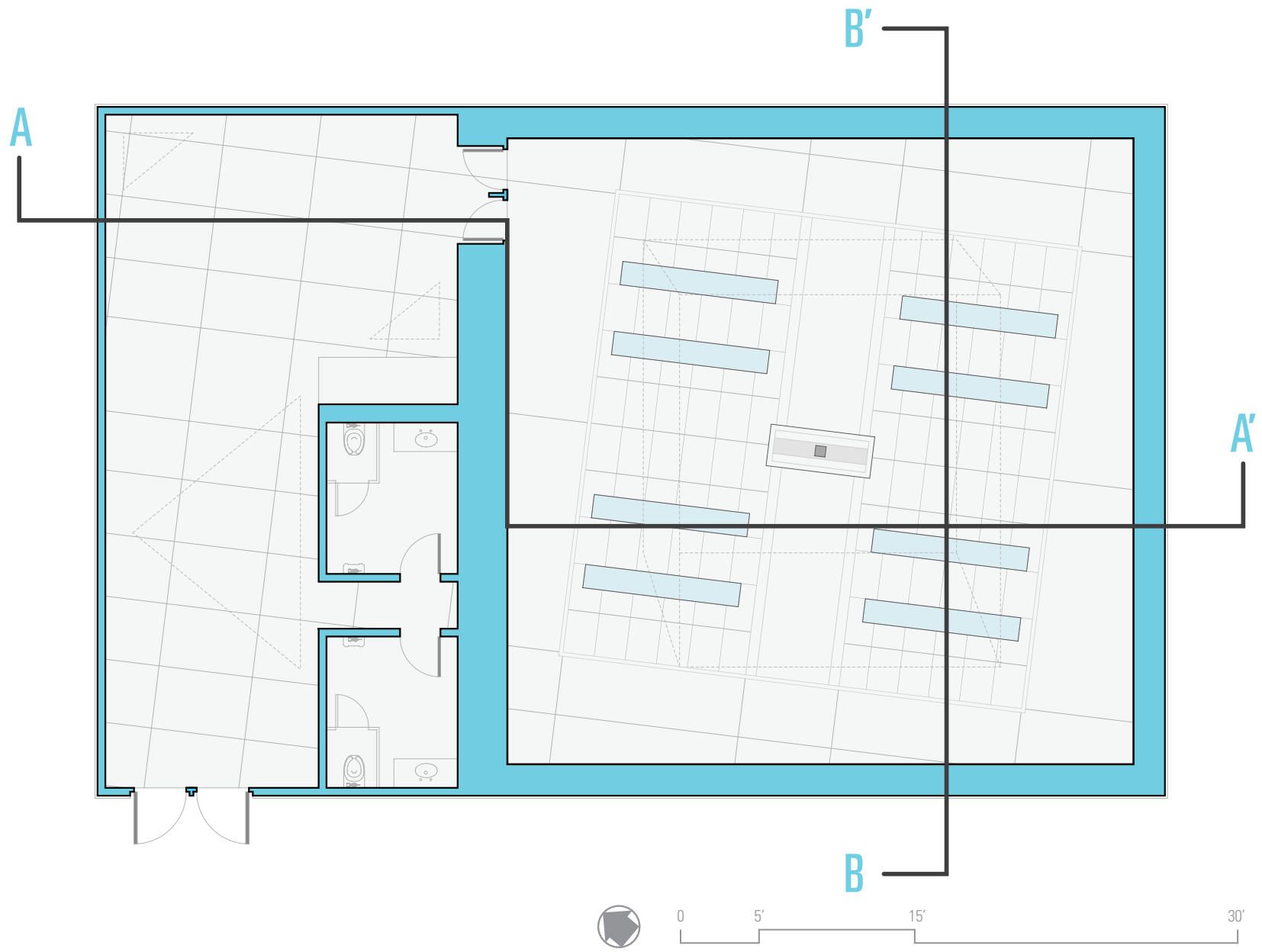
Pathway Section C.



CHAPEL FLOOR PLAN

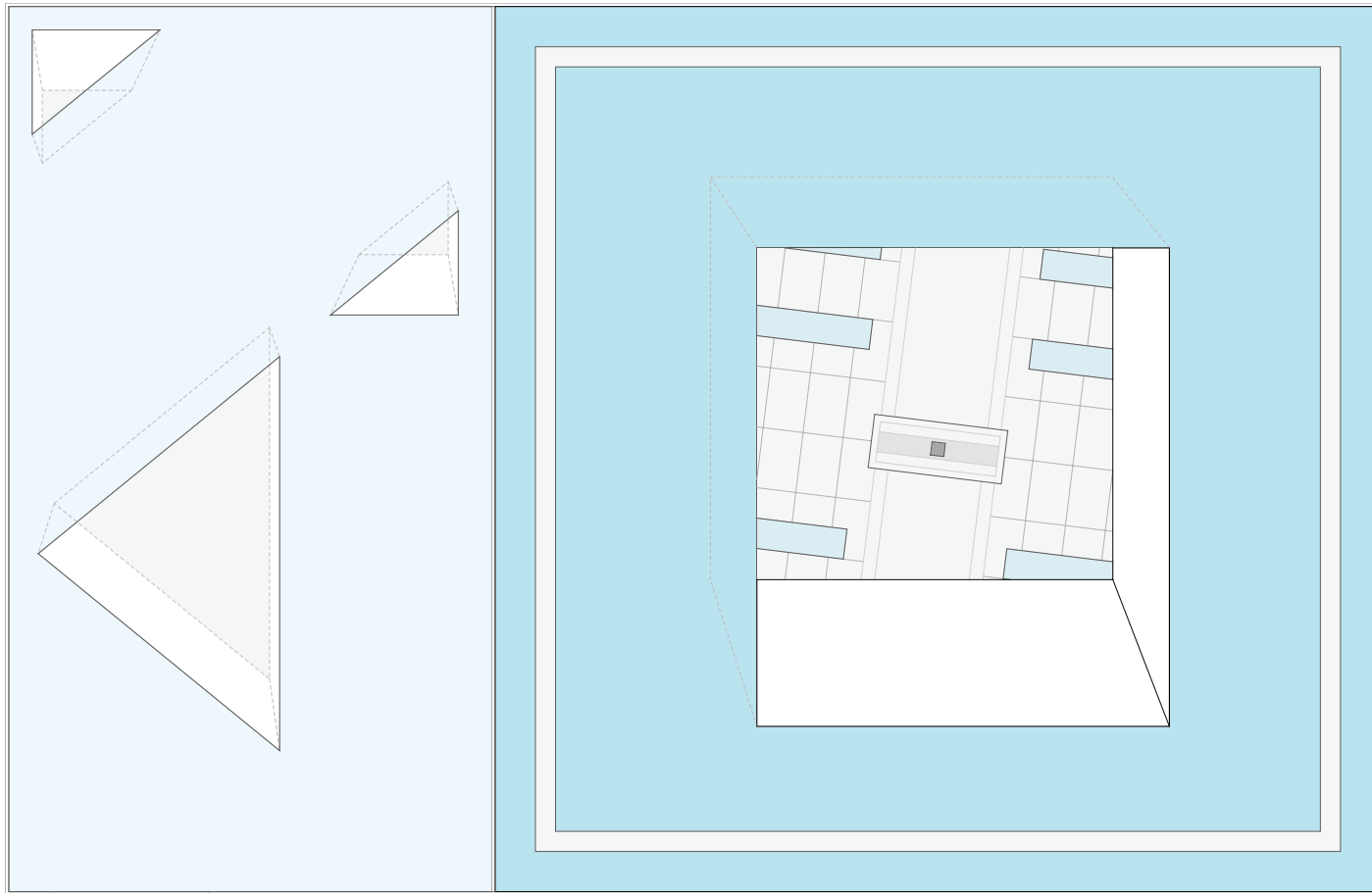
The chapel contains a main space for services, and a secondary space for gathering and waiting. The doors from the gathering area to the main chapel space are located off axis at the corner of the square plan. A low and heavy mass compresses the edges of the chapel and allows for emphasis on the sweeping volume of space that escapes through the massive center skylight.

The chapel can be configured for specific use, where for example, an alter could be placed at the center of the space and surrounded by simple chairs or benches. The space is designed for flexibility to accommodate different types of services and memorials.

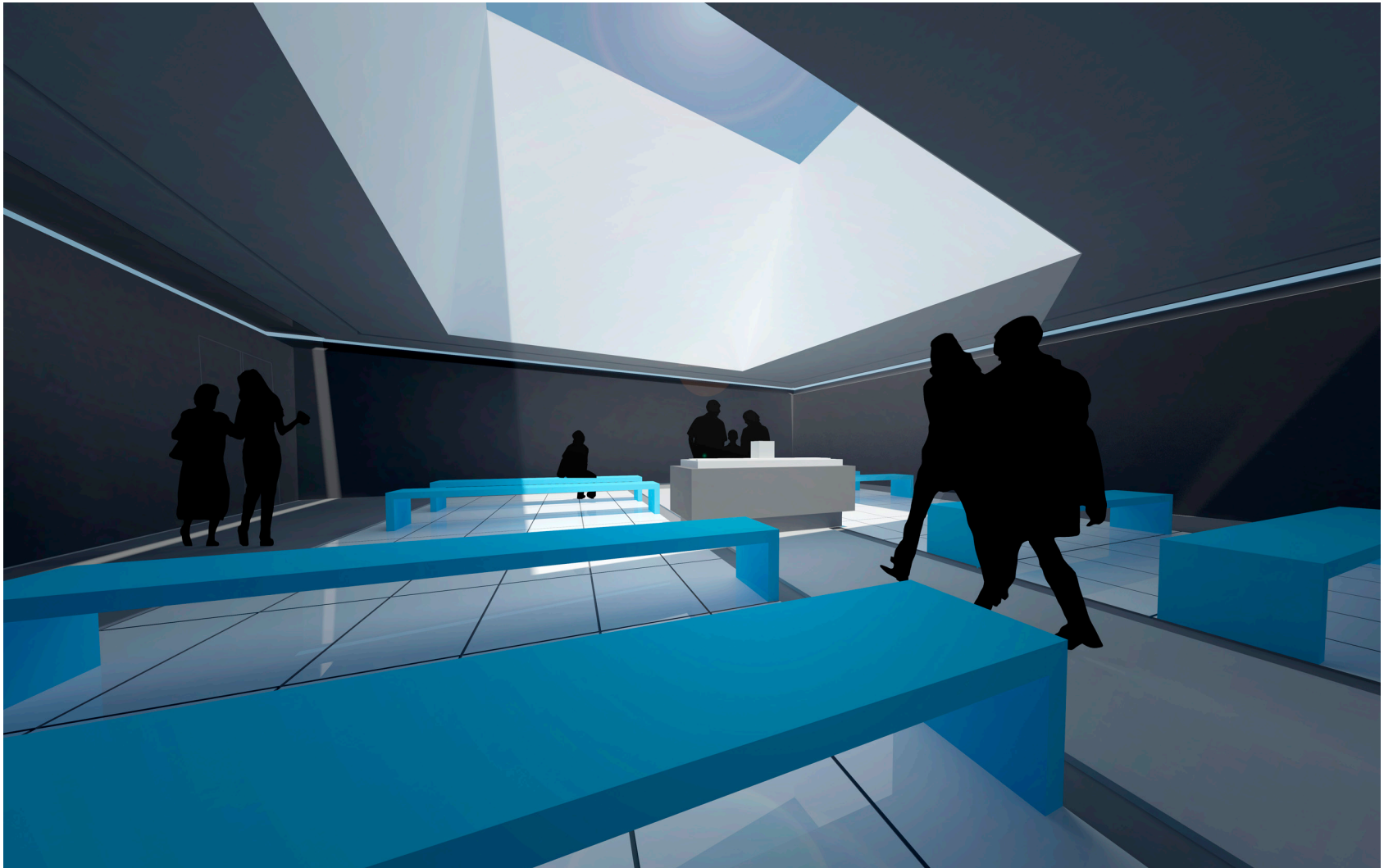


CHAPEL ROOF PLAN

The roof plan of the chapel is defined by the general cubic form of the building, and the skylights which allow light in from above. Those of the entry and gathering space direct visitors to the doorway of the main chapel service space. Above the main chapel, a large skylight floods the space with direct and reflected light. In addition, a small slit near the perimeter of the building further illuminates the interior walls of the chapel.

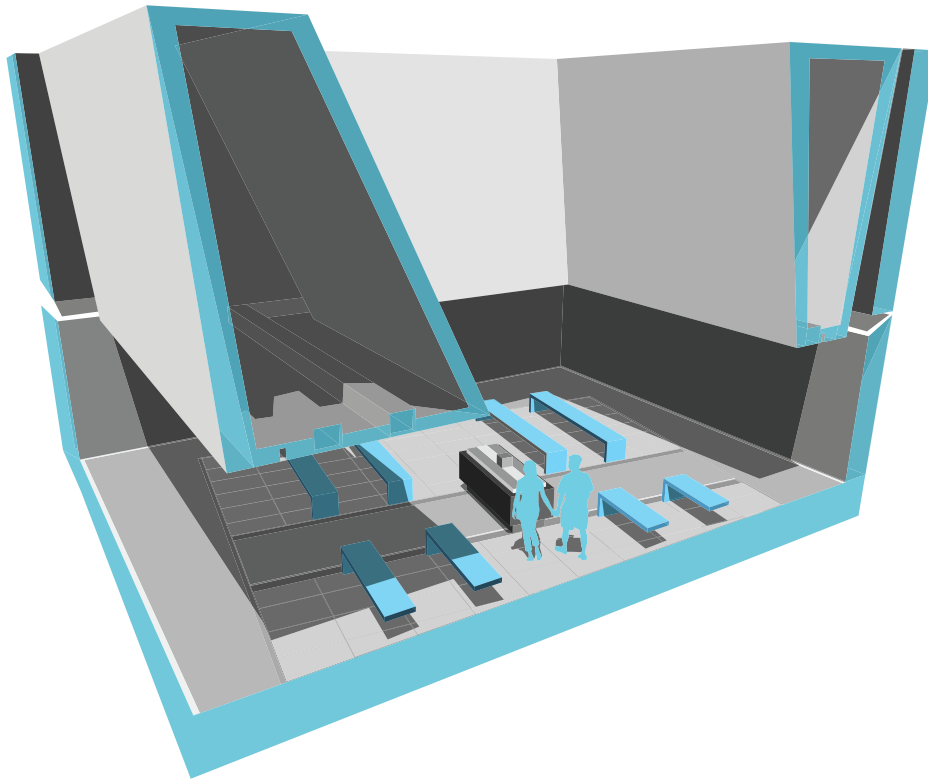


Interior perspective of the main chapel space
with seating configured around a central alter.



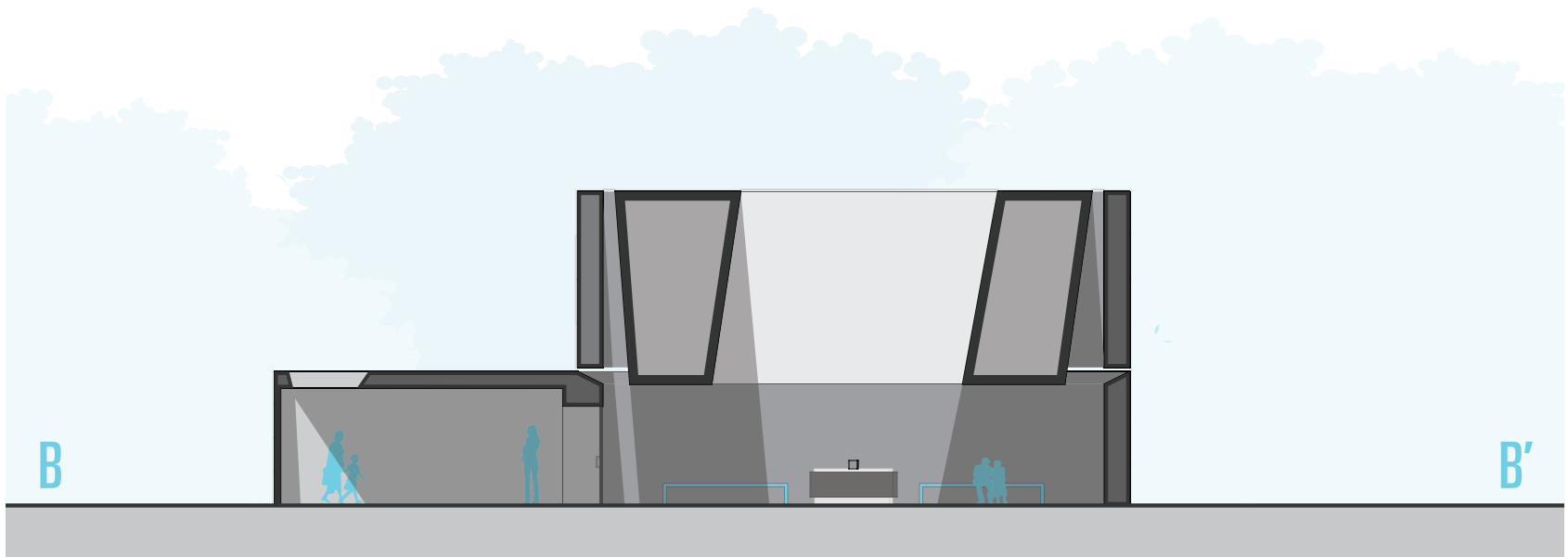
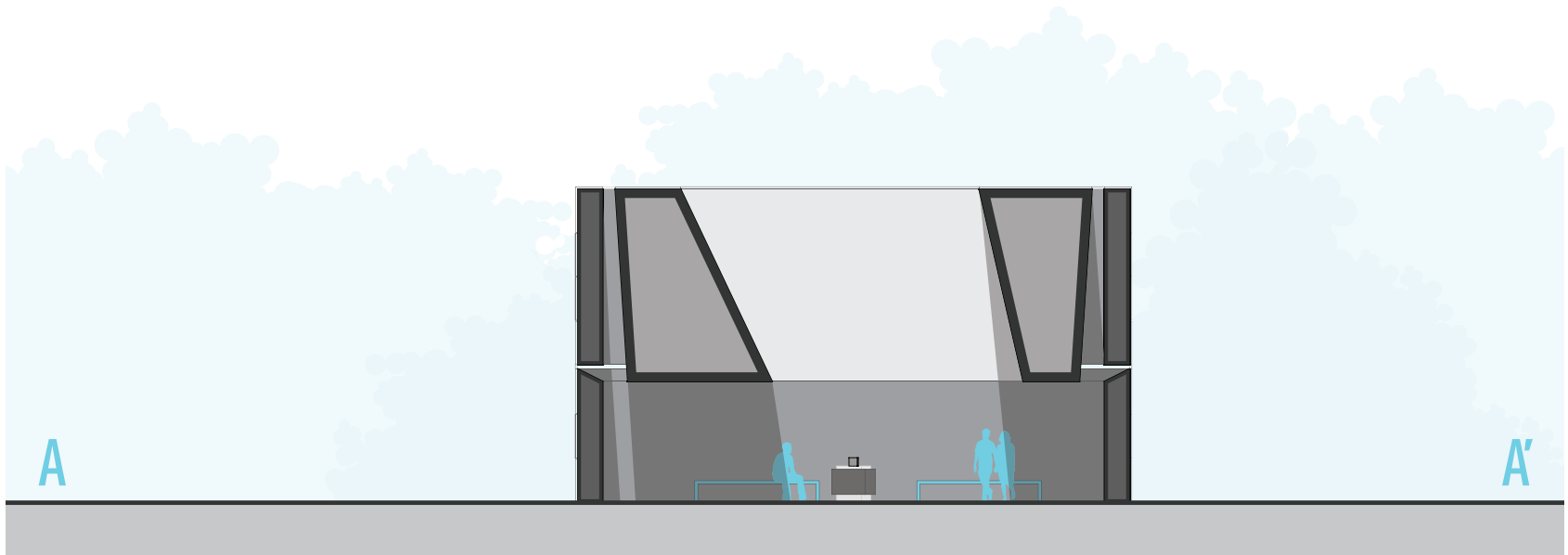
CHAPEL SECTIONS

The angles of the main central skylight are designed to allow the maximum amount of direct and reflected surface light into the chapel throughout the year. This is accomplished by the sharp angles along the southern edges, as well as by reflection off of the inward northern planes. The central skylight cuts through a large volume that floats over the main chapel space.

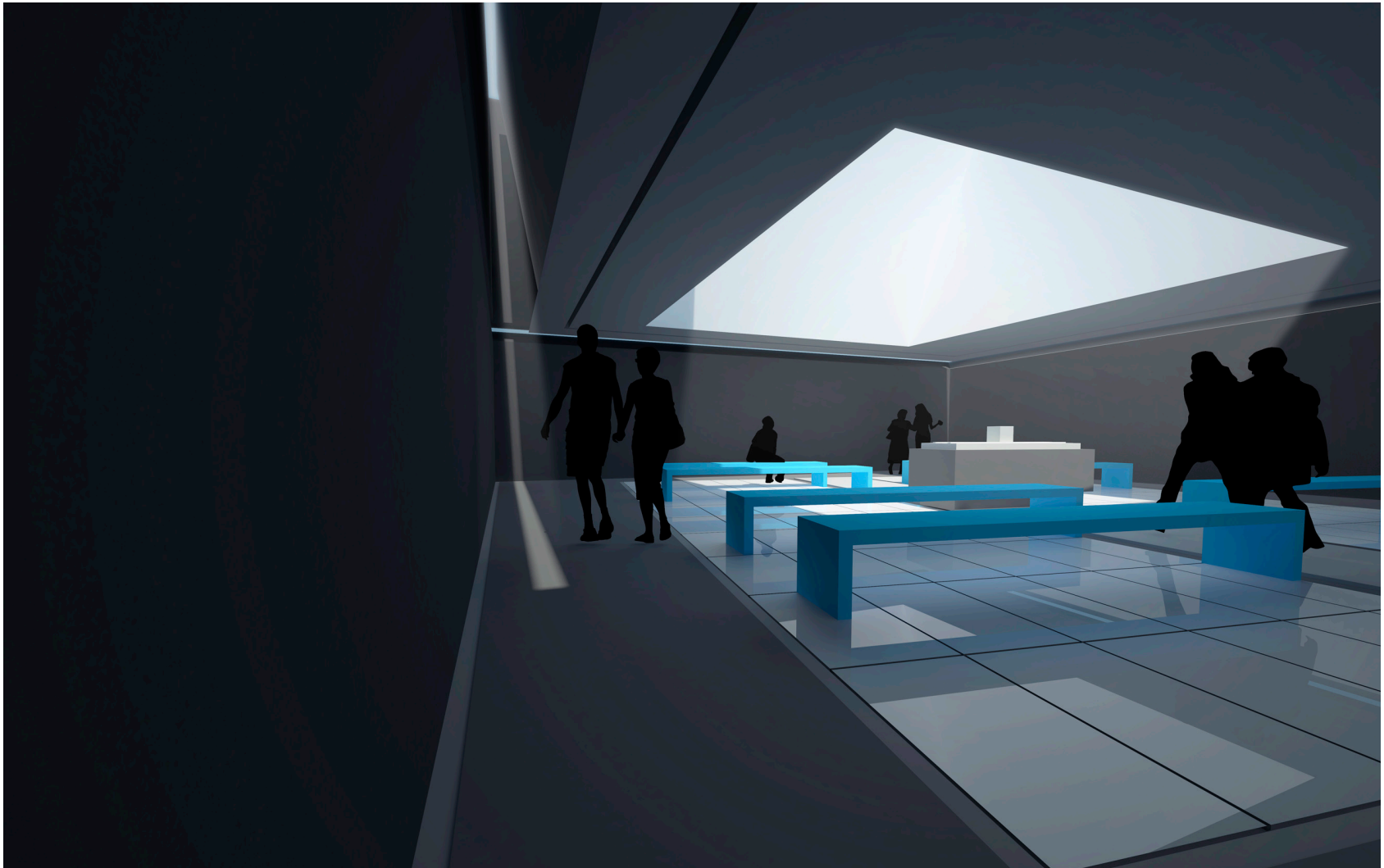


Chapel section A.

Chapel section B.

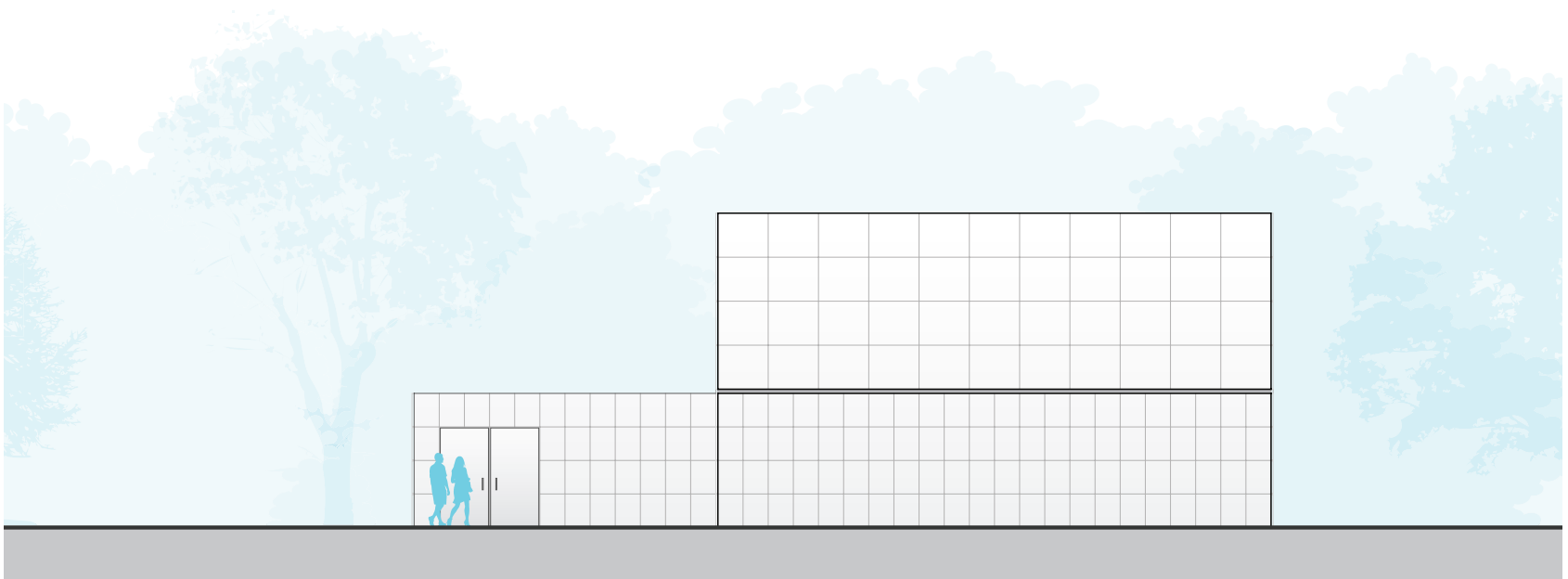
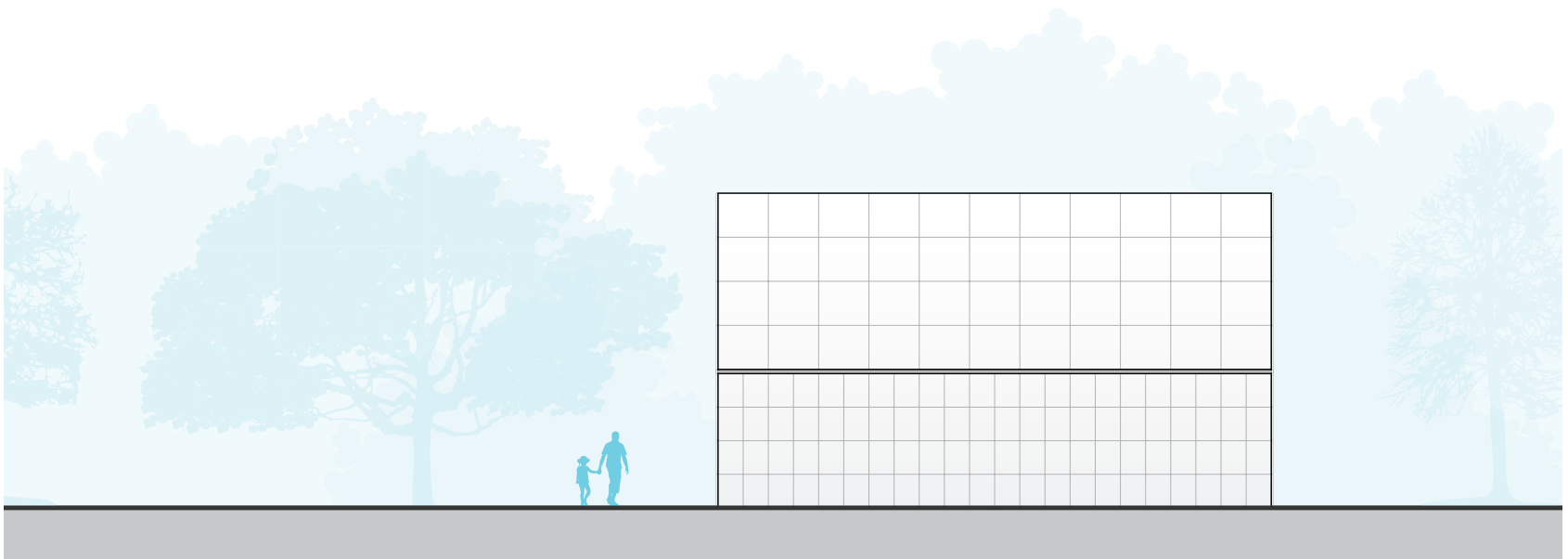


Interior perspective of the main chapel with emphasis on the primary (central), and secondary (peripheral) skylights.



Northwest chapel elevation.

Southwest chapel elevation.



Interior perspective of the main chapel space configured
with a central alter below the main skylight.



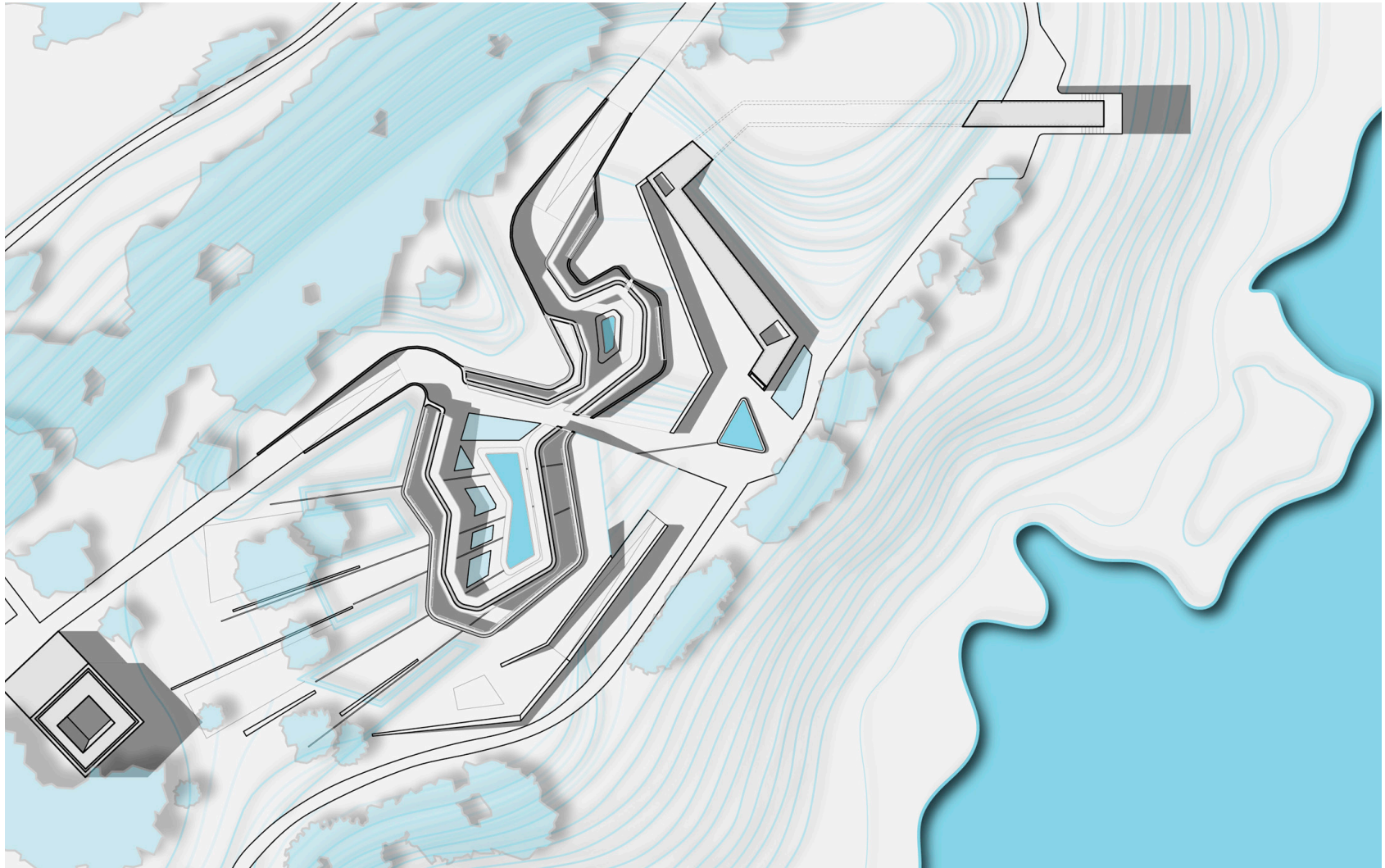
COLUMBARIUM

The columbarium is a permanent concrete structure and monument which is designed to hold over 10,000 urns containing the bone fragments (ashes) of the deceased. The shape of the columbarium walls recall the organic perimeter edge of the site which has also been pushed, pulled, and manipulated by other conditions in the landscape. The design is a metaphor that relates to the sublime: a large ruin of a building that never existed.

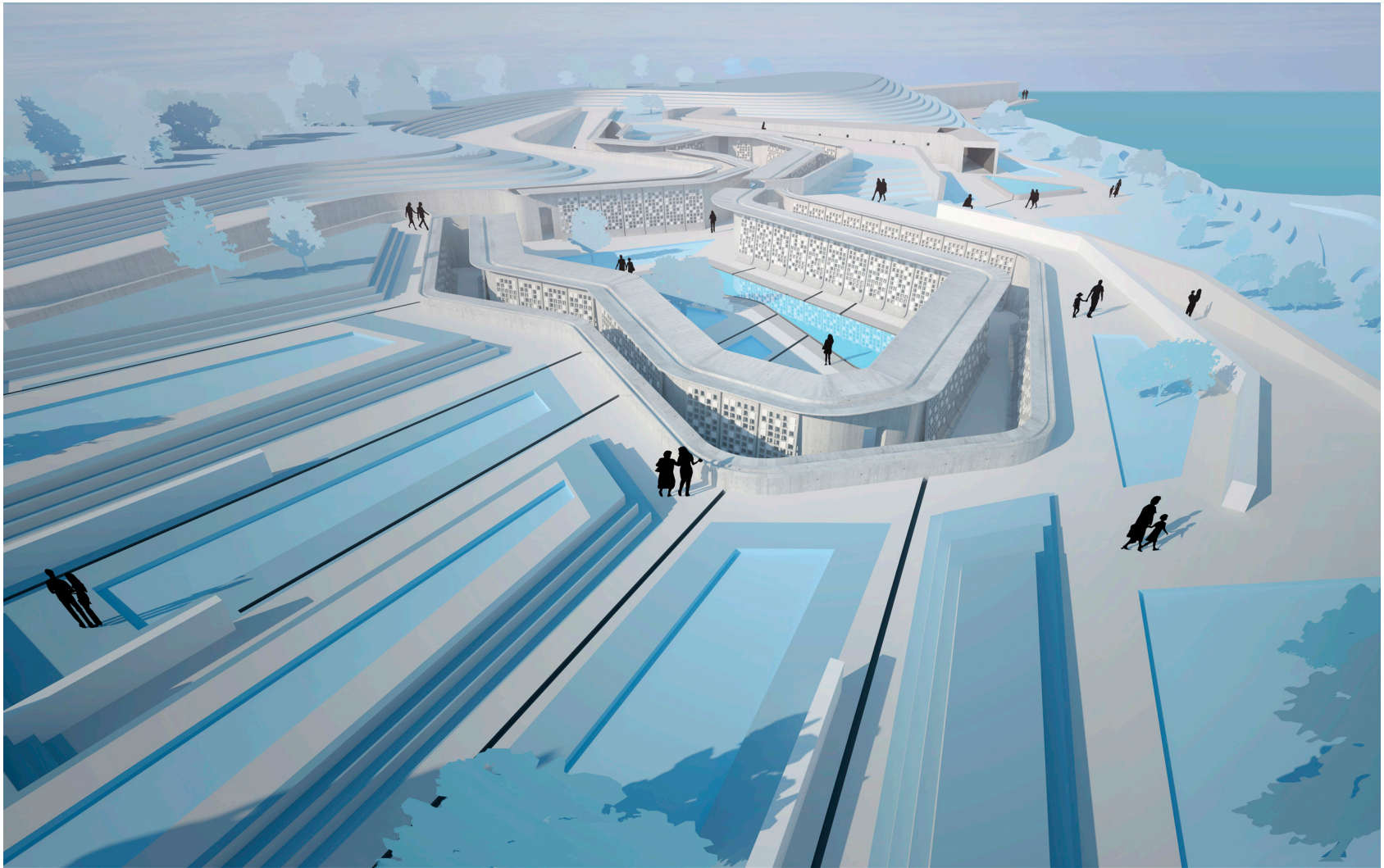
The columbarium is inset and embedded into the earth by way of an eight foot change in elevation downward. One can walk along a path around the top edge of the columbarium and look in, while two ramps provide access down into the space. Once inside, the columbarium is designed to provide a range of spatial and experiential qualities. There are areas which are more public, and those which are more private. Spaces have been designed for reflection and contemplation, as well as grieving and remembrance. Certain areas are brightly lit and sunny, while others offer a dim and more somber environment.

The columbarium contains two main reflection pools which are located along a series of shallow cuts in the site used to collect and distribute rainwater throughout. These cuts and containers echo the natural tidal pools which collect, replenish, and release water each day.

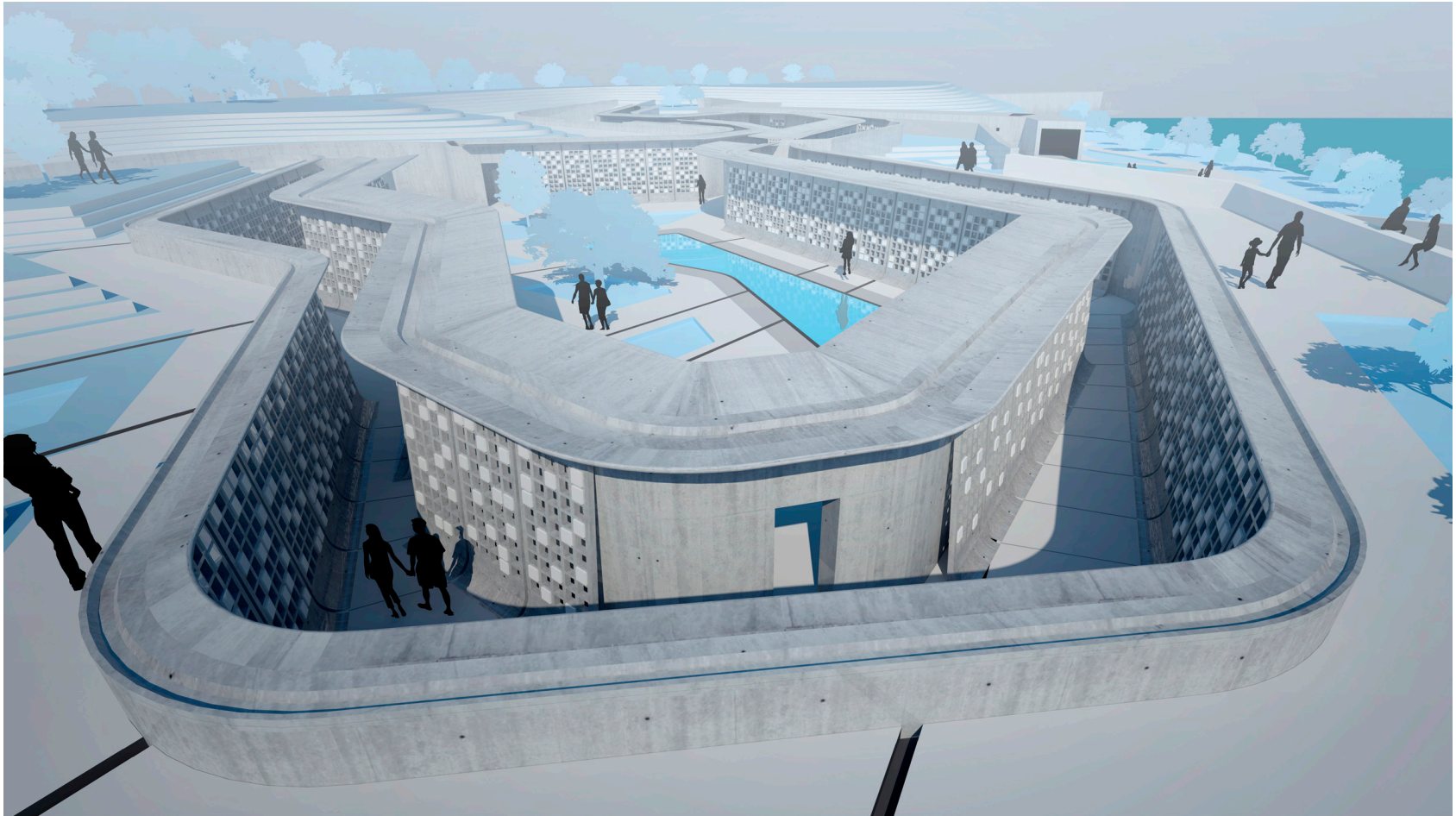
The area surrounding the columbarium is a mix of managed meadow and constructed natural landscape, minimizing the use of paving and pathways. The exit from the columbarium invites visitors to experience a tunnel element which leads to an overlook and viewing platform following an experiential passage through the earth.



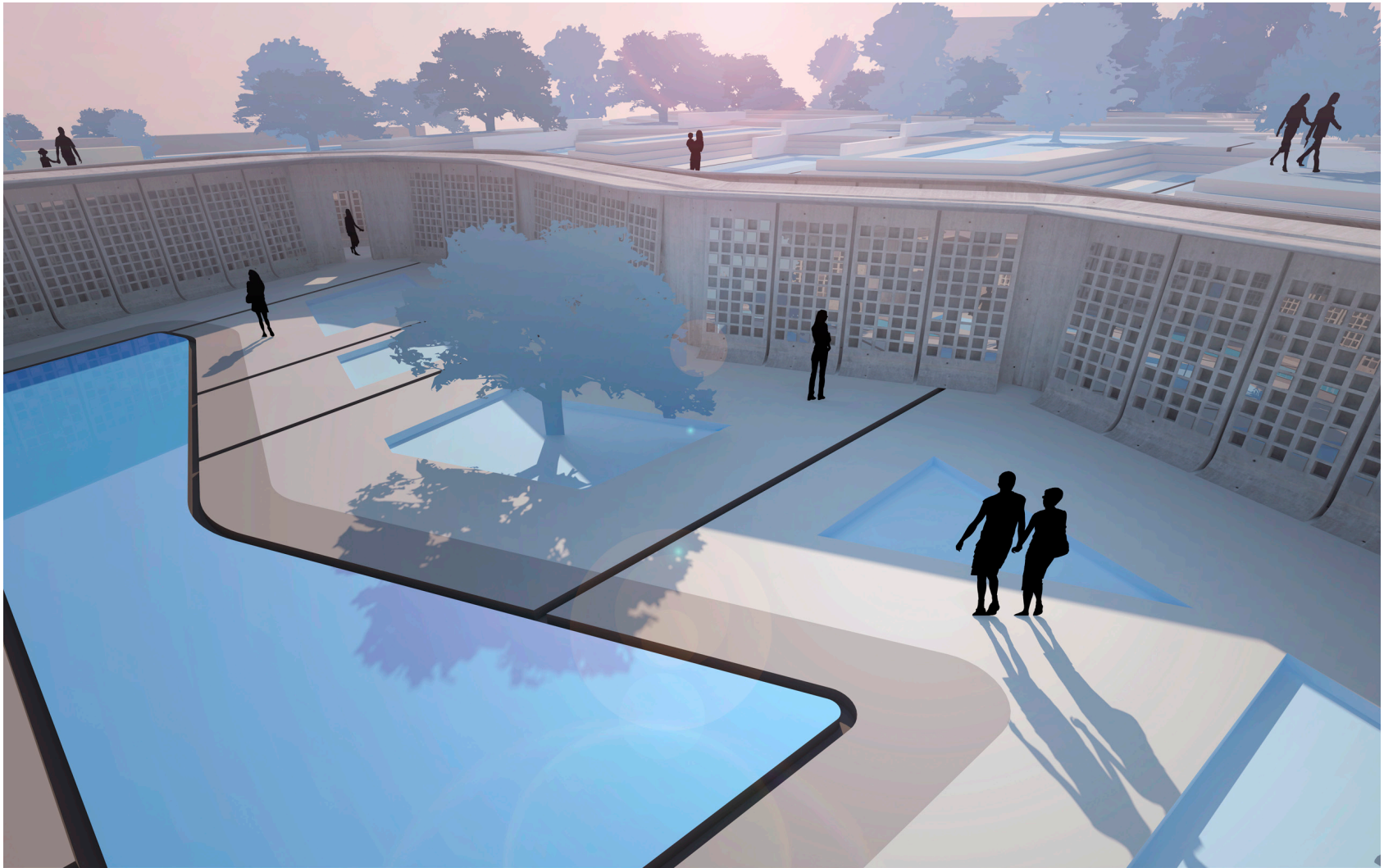
Perspective view of the columbarium looking northeast. The foreground represents the topographic landscape transition down from the chapel, while the tunnel element and resulting overlook can be seen in the background.



Perspective view looking northeast with emphasis on the experience of the columbarium in terms of containment, reflection, memory, etc.



Perspective view of the columbarium looking southwest.



COLUMBARIUM WALL SECTION

The primary function of the columbarium walls are to contain and display cremation urns. The walls are conceived as a system of components that are comprised of three main elements:

WALL:

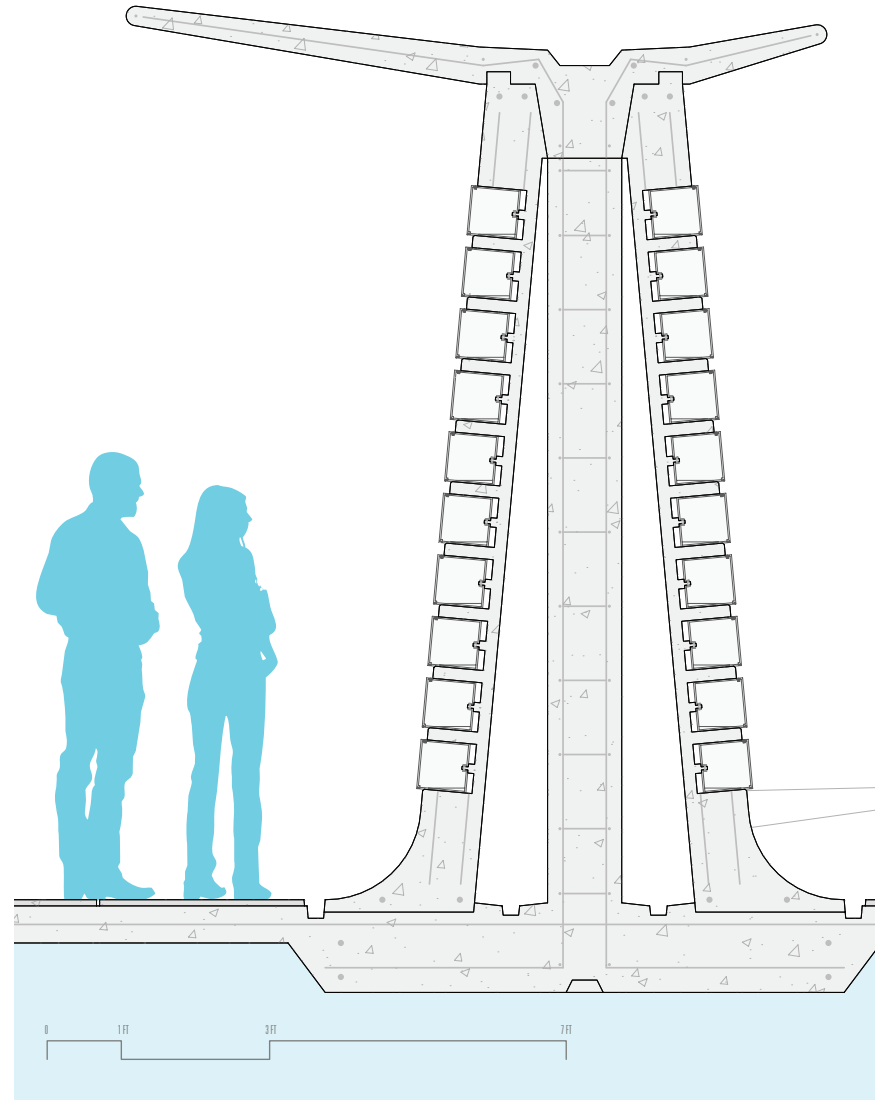
A cast-in-place concrete wall defines the shape of the columbarium, and serves as the main structural and retaining element of the design. The panel and canopy elements attach to the wall.

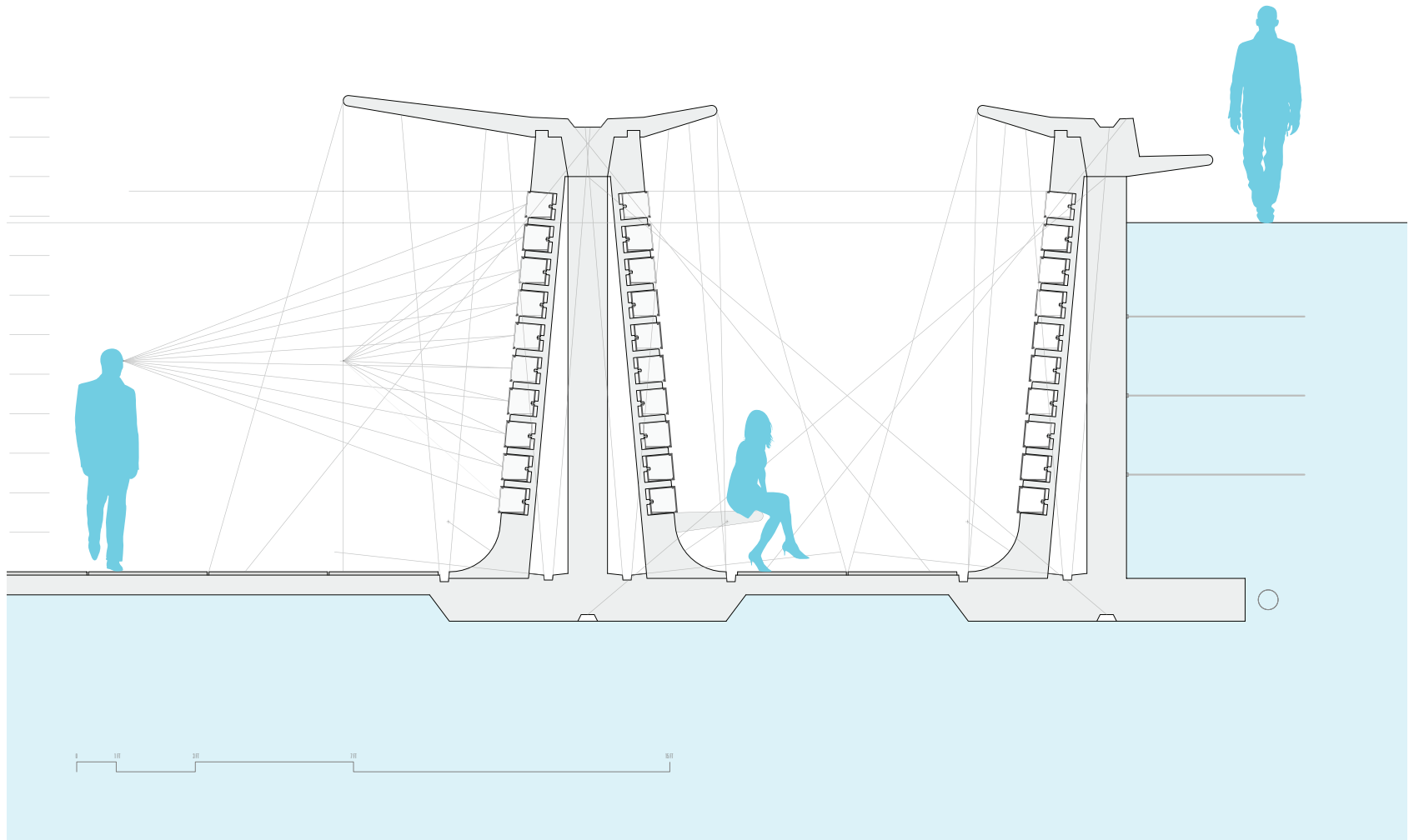
PANEL:

Each pre-cast concrete panel contains slots for 50 urns. The center of the panel is at the average height of a person, allowing for equal visual distribution towards the top and bottom of the panels.

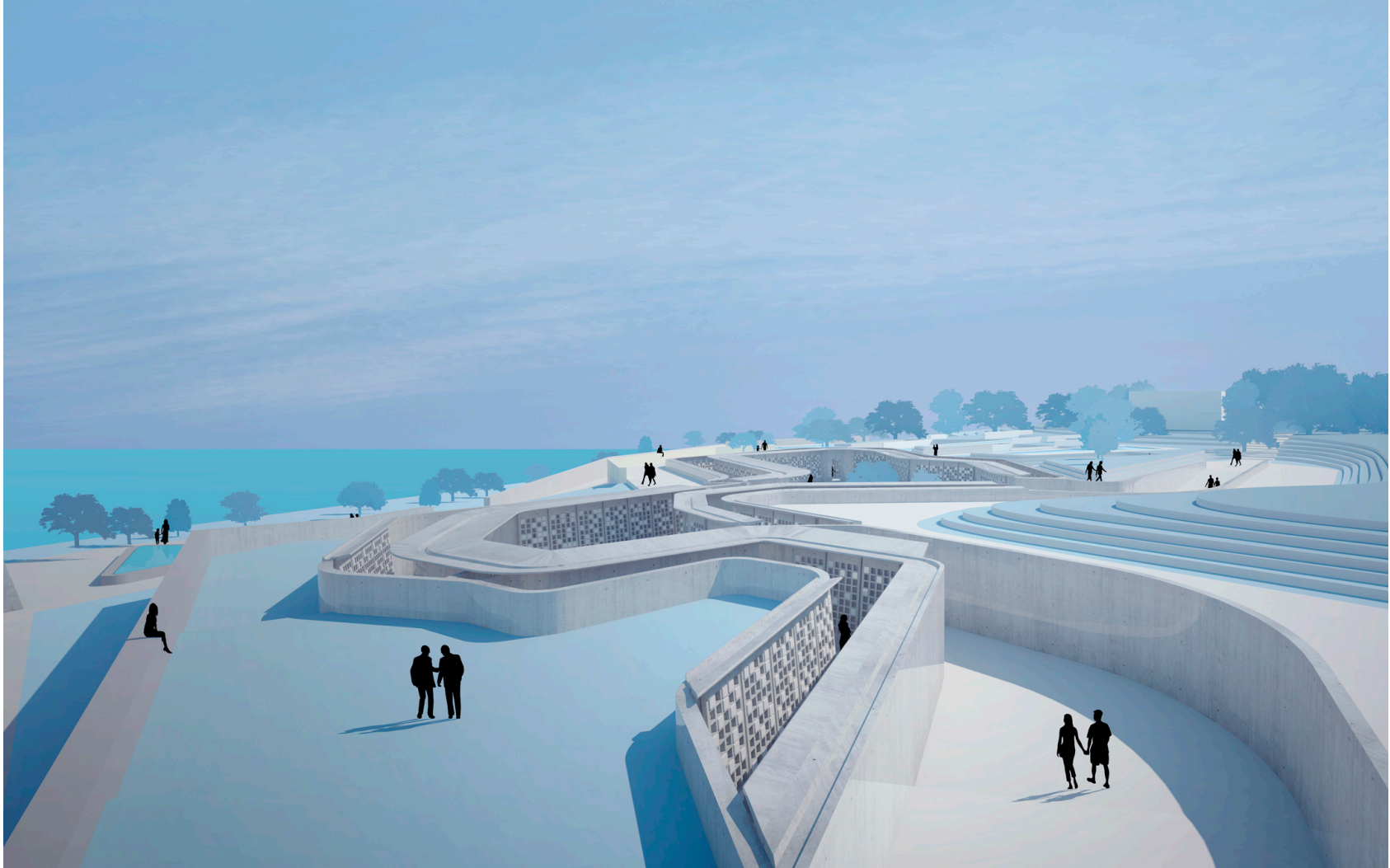
ROOF / CANOPY:

Pre-cast concrete roof / canopy sections are utilized to help protect the urns and visitors from the elements. They are also designed to lock the wall and panel system in place, and are configured in different sections which allows for different length of overhang based on sun orientation, or may allow for an outside wall seating element, for example.





A perspective view of the northeast entrance to the columbarium, with view of the chapel in the background.



TUNNEL

Upon exit from the columbarium, visitors are invited to explore the rest of the site via pathway, and to experience passage through an earthly tunnel that leads to an overlook and viewing platform.

The tunnel consists of three zones. The first zone is the brightest, with two large skylights and small holes to the outside located within the tunnel walls. While it may not be apparent to the observer before completing the entire tunnel experience, these holes that let light in through the sides actually mark where urns have been placed into the wall. When an urn is placed into a slot located within the tunnel wall, a door is closed to contain the urn, which in turn opens an adjacent aperture into the tunnel, allowing light to stream in. Thus, over time, more and more of these apertures would be revealed, and the space would become brighter and more dynamic with the play of light and shadow.

In the second zone, visitors leave behind the light by turning a corner, and enter a space of near complete darkness. A final right turn reveals a long transitional passage from the darkness towards the light. Thus, this zone is a metaphor for the dark passage from death to the beyond, and culminates in the appearance and experience of an infinite sea and an infinite sky.

Following the dark passage, the final zone is revealed as a viewing platform and overlook to the vast and unobstructed open ocean view. The site and programmatic sequence has been manipulated to deny this particular view until the tunnel experience. Afterwards though, the interaction with the sea and rock cliffs are an integral part of the site, with pathways providing a park-like landscape environment.



TUNNEL OVERLOOK

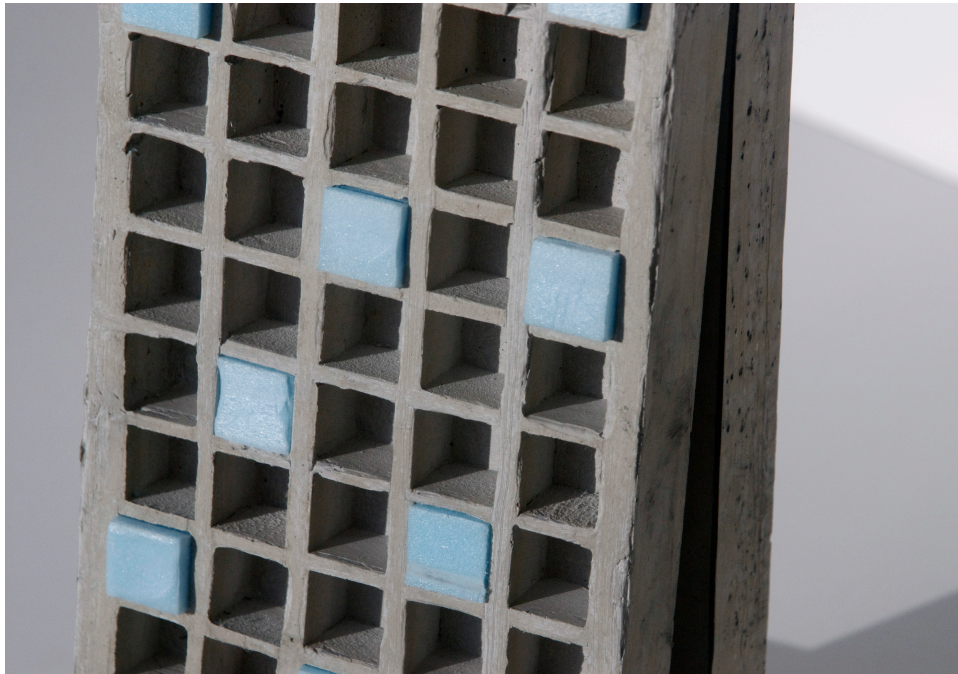
The final leg of the tunnel which includes the overlook and viewing platform is orientated to the summer solstice. The viewing platform cantilevers approximately fifteen feet out over the rocky cliff face, enveloping the viewer with the experience of continuous ocean and sky.

The tunnel and overlook are intended to force visitors to contemplate the mystery that exists beyond our lives. The walls of the tunnel are narrowest at the beginning of the second zone, where the sense of compression underneath the earth is the greatest. The tunnel slowly transitions wider, allowing for a sense of expansion and release.

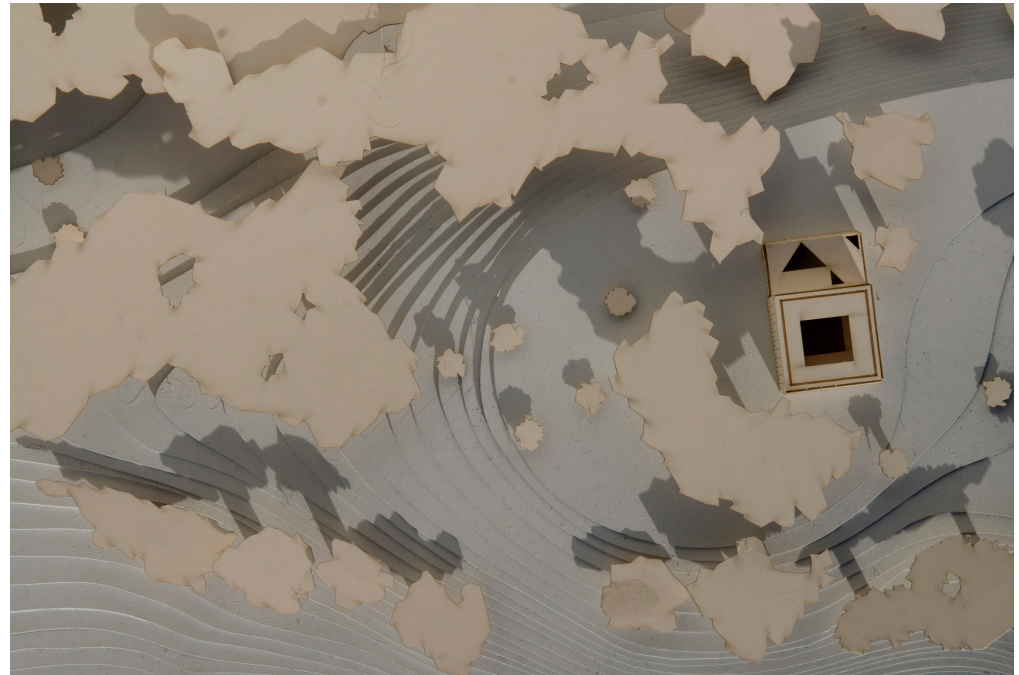
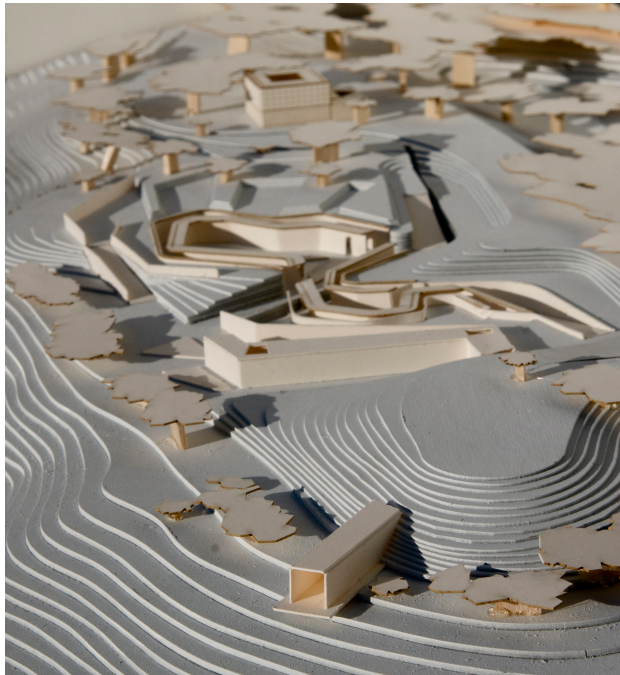
Visitors can exit to paths off each side of the tunnel, and do not go back through it. The side paths open to the rest of the site, and lead back to the columbium, the natural burial meadow, and a path along the southeast cliff edge.

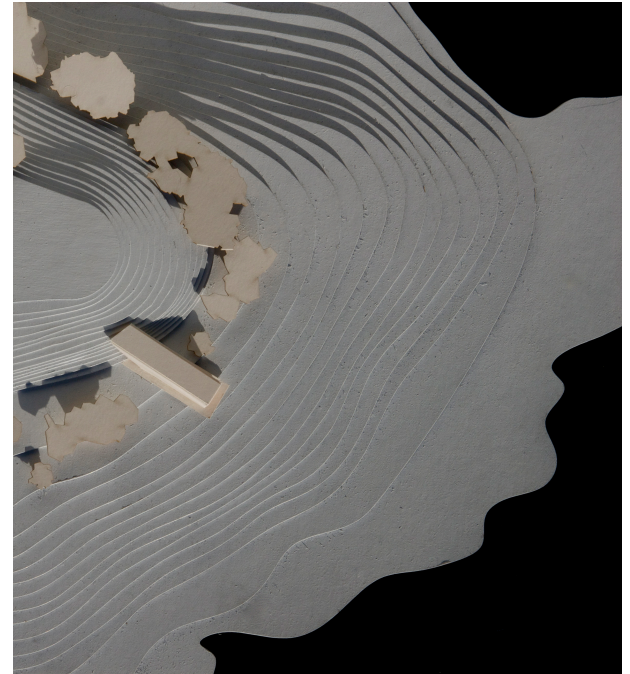
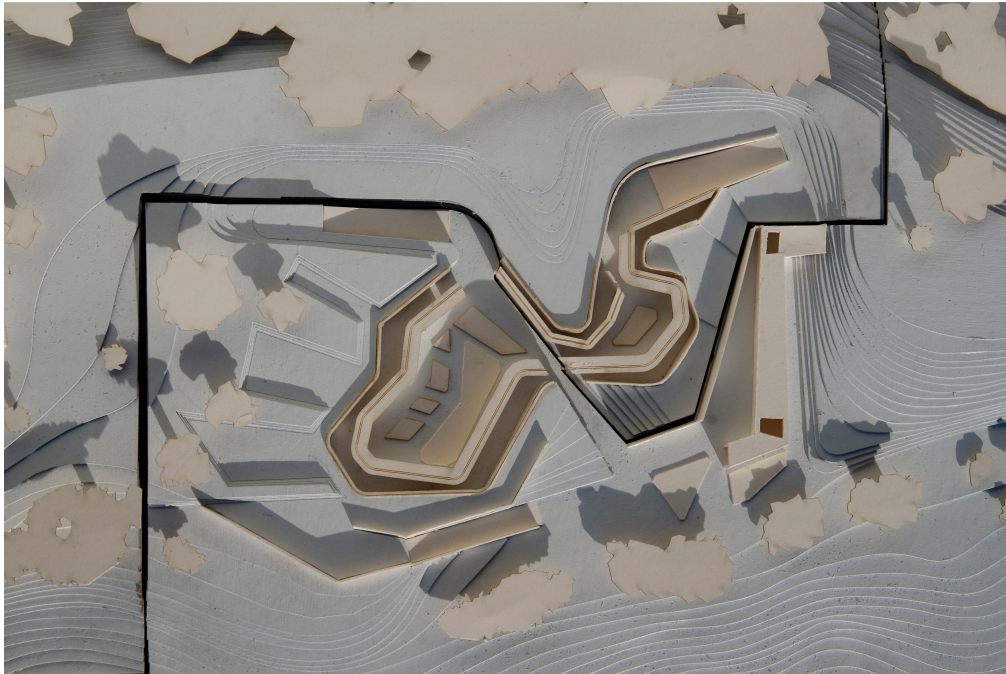


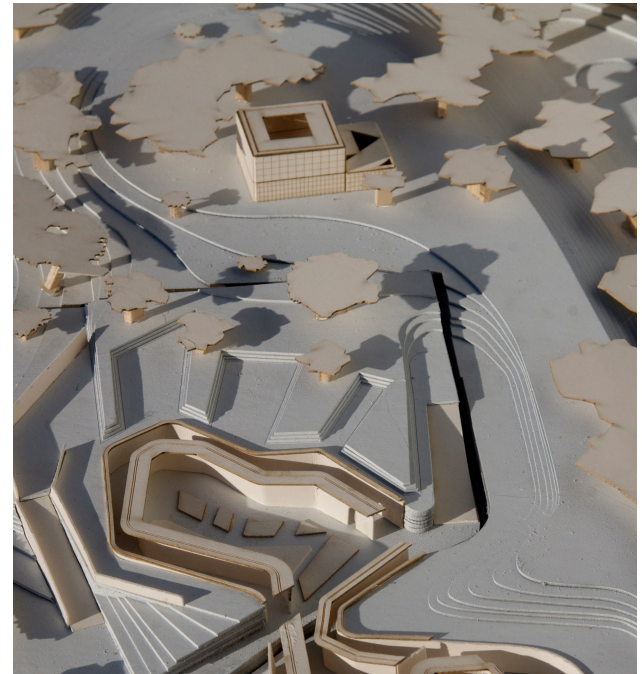
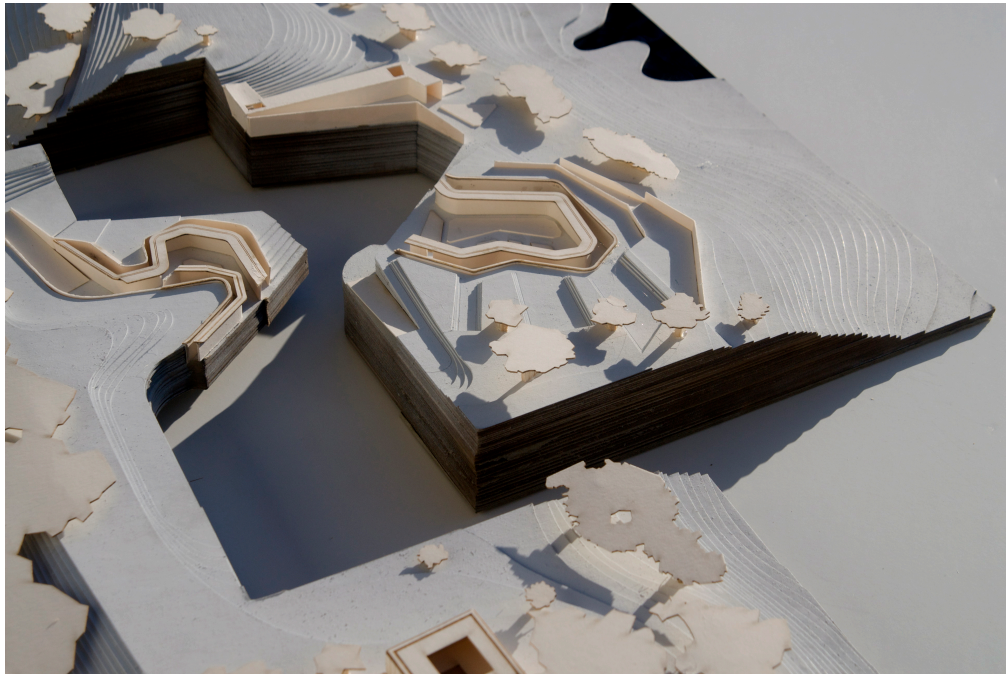
MODEL PHOTOGRAPHS

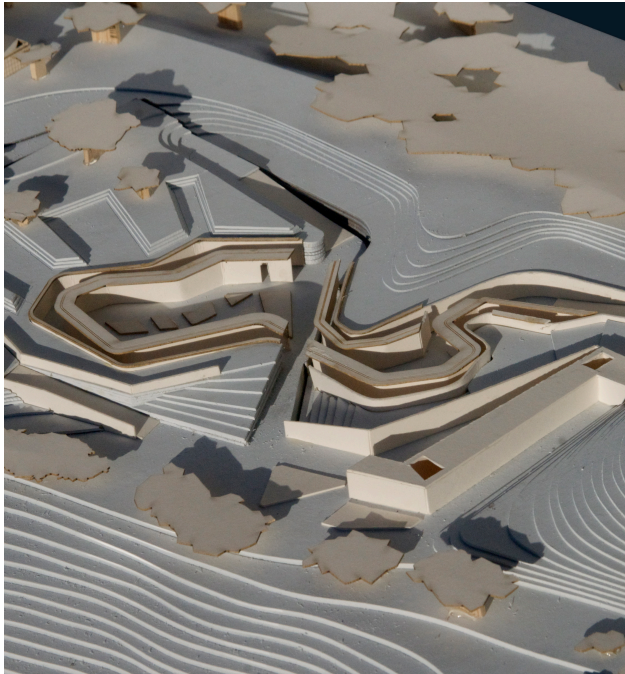


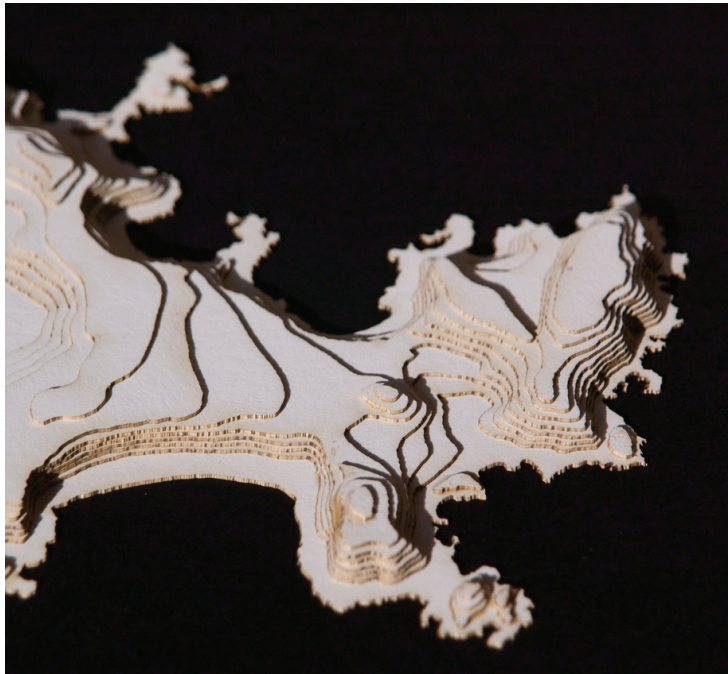


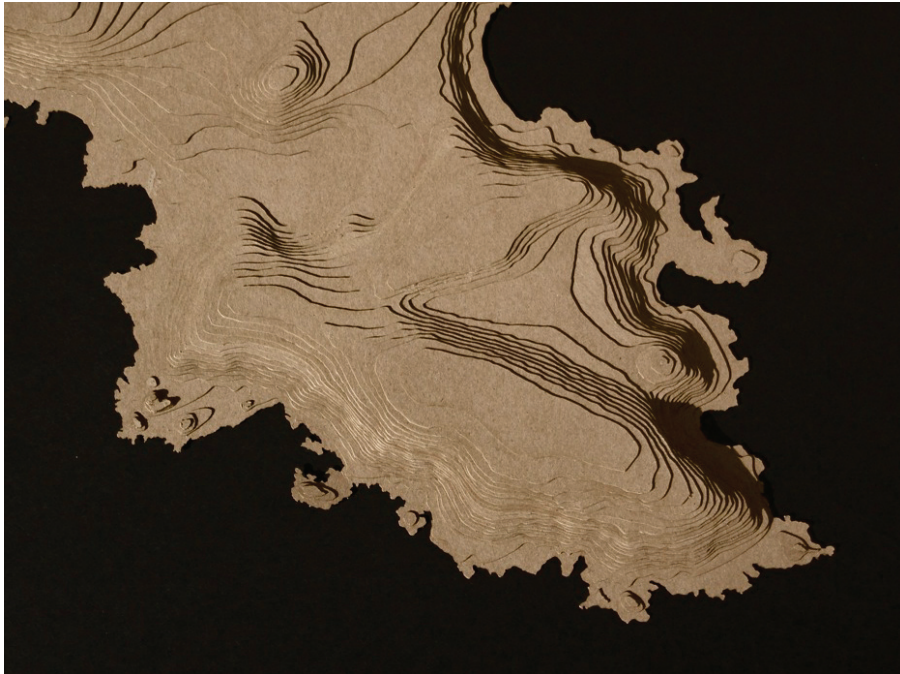














FINAL LAYOUT OF PRESENTATION BOARDS



AN APPROACH TO THE SUBLIME OF DEATH

STEVE PROUSTON
ABSTRACT

THESSIS COMMITTEE
ANDREW SCOTT
BARBARA MARICHAL
JOHN SIVITER
ANN WILSON SPINA



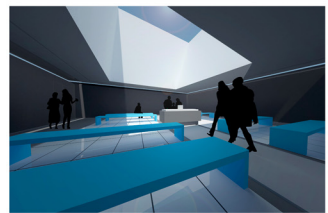
NAHANT MASSACHUSETTS

PROJECT LOCATION - EAST POND, NAHANT

42° 25' 70° 55'

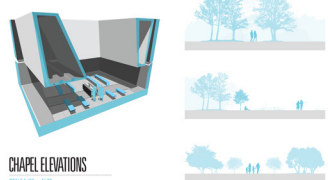
SITE EXTENT

SITE ARRIVAL AND CHAPEL




PATHWAY AND CHAPEL SECTIONS

SCALE = 1/16"



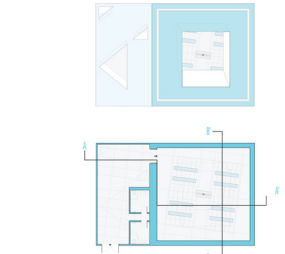
CHAPEL ELEVATIONS

SCALE 1/4" = 1'-0"



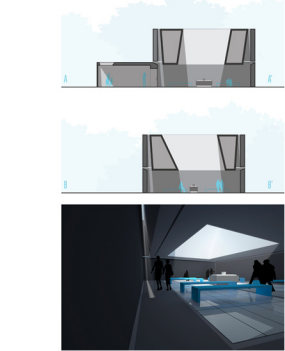
CHAPEL ROOF AND FLOOR PLAN

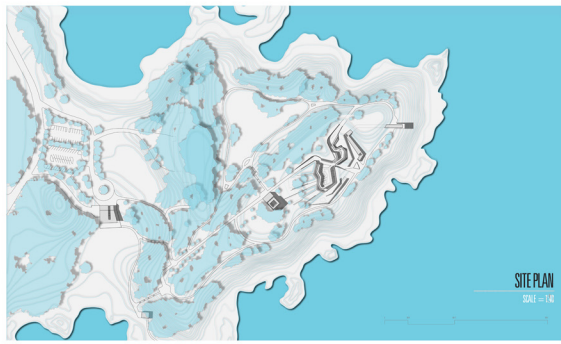
SCALE 1/4" = 1'-0"



CHAPEL SECTIONS

SCALE 1/4" = 1'-0"






SITE PLAN

SCALE = 1/4"


TRANSVERSE SITE SECTION

SCALE = 1/4"



LONGITUDINAL SITE SECTION

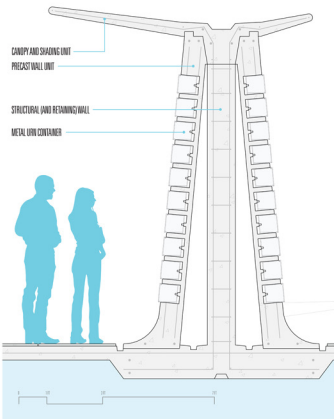
SCALE = 1/4"



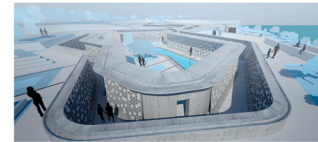
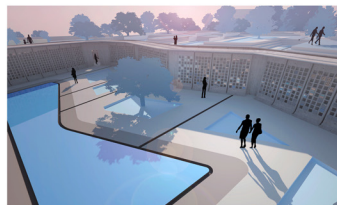
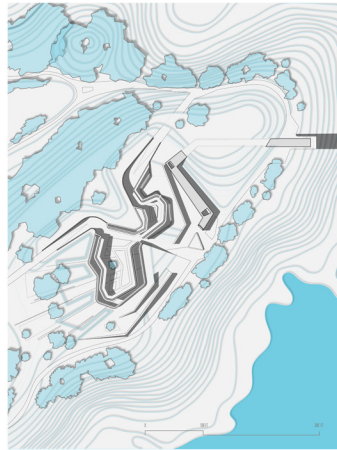
COLUMBARIUM (SOUTHWEST)



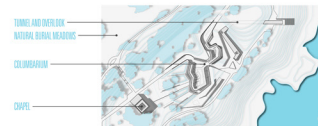
COLUMBARIUM WALL SECTION
SCALE = 1" = 1'



COLUMBARIUM AND VICINITY PLAN
SCALE 1/8" = 1'



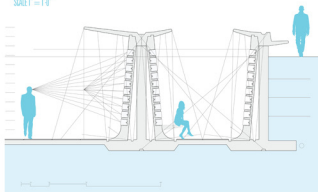
SPACE OF DEATH



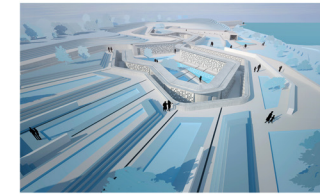
GENEALOGICAL ABSTRACTION

RESUMPTION	PROFESSION	ENVIRONMENTAL IMPACT BY BIRTH
<ul style="list-style-type: none"> 1.0% of the population is expected to be resurrected. 1.0% of the population is expected to be resurrected. 1.0% of the population is expected to be resurrected. 	<ul style="list-style-type: none"> 1.0% of the population is expected to be resurrected. 1.0% of the population is expected to be resurrected. 1.0% of the population is expected to be resurrected. 	<ul style="list-style-type: none"> 1.0% of the population is expected to be resurrected. 1.0% of the population is expected to be resurrected. 1.0% of the population is expected to be resurrected.

COLUMBARIUM WALL SECTION/DETAILS
SCALE 1" = 1'



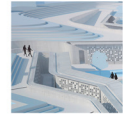
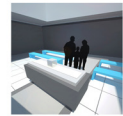
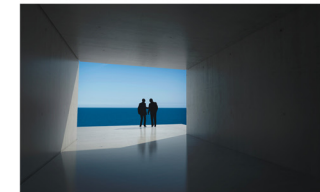
COLUMBARIUM (NORTHEAST)



LIGHT AND SHADOW AS A SOURCE OF MYSTERY



A PATH FROM DARK TO LIGHT



EPILOGUE

I am happy to have selected a fairly non-traditional topic, for it continually sustained my interest throughout the entire thesis process. I enjoyed working on the design and representation this fall semester, but I also enjoyed doing the research, analysis, and going on site visits during the previous summer and spring semester.

I now feel so comfortable with the topic of death that it has gone from a distant intellectual concept to a deep personal understanding and respect. I have come closer to facing death than most, having undergone chemotherapy and radiation treatments to cure a lymphoma, but I feel that this personal connection has only served to strengthen my design.

The biggest challenge I faced was dealing with the scope and scale of the project. I should have probably given myself more constraints towards the beginning to narrow down the seemingly endless number of ideas that I had. While I struggled early on to find the driving forces behind my designs, I finally discovered that I was able to come up with compelling spaces by designing around the experience and emotional qualities of that particular place. This was accomplished mostly through freehand drawings, vignettes, and models which were then converted into traditional plans and sections.

The complexity of the site was also a challenge in terms of representation, while the landscape component of the project could have easily transformed into its own thesis. What helped in the end was to really focus in on the cemetery typology and ask the questions: How do we deal with the dead, and what is their role in our modern society? What might the cemetery of 2010 (and beyond) look like? How do visitors experience and use these spaces of death?

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- Figure 2: http://rousemortuary.com/yahoo_site_admin/assets/images/Retort.125165735.jpg
- Figure 3: <http://www.openstreetmap.org/> "Boston, MA" 7 September 2009.
- Figure 4: <http://maps.google.com/maps/> "Nahant, MA" 12 October 2009.
- Figure 5: <http://www.brooklynmuseum.org/opencollection/objects/973>
- Figure 6: http://www.kenevansart.com/images/nahant_-_view_past_egg_rock_to_marblehead.jpg
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- Figure 21: University of New Hampshire Library Digital Collections Initiative, <http://docs.unh.edu/MA/lynn49se.jpg>
- Figure 22: United States Geological Society, MIT Lindgren Library: Earth, Atmospheric + Planetary Sciences.
- Figure 23: <http://www.bing.com/maps/> "Nahant, MA" 11 December 2009.
- Figure 24: <http://maps.google.com/maps/> "Nahant, MA" 12 October 2009.

APPENDIX

UNITED STATES CREMATION STATISTICS AND TRENDS

Source: 2007 Statistics and Projections to the year 2025, 2008 Preliminary Data Cremation Association of North America (CANA)

Top Ten States by Number of Cremations (2007)

STATE	CREMATIONS	% OF DEATHS CREMATED
California	111,113	47.43
Florida	89,463	52.94
New York	42,624	29.09
Texas	41,142	25.26
Pennsylvania	37,431	30.43
Michigan	35,088	40.50
Washington	31,302	66.44
Ohio	30,739	28.79
Illinois	29,366	29.35
Arizona	28,887	62.36

Top Ten States by Percentage of Deaths Cremated (2007)

STATE	% OF DEATHS CREMATED	CREMATIONS
Nevada	66.72	12,989
Oregon	66.62	20,869
Washington	66.44	31,302
Hawaii	66.19	6,372
Arizona	62.36	28,887
Montana	60.42	5,201
Colorado	58.65	17,916
Maine	58.38	7,250
Vermont	56.94	2,942
New Hampshire	56.51	5,752

Bottom Five States by Number of Cremations (2007)

STATE	CREMATIONS	% OF DEATHS CREMATED
North Dakota	1,352	23.94
South Dakota	1,487	21.09
Washington DC	1,866	29.72
Alaska	1,913	54.88
Wyoming	2,209	53.23

Bottom Five States by Percentage of Deaths Cremated (2007)

STATE	% OF DEATHS CREMATED	CREMATIONS
Mississippi	10.36	2,863
Alabama	12.86	5,931
Kentucky	13.22	5,196
Tennessee	15.08	9,217
Louisiana	17.37	6,705

Percentage of Deaths Cremated by Year

Year	Percentage of Deaths Cremated
1940	3.2%
1950	4.1%
1960	3.6%
1970	4.6%
1980	9.7%
1990	17.1%
2000	26.2%
2008	36.0%
2015 (Projection)	(46.0%)
2205 (Projection)	(58.9%)

CREMATION DETAILS

URN PURCHASE INTENT

Yes	56%
No	33%
Unsure	11%

PLANS FOR CREMATED REMAINS

Scatter remains	39%
Bury ashes (plot)	16%
Keep in urn at home	10%
Place in a columbarium at a cemetery	8%
Family can decide	5%
Let deceased decide	3%
Dispose (general)	3%
Place in a columbarium at a church	1%
Other	1%
Unsure	14%

MAJOR TRENDS AFFECTING CREMATION

- People are dying older
- Migration to retirement locations is increasing
- Cremation has become acceptable
- Environmental considerations are becoming more important
- Level of education is rising
- Ties to tradition are becoming weaker
- Regional differences are diminishing
- Religious restrictions diminishing
- Greater flexibility in memorial services

PRIMARY REASONS FOR CHOOSING CREMATION

- Saves money (30%)
- Saves land (13%)
- Simpler (8%)
- Body not in earth (6%)
- Preferences (6%)

MASSACHUSETTS DATA

2006:

15 Crematories
16,649 Cremations
53,450 Deaths
31.15% of Deaths Cremated

2007:

15 Crematories
17,494 Cremations
53,109 Deaths
32.94% of Deaths Cremated

2008:

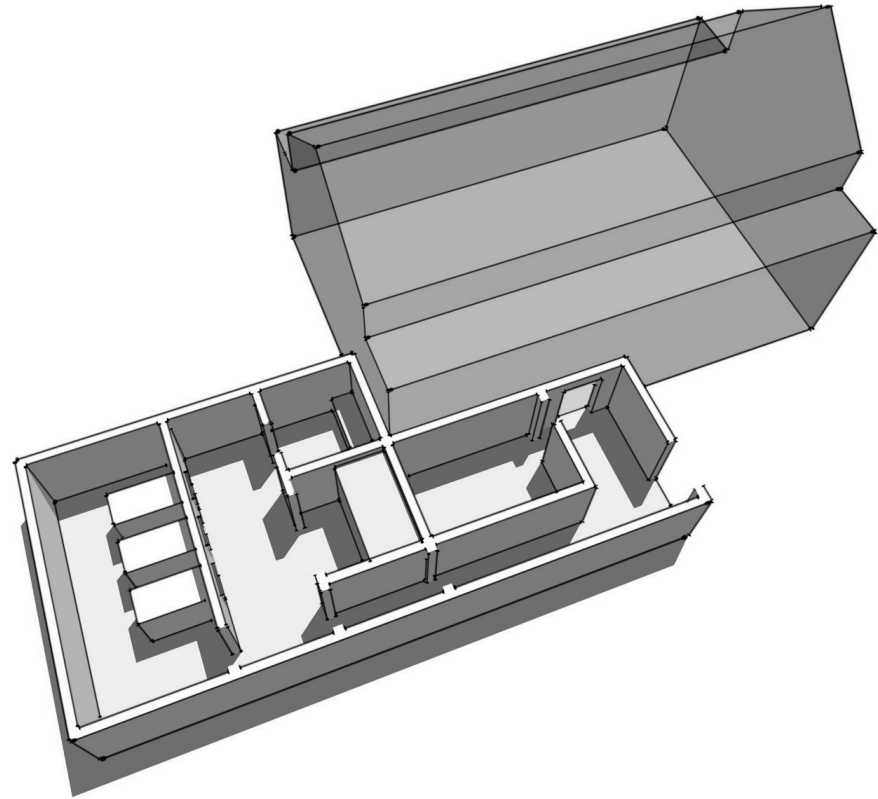
15 Crematories
18,502 Cremations
52,684 Deaths
35.12% of Deaths Cremated

MT. AUBURN CREMATORIUM

In 1900, Mt. Auburn opened the second crematory in Massachusetts (the first was at Forest Hills Cemetery in 1896). The crematory originally consisted of four oil burning retorts and was constructed below the chapel. During the mid-twentieth century, however, a new crematory was built adjacent to the chapel. The newer facility contains three natural gas retorts which are more efficient and faster than the previous four oil burning retorts.

There are currently 15 crematories in Massachusetts, with two new facilities planning to open later this year in Duxbury and Plymouth. Mt. Auburn performed over 1200 cremations last year, and is currently planning to construct new facilities to meet the increasing demand.

The crematory is often staffed and operated by just one or two individuals. There is an entry and delivery area located adjacent to the chapel. Beyond the entry and administrative office is a room that contains the retort doors. Opposite of the doors, there is small room for processing remains, and a storage room containing bodies to be processed. The final room contains the three retorts as well as equipment for monitoring the cremation process and for filtering the exhaust air. The retorts are relatively quiet, and cannot be heard from outside the crematory. The exhaust is barely visible, and probably not noticed by the casual passerby.¹



¹ Information from 9/4/2009 crematorium tour and interview visit with Sean O'Regan, Vice President of Cemetery Services, Mt. Auburn Cemetery, Cambridge, MA.

