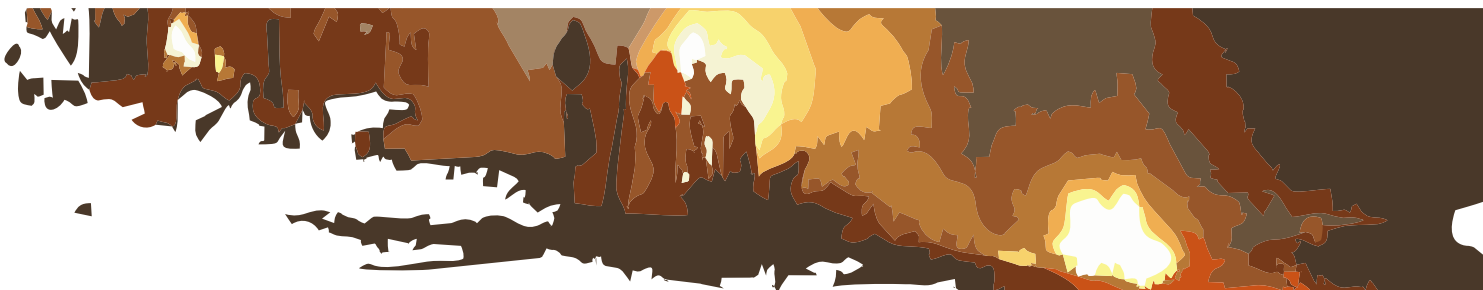


CREMATORIUM

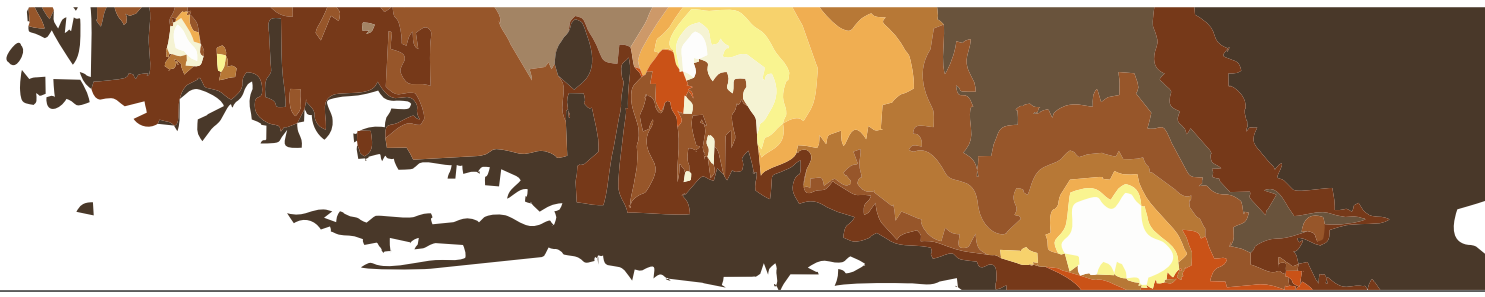
AJIT PRABHU

FIFTH YEAR B.ARCH

AIKTC SOA



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I would like to express my gratitude towards my thesis guide Prof. Raj Singh for it would have been impossible for me to envision and execute my design dissertation if it had not been for his valuable remarks and views on the design, the best part being, he was open to and listening to my rather nascent ideas and advising me on their level of feasibility and logic. All the members of my group thoroughly enjoyed the sessions where we discussed our ideas with Prof. Raj Singh, the reason being the good dose of laughter that we got from sir's satirical views of the work that we showed.

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AIM :

To design a hindu crematorium which tries to connect with the people, accepting it as a fact and with adherence to such place.

ABSTRACT :

According to hindu philosophy humans go through 16 different rites out of which 5 are the main one i.e Birth, Naming , Threading Ceremony , Wedding and Death. A rite is basically a religious act which changes from religion to religion. Few rite remain many change in the society. Rituals exist today in the institutions of death, marriage and birth. The backdrop for a ritual is architecture and architecture must support the ritual it envelopes. The rituals of mourning are important to humanity, since it allows humans to find a way from grief to healing.

WHY :

In modern context due to the social taboo and even due to the fact that we live in death denying society such places are scheduled away. Such ignorance daunts architecture to express death in modern days. If we look back in history death was given a lot of importance. Marvels like Pyramids , Taj Mahal , Humayun's Tomb etc. were built just because such places are sacred. These places even act as buffer spaces in urban context.

GOAL / AIM

A crematorium is associated with a lot of negative energy.there is a feeling of reluctance towards the structure or the process

Goal was to create a space that stikes people.it becomes a part of their life. It's a fact and can be accepted with piousness.

This indirectly changes the way we think the things we do. Firmly believe that this realization and understanding will lead to broader thinking about death and make the world a much better place to live in.

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Abstract

VARIOUS METHODS OF BODY DISPOSAL:

Commonly practiced:

The most common methods of disposal are:

Burial of the entire body in the earth, often within a coffin or casket (also referred to as inhumation)

Permanent storage in an above-ground tomb or mausoleum (also referred to as immurement)

Cremation, which burns soft tissue and renders much of the skeleton to ash. The remains, known as "cremains" may contain larger pieces of bone which are ground in a machine to the consistency of ash. The ashes may be stored in an urn or scattered on land or water.

Less common:

Disposal by exposure

Traditional examples include Tibet sky burial and the Parsi Towers of Silence

A body farm involves a similar method of disposal as an object of scientific study.

In some traditions, for example that practiced by the Spanish royal family, the soft tissues are permitted to rot over a period of decades, after which the bones are entombed.

Burial at sea

Dropping overboard from a ship or plane, a form of burial, often used in a military/naval context, where the corpse, suitably prepared and weighted is deposited into the sea.

Ship burial, a form of burial at sea in which the corpse is set adrift on a boat.

Illegal disposal of bodies in the water

Dissolution, e.g. in acid or a solution of lye, followed by disposal as liquid

Recently there has been much controversy over alkaline hydrolysis (also called Resomation) as a method of body disposal. Advocates claim the process is more environmentally friendly than both cremation and burial, due to CO₂ emissions and embalming fluids respectively. On the other hand, many find the idea of being "poured down the drain" to be undignified. [1]

Donation for study – donation to a medical school or similar – after embalming and several years of study and dissection the body is usually eventually cremated.

Cannibalism, ritual or otherwise

Space burial

In cases of war, genocide, or natural disasters including disease epidemics, large groups of people have been buried in mass graves or plague pits.

Dismemberment, in which the body is divided and different body parts are dealt with separately; for example in the case of the Habsburg royal family as well as the display of the relics of various saints.

New methods in development include promession, and the mushroom death suit by Infinity Burial Project.

Clandestine disposal :

In some cases, a body is disposed of in such a way as to prevent, hinder, or delay discovery of the body, to prevent identification of the body, or to prevent autopsy. In such cases, the deceased is considered a missing person as long as a body is not identified, unless death is so likely that the person is declared legally dead.

This often occurs as part of a murder or voluntary manslaughter. In other cases, an individual who did not intend to cause death may still feel guilt about a death (e.g. by involuntary manslaughter or an accident) and may attempt to prevent discovery of the body. This can exacerbate any legal consequences associated with the death.

Other motives for concealing death or the cause of death include insurance fraud or the desire to collect the pension of the deceased. An individual may commit suicide in such a way as to obscure the cause of death, allowing beneficiaries of a life insurance policy to collect on the policy.

Means of clandestine disposal :

Burial, especially in a shallow grave due to time constraints

Cremation, which may be incomplete if performed without proper equipment

Dumping the body in a deserted or private place, such as a freezer or body of water

Dissolution (see above)

Burial in cement or concrete

Crushing, e.g. within a junked car

Collected as trash e.g. in a trash truck or other trash collection vehicle.

Burial at a landfill

Illegal disposal of bodies in the water :

Disposal of this type happens for various reasons, including the main difference between a burial at sea and a burial on land: the difficulty in recovering the body. Sometimes this difference is desired to dispose of bodies outside of the law.

Disposal of evidence :

There may be a number of reasons for this kind of crime. One common reason for this behavior is to dispose of the evidence. The body may be the victim of a homicide, as for example murder or manslaughter. In some cases, the victim may even be still alive and drowning during the process. A live victim is usually restrained to reduce the likelihood of the victim freeing themselves or fighting back, and the body is often weighted to ensure the sinking of the body. The mafia is infamous for disposing of victims in oceans or lakes with their feet cast in a concrete block. Other variants tie concrete blocks or other heavy objects to the victim. The Chicago-style method involves wrapping heavy chains around the victim. In Venice, barrels filled with a human body and concrete are occasionally found in the canals. It is difficult to determine if murder victims buried in a swamp are buried in water or in earth. Often, the body is also cut up to reduce the likelihood of reappearing.

In other cases, the victim may have died from an accident, and another involved party tries to destroy evidence of the accident. There are also cases where a stillborn infant is buried to dispose of evidence of infidelity, or problems with fertility, or the shame associated with unwed parenthood in many cultures.

Problems :

While a corpse properly buried at sea is unlikely to reappear, many criminals are unable to ensure the permanent disposals of a body, and evidence of the body may reappear. This is rarely as spectacular as the freshly caught shark in the Sydney Coogee Aquarium that vomited up a surgically separated human arm, leading to a murder investigation. That victim was determined to be James Smith, but the three murder suspects were acquitted.

Many criminals dispose of bodies in a river, hoping that the body is carried away. However, this method will most likely lead to a quick detection of the body, because the body gets entangled at the side of the river, or stopped at a dam, or is simply seen floating by others. A disposal in large lakes or oceans is more likely to hide the body, but a decomposing body can develop a strong positive buoyancy due to the decomposing gases being trapped underneath the skin. This may bring the body up to the surface, or at least increase the movement across the ocean floor due to wave actions. Many bodies have washed up at the shore. Bodies have also been discovered in the nets or lines of fishermen, and occasionally, bodies are also discovered by divers.

Means of preservation :

In some cases an attempt is made to preserve some or all of a body. These methods include:

Cryopreservation

Mummification; the most well-known examples are from ancient Egypt

Taxidermy: A few people, such as the philosopher Jeremy Bentham, have had their dead bodies stuffed.

Plastination: The preserved (embalmed) body is prepared by dissection or slicing and fluids are replaced with inert plastic for anatomical study by medical students or display in museums. This technique was pioneered by Gunther von Hagens of the Institute for Plastination.

Human remains of archaeological or medical interest are often kept in museums and private collections.

In the cases of Native Americans in the United States, possession of remains and related objects is regulated by the NAGPRA Act of 1990.

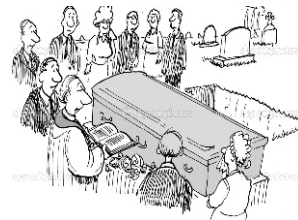
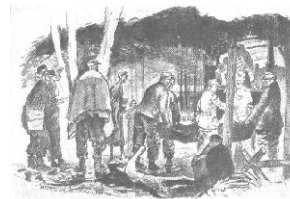
LONG TIME AGO, **STORIES** TO COMMON MAN WERE CLEARLY PRESENT IN THEIR **ARCHITECTURE**. SCULPTURE ,MOSAIC PAINTINGS, STAINED GLASS WINDOWS, ALL BLATANTLY TOLD THE BEGINNING, THE MORALS, THE EPICS AND THE FUTURE OF HUMANITY.....

TODAY, THESE ELEMENTS HAVE ALL **DISAPPEARED** ALONG WITH THE STORIES THAT THEY TOLD.....

ONLY ONE STORY STILL COMMON TO HUMANITY IS THE ACT OF **DEATH**

Understanding Death in Hindu Philosophy:

Hinduism, which is more a way of life than religion upholds death as real and natural as life. In hindu philosophy, death of any life form is a cause of celebration as it is an event that helps the soul to reunite with the divine cosmic cycle. It is believed that the human life is the most refined form of existence for the soul. Hence, death of a human being leads to 'moksha' (salvation) of the soul, liberating it from the cycling process of birth and rebirth.



DEATH AND ARCHITECTURE:

As pertaining to India, let us consider the three most common religions and their methods of cremation:

- 1) Hinduism
- 2) Islam
- 3) Christianity

METHODS OF CREMATION:

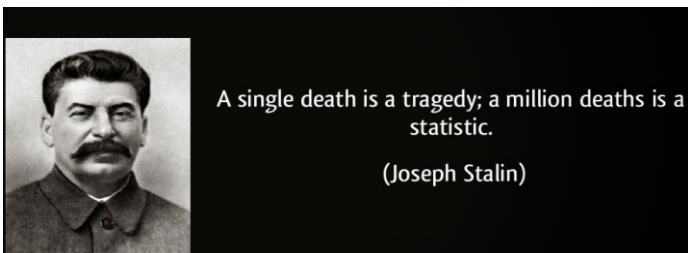
Hinduism- most common method is by burning the body on a pile of wooden logs.

Since, Hinduism has been divided into various sects, different methods are used by each one of them.

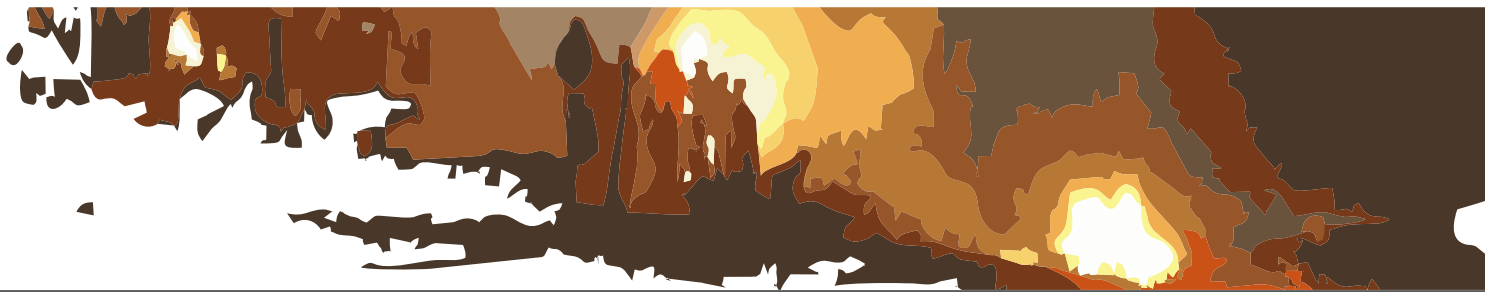
Islam- The only method followed in Islam is covering the body and burying it into the soil.

Christianity- Bodies are covered and placed in coffins after which they are buried into the soil.

The research study focuses on Hindu crematoriums as the scope of study of all the religions is vast.



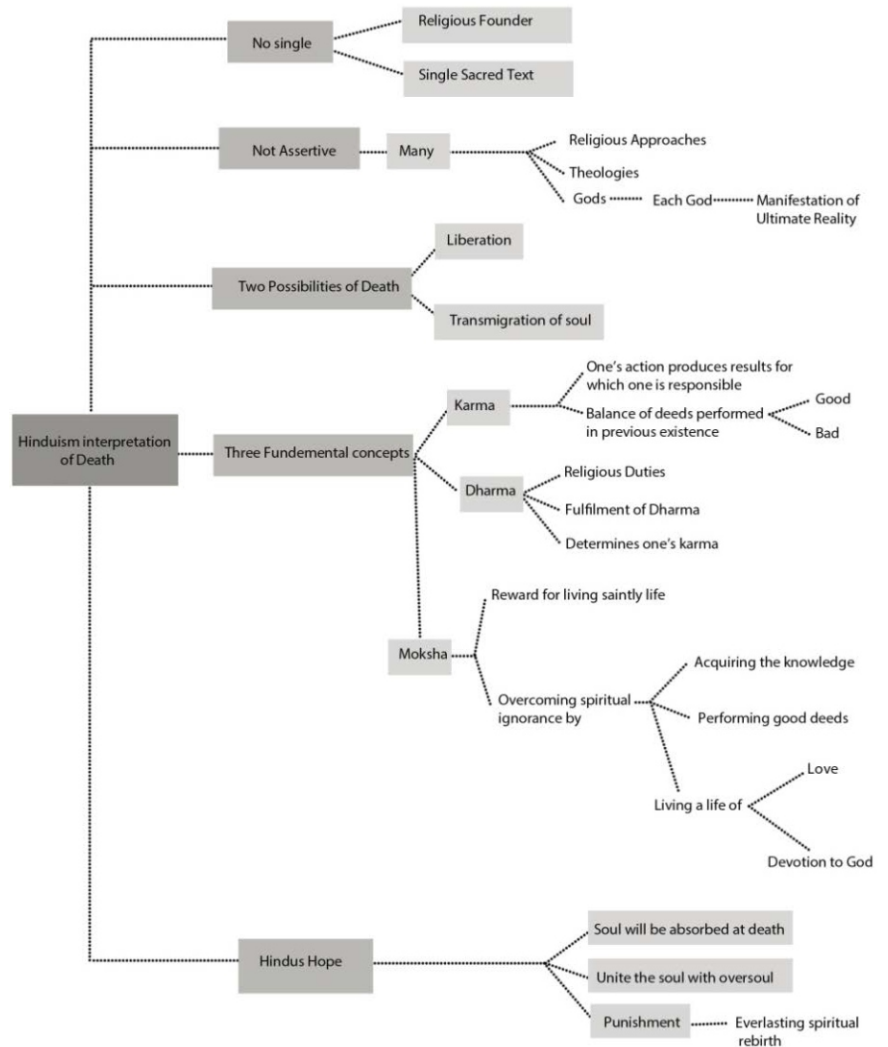
Hindu Theories



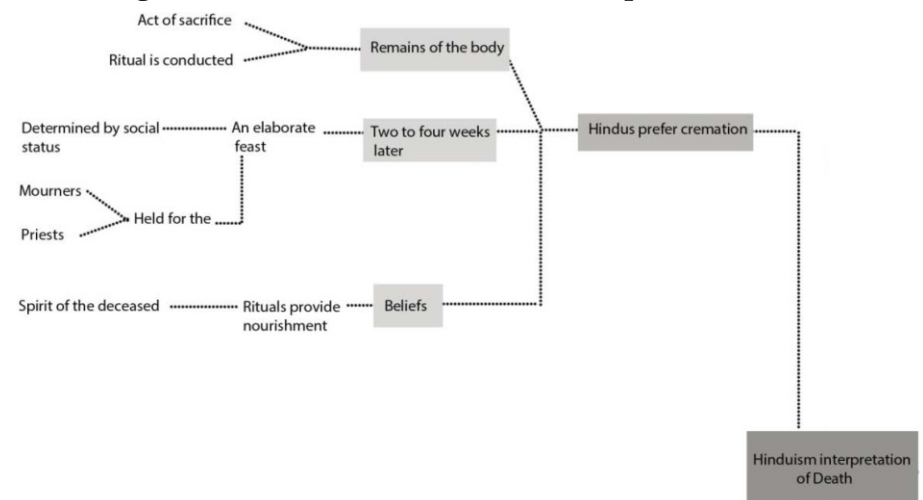
Death?

CONCEPT OF DEATH:

- Death as an event - Here death is something that happens and it happens at a particular time, place and in a particular way .Death is an event that cuts off a life.
- Death as a condition - It is viewed here as a non-reversible condition in which an organism is incapable of carrying out the vital functions of life. Here the main focus is to establish the termination of life particularly bringing the medical context to it and those signs of termination are obvious to all the observers .
- Death as a state of existence and non-existence- Death is what becomes of a person after death. Here the concern is neither with the event that ends life nor with the condition of the body at that time but the focus is on the form of existence that is thought to prevail when a temporal life has come to its end.



The generalized structure for Hindu interpretation of death - I



The generalized structure for Hindu interpretation of death - II

The adjacent diagrams give a fair understanding as to how the concepts of death get related to the myths , beliefs and rituals in Hinduism and also form the basis for research on the spaces of death

CREDIT: **Sanchit Arora**

Spaces of Cremation- The Invisible Sacred Landscape in Indian Cities

HINDU COSMOLOGY:

- For Hindus, the physical universe consists of:
 - the Earth
 - Vasu Loka (space of the godlings, the Vasus).
 - Rudra Loka (space for the godlings Rudras).
 - Aditya Loka (space for Aditya, the Sun god).
 - Swarga Loka (Heaven).
- The ultimate reality is the Brahman—the principle that governs the universe and that resides in the Swarga Loka.

GOAL OF HUMAN LIFE:

The ultimate goal of human life is to achieve freedom from re-birth (Moksha) This can be achieved in many different ways even within Hinduism.

- Total selfless devotion to god (Bhakti)
- Total asceticism: renouncing the society altogether
- Follow the path of knowledge
- Follow the path of being a righteous member of the society and do the right thing by all.

THE KARMA THEORY:

- Any action by an individual is called *Karma*.
- Karma can be good or bad.
- One has to extinguish all the *Karma* before *Moksha* can be achieved.
- Thus, *Moksha* is a very difficult thing to achieve. One has to go through thousands of cycles of birth and deaths to extinguish all the *Karma*.

These cycles are called *Reincarnation*



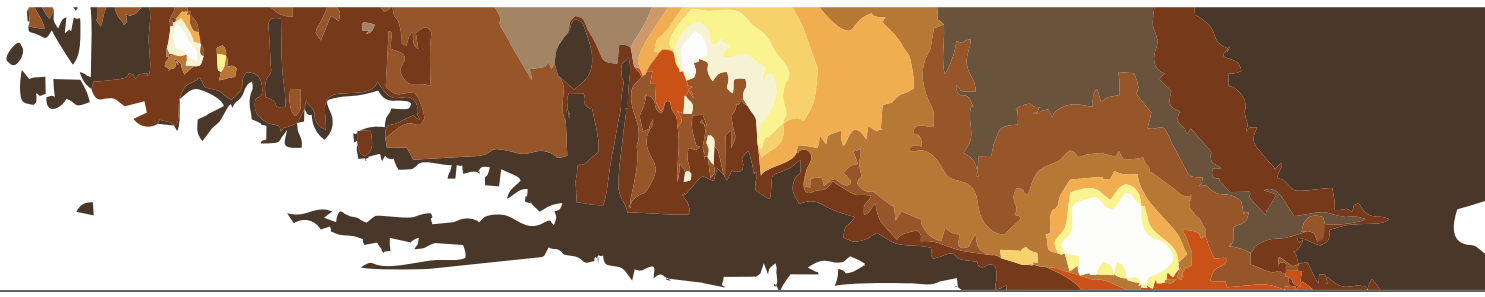
HINDU FUNERAL RITES:

- From birth, humans go through 16 rites of passage.
- Main ones are: birth, naming, threading ceremony, wedding and death.
- Since death is the last rite, it is the most important one.
- Hindus generally cremate the body. Two exceptions are: child under one year of age and an ascetic who has taken ochre robes. These two are buried.
- In India, cremation happens on an open wooden pyre.
- The eldest son torches the pyre and then performs the ritual with the help of a priest. This takes about one hour.
- The ashes are spread into any source of water: river, lake or the sea.
- Generally women do not attend funerals.

MYTH AND SYMBOLISM:

- Human body consists of two things: the physical body and the soul (*Atman*)
- Body is subject to nature's ravages and is destructible.
- Offering of the body to gods via fire is the ultimate human sacrifice.
- Soul is part of the *Brahman*, it is forever and is indestructible.
- Upon leaving one body, the soul is set free and enters a new one. This is *Reincarnation*.
- The soul hovers around on the earth for 13 days. After this, it starts its journey through the 3 *Lokas*.
- The time spent on each of these *Lokas* depends on the accumulated *Karma* and may involve taking thousands of rebirths before *Moksha*.
- On the 14th day, *Ganesha*, the auspicious god is worshipped and the home is sprinkled with consecrated water. All impurities are now thought to be gone.

Process



Generally, Hindus believe that life and death are part of the concept of samsara, or rebirth. The ultimate goal for many Hindus is to become free from desire, thereby escaping samsara and attaining moksha, the transcendent state of salvation. Once moksha is attained, the soul will be absorbed into Brahman, the divine force and ultimate reality.

POST-DEATH RITUALS:

Bodies are always cremated, never embalmed, although they can be frozen for up to 3 days so relatives can attend the funeral rites. The family may wish to witness the cremation and even start the cremation fire. The family may return to collect the ashes directly from the crematorium. After the family returns from the crematorium, everyone bathes, and the entire house is cleaned. The ashes are scattered in an ocean or a river. Infants and young children are the exception to the cremation rule: since they have not accumulated bad karma and are considered pure, infants and young children may be buried. The period immediately following death is considered a time of impurity. A pot of water is set in the entryway and is changed every day for 31 days. On the third, fifth, seventh, and ninth days, a meal of the deceased's favorite foods is prepared, and a portion is put in front of a photograph of the deceased. The time of impurity can last from several days to a year. The length of the time of impurity is traditionally determined by caste: the lower the caste, the longer the time of impurity. During this time, the family lives in seclusion and does not participate in festivals, celebrations, or temple observances.

When Death Is Imminent?

When a Hindu is approaching death, a priest should be contacted and the priest and the family should gather to be with the dying person. Those present should chant mantras or play a recording of mantras being chanted. A small amount of water from the Ganges River should be placed in the dying person's mouth. If this is not possible before death, then these actions should take place immediately following the death.

After Death Has Occurred

As soon as death occurs, those gathered will avoid unnecessary touching of the body, as it is seen as impure. The body is placed in the home's entryway with the head facing south. If a patient dies outside the home, the family may want to bring the body home for ritual bathing, dressing, and for friends and family to say goodbye. If necessary, these rituals can take place in a mortuary. If the dying person is unconscious at departure, a family member chants the mantra softly in the right ear.

Holy ash or sandal paste is applied to the forehead, Vedic verses are chanted, and a few drops of milk, Ganga or other holy water are trickled into the mouth. The lamp is kept lit near the head and incense burned. A cloth is tied under the chin and over the top of the head. The thumbs are tied together, as are the big toes. In a hospital, the family has the death certificate signed immediately and transports the body home. Under no circumstances should the body be embalmed or organs removed for use by others. Religious pictures are turned to the wall, and in some traditions mirrors are covered.

FIRE RITUAL:

Preparations for the funeral begin immediately. The funeral should take place as soon as possible—traditionally, by the next dusk or dawn, whichever occurs first. A priest should be contacted and can help guide in the decision-making process and direct the family to a Hindu-friendly funeral home. In a shelter built by the family, a fire ritual (homa) is performed to bless nine brass kumbhas (water pots) and one clay pot (present days this happens in crematorium itself). The "chief mourner" leads the rites. He is the eldest son in the case of the father's death, and the youngest son in the case of the mother's. In some traditions, the eldest son serves for both, or the wife, son-in-law or nearest male relative.

Organ Donation:

Organ donation is acceptable for Hindus, as there are no Hindu laws prohibiting organ or tissue donation.

Embalming:

Embalming is acceptable in Hinduism.

Preparing The Body:

Traditionally, the body is washed by family members and close friends. Many Hindu funeral homes recognize the importance of the family washing the body and will allow the family to prepare the body. If this is not possible, the funeral home may wash and dress the body. For the ritual washing, the deceased's head should be facing southward. A lighted oil lamp as well as a picture of the deceased's favorite deity should be kept by the deceased's head. Traditionally, for the "abhisegam" (holy bath), the body is washed in a mixture of milk, yogurt, ghee (clarified butter), and honey.

The body may also be washed in purified water. While the body is being washed, those washing should recite mantras. Once the body is sufficiently cleaned, the big toes should be tied together, the hands should be placed palm-to-palm in a position of prayer, and the body should be shrouded in a plain white sheet. If the person who died was a married woman who died before her husband, she should be dressed in red.

Viewing, Wake, Or Visitation Before A Hindu Funeral:

Hindus generally hold a brief wake before cremation. The body should be displayed in a simple, inexpensive casket. "Vibuti" (ash) or "chandanam" (sandalwood) should be applied to the forehead of a man, and turmeric should be applied to the forehead of a woman. A garland of flowers should be placed around the neck, and holy basil should be placed in the casket. During the wake, family and friends gather around the casket and may recite hymns or mantras. At the end of the wake, before the body is removed for cremation, many Hindus place "pinda" (rice balls) near the casket. At the end of the wake, the casket is removed feet-first and brought to the place of cremation.

Cremation:

Traditionally, all Hindus—except babies, children, and saints—are cremated. Two pots are carried: the clay kumbha and another containing burning embers from the homa. Traditionally, the casket is carried on a stretcher and walked to the cremation site, though it is acceptable to transport the body in a vehicle. If a vehicle, such as a hearse, is used for transportation, the eldest male relative (known as "karta") and another male family elder should accompany the casket.

It is customary that only men attend the cremation. Historically, Hindu cremations take place on the Ganges River in India. The family builds a pyre and places the body on the pyre. The karta will circle the body three times, walking counter-clockwise so that the body stays on his left, and sprinkling holy water on the pyre. At each turn around the pyre, a relative knocks a hole in the pot with a knife, letting water out, signifying life's leaving its vessel.

At the end of three turns, the chief mourner drops the pot. Then the karta will set the pyre on fire and those gathered will stay until the body is entirely burned. For Hindus living outside of India, there are companies that will arrange for the shipment of the body to India and hold a traditional cremation with a proxy karta. The body should be brought into the crematorium feet-first, ideally with the feet facing south. Those gathered may pray, and then the karta will perform the ritual circling of the body. At this point, the body is ready for cremation, and should be placed into the incinerator feet-first. When the body has been fully cremated, those gathered will return home.

Post-Funeral Reception:

Returning home, all bathe and share in cleaning the house. A lamp and water pot are set where the body lay in state. The water is changed daily, and pictures remain turned to the wall. The shrine room is closed, with white cloth draping all icons. During these days of ritual impurity, family and close relatives do not visit others' homes, though neighbors and relatives bring daily meals to relieve the burdens during mourning. Neither do they attend festivals and temples, visit swamis, nor take part in marriage arrangements. Some observe this period up to one year.

For the death of friends, teachers or students, observances are optional. While mourning is never suppressed or denied, scriptures admonish against excessive lamentation and encourage joyous release. The departed soul is acutely conscious of emotional forces directed at him. Prolonged grieving can hold him in earthly consciousness, inhibiting full transition to the heaven worlds.

Bone-Gathering Ceremony

About 12 hours after cremation, family men return to collect the remains. Water is sprinkled on the ash; the remains are collected on a large tray. At crematoriums the family can arrange to personally gather the remains: ashes and small pieces of white bone called "flowers." In crematoriums these are ground to dust, and arrangements must be made to preserve them. Ashes are carried or sent to the Ganges or placed in an auspicious river or the ocean, along with garlands and flowers.

CHALLENGES FACED:

Emotional challenges pre - cremation

Emotions of friends, relatives and acquaintances.

These emotions depend upon the age of the deceased person and also his position in life, the social structure in which he lived.

Challenges post cremation :

Providing socially acceptable Reasonably price

Hindu Mourning Period And Memorial Events

First Memorial:

On the 3rd, 5th, 7th or 9th day, relatives gather for a meal of the deceased's favorite foods. A portion is offered before his photo and later ceremonially left at an abandoned place, along with some lit camphor. Customs for this period are varied. Some offer pinda (rice balls) daily for nine days. Others combine all these offerings with the following sapindikarana rituals for a few days or one day of ceremonies.

31st-Day Memorial:

On the 31st day, a memorial service is held. In some traditions it is a repetition of the funeral rites. At home, all thoroughly clean the house. A priest purifies the home and performs the sapindikarana, making one large pinda (representing the deceased) and three small, representing the father, grandfather and great-grandfather. The large ball is cut in three pieces and joined with the small pindas to ritually unite the soul with the ancestors in the next world. The pindas are fed to the crows, to a cow or thrown in a river for the fish. Some perform this rite on the 11th day after cremation. Others perform it twice: on the 31st day or (11th, 15th, etc.) and after one year. Once the first sapindikarana is completed, the ritual impurity ends. Monthly repetition is also common for one year.

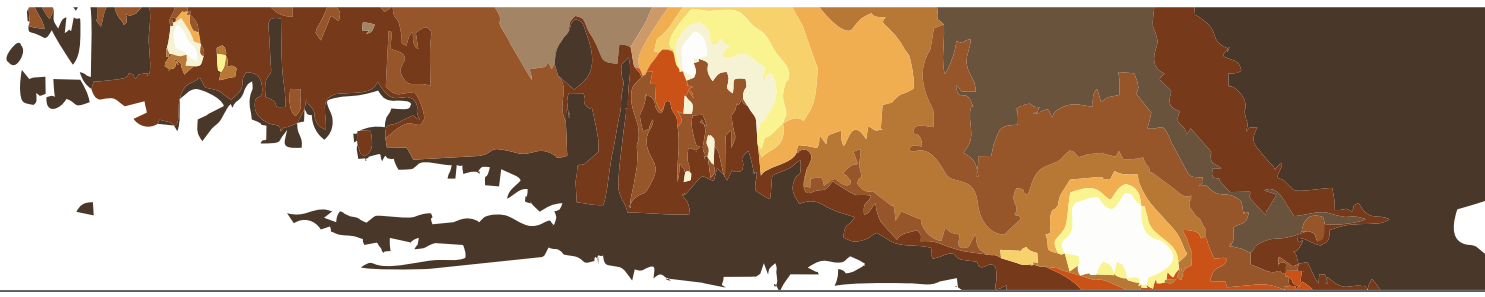
One-Year Memorial:

At the yearly anniversary of the death (according to the moon calendar), a priest conducts the shraddha rites in the home, offering pinda to the ancestors. This ceremony is done yearly as long as

the sons of the deceased are alive (or for a specified period). It is now common in India to observe shraddha for ancestors just prior to the yearly Navaratri festival. This time is also appropriate for cases where the day of death is unknown.

Hindu funeral rites can be simple or exceedingly complex. These ten steps, devotedly completed according to the customs, means, and ability of the family, will properly conclude one earthly sojourn of any Hindu soul.

Introduction



WHAT IS A CREMATORIUM?

Crematoriums may be considered as cultural places of death and remembrance as well as technical places of bodily disposal. A place where cultural meanings are reproduced and communicated through architecture, interior design and landscaping. These influence emotions, either intensifying feelings of awe or anxiety.

In modern context crematoria are criticised for being impersonal and meaningless non-places. These places have become sad or negative spaces

ROLE OF CREMATORIUMS:

In modern context due to social taboos followed or due to emotions attached to death, these spaces have become scheduled away/segregated or have become dead spaces in urban context even though these spaces are sacred in the society. They are the invisible buildings. Invisible not only because they are not much talked about but also because of their design.

The existing **funerary architecture** does not strike people from making it as their part of life. Not accepted as a fact.

Therefore there is a necessity to design a sacred and respectful space where people from various community can gather and grieve during the period of great loss

SO THE PURPOSE OF THIS TOPIC IS TO EXPLORE THE INFRASTRUCTURAL ISSUE AND TO EXAMINE THE ROLE THAT ARCHITECTURE CAN PLAY IN THE PROCESS OF GRIEF AND HEALING.

GOAL/AIM:

A crematorium is associated with a lot of negative energy. There is a feeling of reluctance towards the structure or the process

Goal was to create a space that strikes people. It becomes a part of their life. It's a fact and can be accepted with piousness.

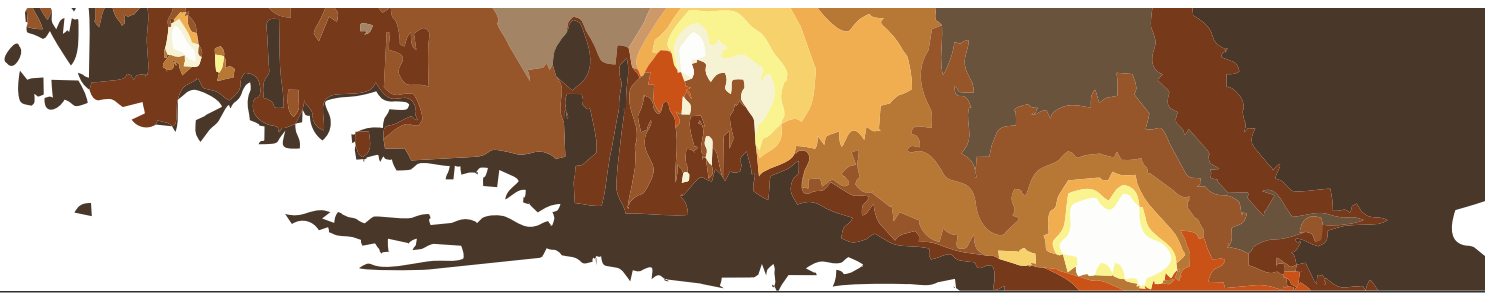
This indirectly changes the way we think the things we do. Firmly believe that this realization and understanding will lead to broader thinking about death and make the world a much better place to live in.

MEANS OF CREMATION:

MEANS OF CREMATION	WOODEN PYRE	WOOD BASED CI FURNACE	ELECTRIC CREMATORIUM	DIESEL BASED CREMATORIUM	GAS FIRED CREMATORIUM	SOLAR CREMATORIUM	BIOMASS CREMATORIUM
MECHANISM	Conventional method based on Hindu death rituals. Open air cremation.	A open stove consisting of cast iron grates at the bottom as well as on side wall, which is placed above the ground so that air can enter from the bottom of the grate.	Main combustion chamber where body is fumed up and burns to ashes; then the smoke goes into the post combustion chamber before entering into the chimney.	Bottom hearth furnace principle. Two chambers one above other joined by tertiary chambers. The bottom chamber burner is started first to preheat bottom hearth and tertiary chamber. The body is then placed inside the top hearth with the help of mechanized conveyor belt. After closing the door, the top burner is started.	Hot hearth design and multichamber air control design	Based on solar concentrating collector made up of glass-steel parabolic solar dish (concentration ratio of 600, 50m ² reflector surface and focal area not bigger than 300 mm), which reflects sunrays on a specially constructed coffin. Typically, the dish first traps the energy from the sunlight and then reflects it on to the solar pyre box.	Gasifier burns gas produced from wood instead of burning wood directly.
FUEL	Wood	Wood	Electricity	Diesel	LPG/ CNG	Solar energy into heat energy.	Firewood, dry leaves, and stubble . Wood energy into a combustible gas
QUANTITY per body	400-600kg	250-350 Kg	80 kW of electric power, four electric heaters of 20 kW. When the dead body is loaded the heaters get tripped off, the operating energy expenses would be more than 150 kWh per cremation.	30 Litres	45 kg	Power of reflector 25 kW, 10 kg pallet out of wood helps at the beginning to start the combustion, for the air blower 1 kw electric energy (ca. 150 kg air per hour). Air required into the chamber in order to have an optimal combustion.	100-145 kg of wood
START UP TIME PERIOD			10 hours. Long start-up time	Half an hour to raise temperature	Half an hour		45 minutes
TIME PERIOD TO BURN THE BODY	4-5 hours	2-3 hours	1 hour	45 minutes. Cremation of the first body takes little more time as firebrick walls absorb lot of heat	1 hour	2-3 hours	Less than an hour
TEMPERATURE REQUIRED			800°C	600-800 C. Two digital temperature indicators provided, one in top hearth and other in bottom hearth to observe prevailing temperatures while cremation process is going on.	700°C	1000°C	700°C
DIMENSION (l x b x h) in m		2 x .75 x 1.75		3.6 x 1.65 x 2.4	4 x 2.5 x 5	8 x 7.2	4 x 1.4 x 1.2
COST OF CREMATION	Rs. 1000 - Rs. 1500	Rs. 600-Rs. 800	Rs. 1000	Rs. 800	Rs. 600		Rs. 250
ENVIRONMENTAL CONCERN	A large number of partially burnt bodies are released into rivers, a major source of water pollution	Promoted for fuelwood saving.	Carbon, chemicals, germs, etc. which would burn up completely in post combustion chamber before entering into the chimney			Smoke is going out of the chamber through the focal area and so a secondary combustion is taking place, so we hope to have a smokeless procedure	Lower emissions and substantial savings in the use.
POLLUTION FREE	No	No	Yes	Yes	Yes	Yes	Yes
SMOKE FREE	No	No	No	No	No	Yes	Yes
EFFICIENCY		Placing wood as well as dead body on the grate helps in complete and faster burning thereby consuming about 25 to 30% less fuel.	Non-operation due to power cuts. Difficult to get reliable high voltage supply, that too for continuous long duration operation. Heaters have to kept on round the clock to maintain the chamber temperature at around 700°C	Can be operated as and when required without need to keep cremation chamber hot round the clock.	Recently in developed countries natural gas fired crematoria are gaining more acceptance over electric or diesel fired systems due to its cleaner burning with lower emissions and better control on fire.	Dual fuel arrangement. Option of using electricity or gas when the clouds shroud the sun	Better conversion (solid to gas) efficiency (above 70%). Better control on burning (handling gaseous fuel). Production of clean flue gases (as gas is burnt)
FIXED CAPITAL COST			20,00,000	20,00,000	18,00,000	The solar dish alone costs about Rs 10,00,000	5,00,000
ANNUAL COST			3.95,000	3.55,000	3,00,000		1,20,000

Case Studies

LIVE



Case Study I

RAJESHWAR WAMAN HINDU CREMATORIUM

LOCATION:

Located in Jogeshwari is a small Hindu crematorium. **Rajeshwar Waman Hindu Crematorium** is a small crematorium aligned with the Goregoan Mulund link road on the corner of the road.



ANALYSIS:

- The site is not big neither is the structure. The hall is common for all the activities whether to assemble or for any other purpose.
- The storage given is too small and has also become the only place for the workers to stay since there is no accommodation for the staff.
- The seating provided is too less, can only accommodate 3-4 people at a time.
- There is one big shed under which there are four piers.
- There is no temple as such but just a sculpture of LORD SHIVA besides the piers.
- There is even lack of services.
- There is no parking facility and no urn room.

WEAKNESS:

- Due to the negligence of the authorities maintenance of the space has become an issue.
- Lacks provisions for the users as well.

STRENGTHS:

- The site is well connected with the highway, hence it is easily accessible

OPPORTUNITIES:

- There is a lot of empty land which is not in use and can be used to fulfill the provisions that are lacking.
- There is a small area ahead of the site which can be used for parking.



Case Study II

SHIVDHAM HINDU CREMATORIUM

LOCATION:

Located in Goregaon, lies a well planned Hindu crematorium along the western express highway near Aarey flyover.



ANALYSIS

- The site is quite good, which accommodates most of the facilities required for various processions.
- The site is protected by a compound wall and has security guard.
- The crematorium follows traditional method.
- The site welcomes mourners with a nice big garden which tries to reduce the grief.
- There is a proper cabin provided for record purpose.
- Separation of assembly hall and Vidhi hall allows to conduct multiple processions at the same time.
- The assembly hall or the seating area allows to watch the ongoing procession in a proper way.
- The site has a proper burial ground for children.
- It has proper urn room to store the urns

STRENGTHS:

The site is well connected with the western express highway, and is easily accessible

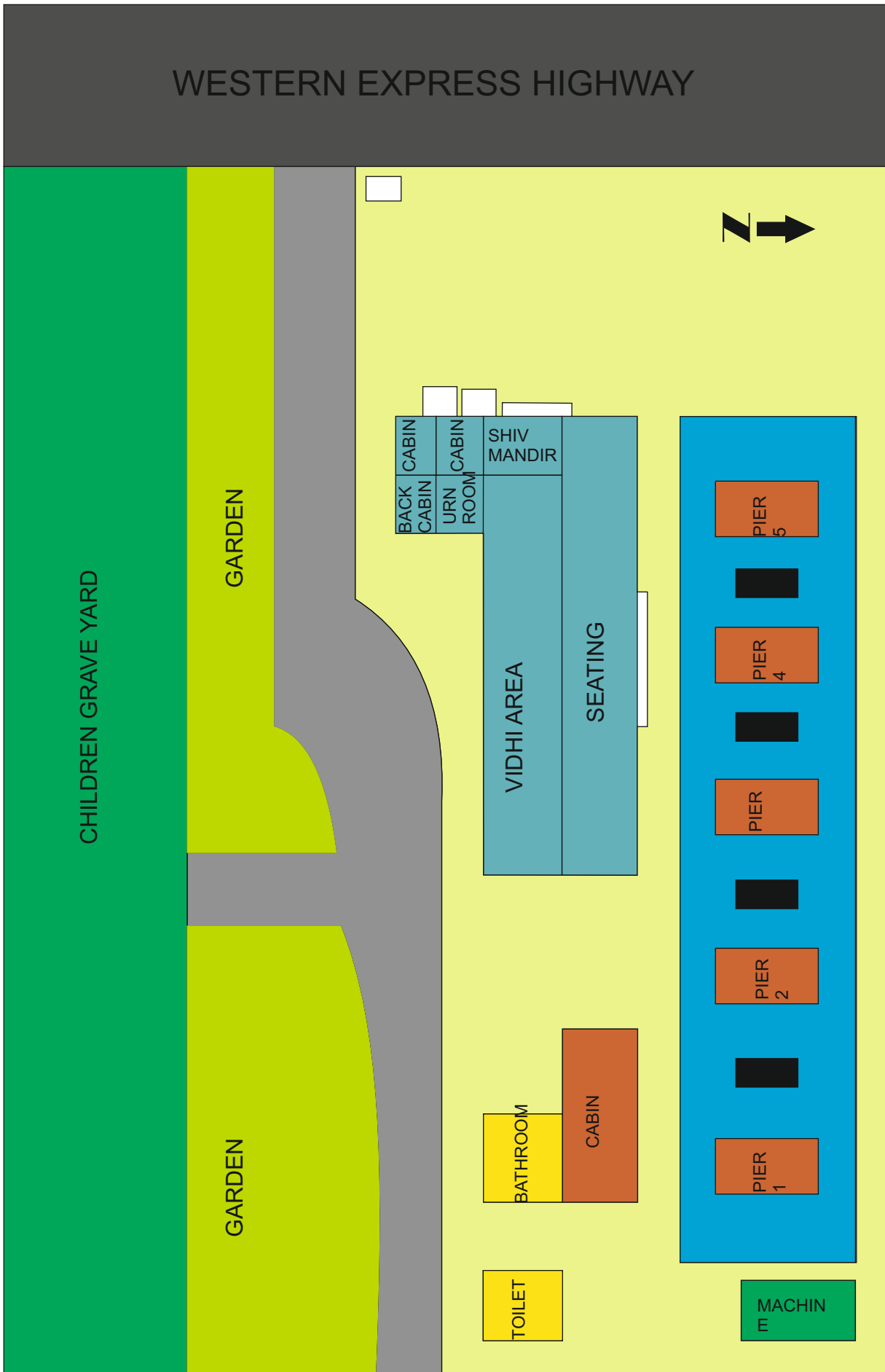
WEAKNESSES:

- Though the site is well planned it does not allow parking facility.
- The garden lacks proper seating facility to support the mourners who would gather near the children graveyard.

OPPORTUNITIES:

The area outside the crematorium can be used as a parking lot.



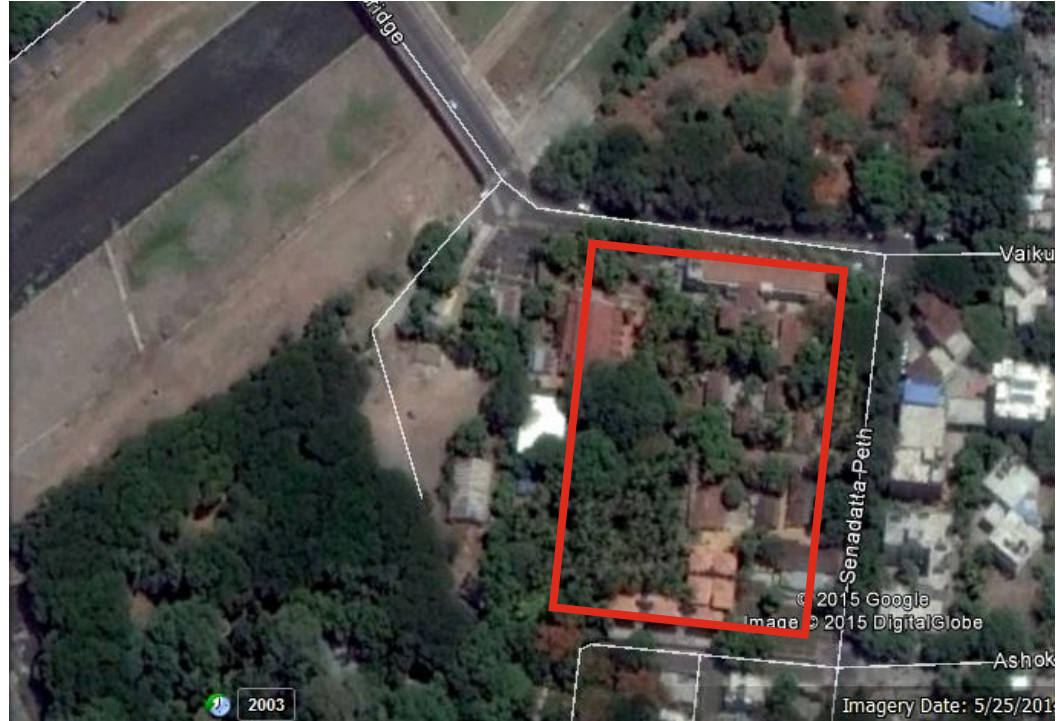


Case Study III

VAIKUNTHDHAM HINDU CREMATORIUM

LOCATION:

Located in Pune is a big Hindu crematorium. Set by the banks of river Mutha lies Vaikunthdham Hindu Crematorium.



ANALYSIS

- The site is quite big.
- It has facility for both traditional and electrical cremation.
- The site has a good big parking lot which is connected to S.M.Joshi bridge which lets the people to go accros the river. The parking is also connected to the internal road.
- The crematorium has 16 piers where open cremation takes place and 2 electrical combustion chambers.
- It has large store house and urn room.
- There are big gardens which allows people sit and spend some time.

STRENGTHS:

- The site has a river along side which also allow to conduct the final ash disposal rights.
- It is also well connected to the internal and the main road.

WEAKNESSES:

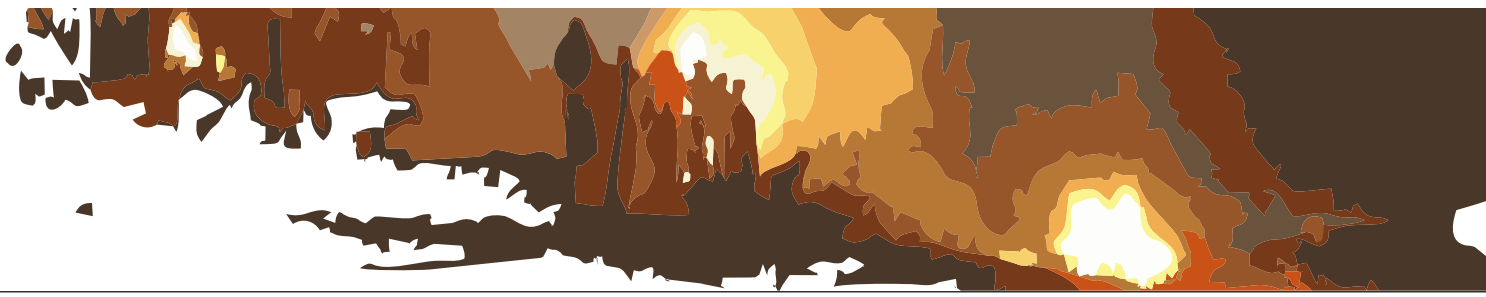
- The area near the river where the ash is disposed is unclean which makes the users difficult to dispose ash.

OPPORTUNITIES:

The garden provided has a scope for allowing users other than the people gathering for cremation purpose if its designed well.

Case Studies

NET

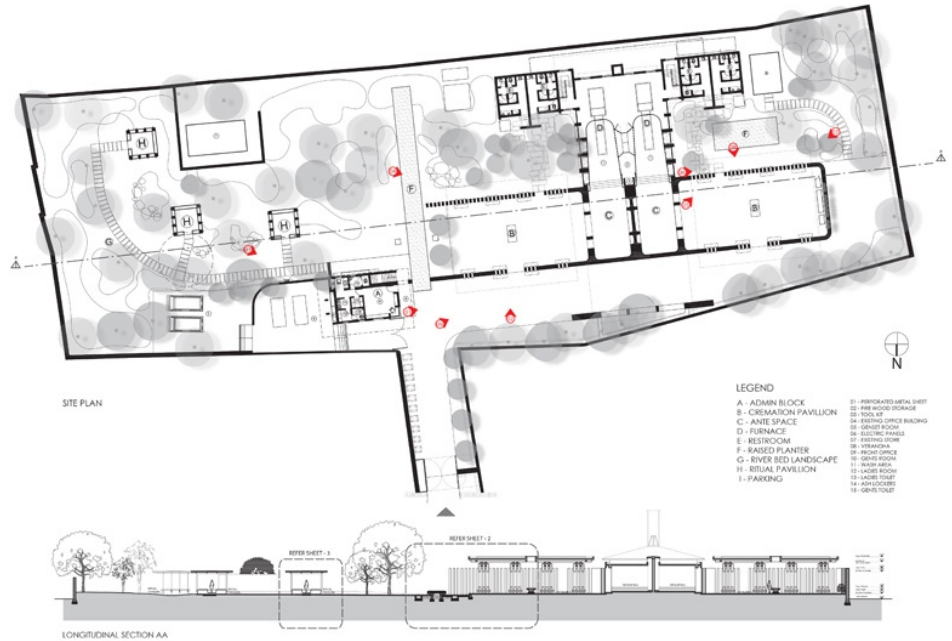


Case Study IV

CREMATORIUM CHARITY TRUST

LOCATION:

A crematorium for Crematorium Charity Trust is located in Coimbatore, Tamil Nadu designed by Manchini Studio. The total area covered is 4856 SQM.



ANALYSIS

- 2 large pavilions in form-finished concrete provide space for the last rites to be performed - often in attendance of large amount of mourners - before the body is taken to the furnace area.
- The next morning family members collect the ashes from the admin building and proceed into the garden where smaller pavilions shelter the required rituals.
- The design of the crematorium located in a dense part of the city is concerned with providing a humble but dignified environment evoking traditional landscape setting of the river banks where cremations used to be performed before the growth of the city made these impossible.

PUBLIC CREMATORIUM IN COIMBATORE FOR G.K.D CHARITY TRUST SOUTH INDIA

ARCHITECTURAL PLAN



Case Study v

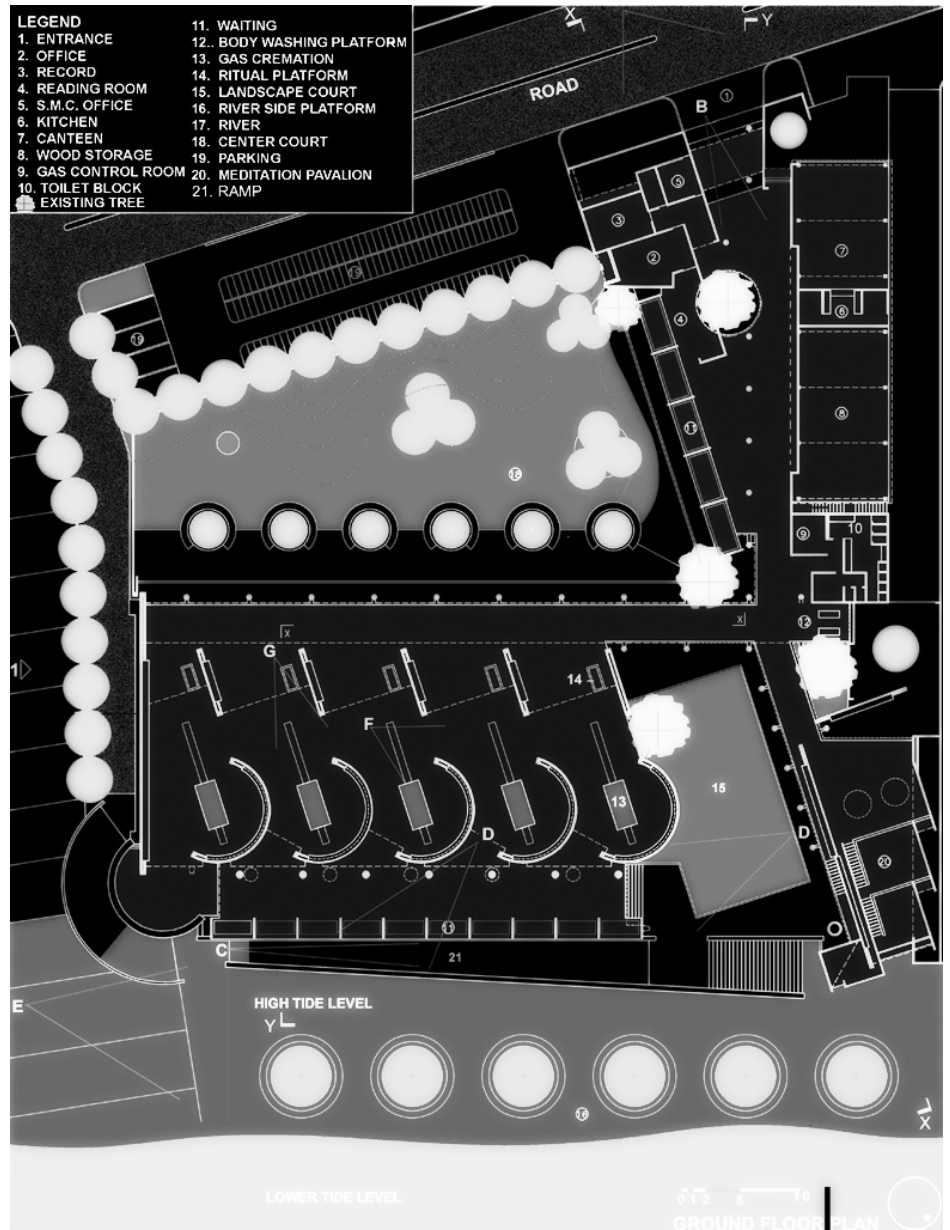
ASHWINIKUMAR CREMATORIUM

LOCATION:

Ashwinikumar crematorium is located in Surat, Gujrat designed by Matharoo architects

ANALYSIS

- The cremation place is marked by a pavilion-like structure standing in open ground outside the city limits.
- The ashwinikumar ghat (crematorium) is located on the banks of the river tapi in surat.
- Nothing of the inside is visible, stressing the unknown.
- Reciprocating life, the light on the wall narrates the changing nature of the day.
- A row of crescent-like walls enclose the furnaces, secluding the family from the world outside.





Case Study VI

ERODE CREMATORIUM

LOCATION:

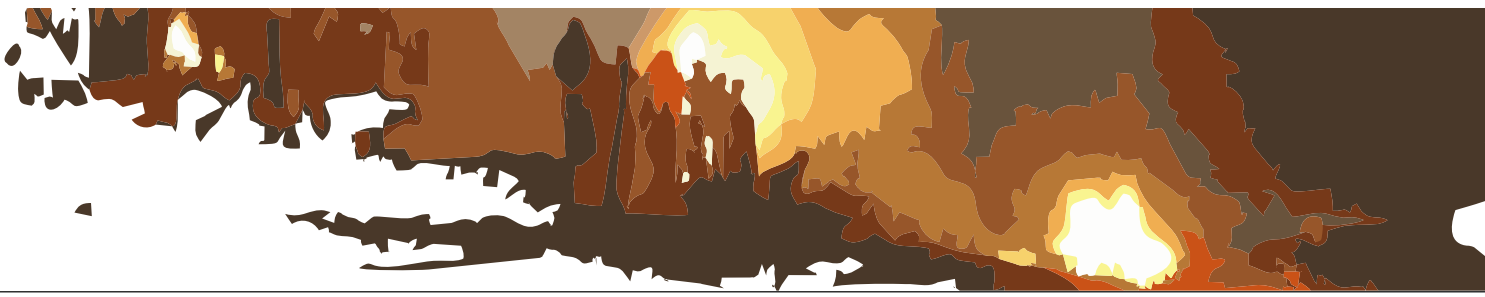
Erode crematorium located in Tamilnadu is designed by Murali architects

ANALYSIS

- Created series of pyramids and mandapams on the banks of the river cauvery which will create the desired moods to gather, cry, mourn, pray, pay respects, do the last rites and part with heart filled with the wonderful thoughts of the departed.
- The two crematoriums are pyramid-shaped with a chimney in the centre.
- The area around the crematoriums is landscaped.



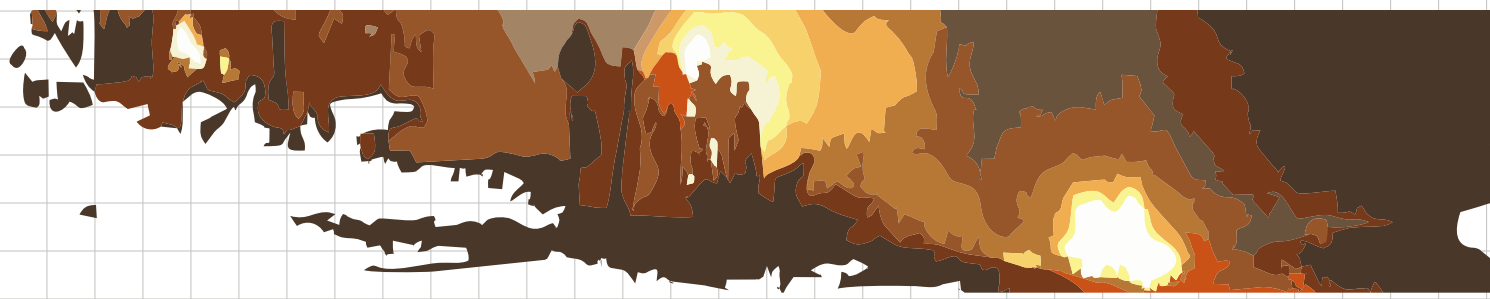
Pre-Design Study



CURRENT SCENARIO:

- The current conditions of most of the conditions of cemeteries and crematoriums are quite bad.
- Negligence by authorities and lack of staffs have made most of the sites vulnerable.
- Such unplanned and badly designed crematoriums and cemeteries have quite a lot affected the contexts.
- The city has a total of 202 crematoria and cemeteries, of which BMC manages 64. Of these 64, there are 43 crematoria, 13 cemeteries for Muslims (Shias, Sunnis, Dawoodi Bohras) and eight Christian cemeteries. Most of them, however, do not have proper security and are poorly maintained.

ARTICLES





GOING OUT IN STYLE

The crematorium is getting a facelift, and it is thanks to private enterprise

Joeanna.Rebello@timesgroup.com

Death, in Bollywood dramas, invariably meets its elegiac end on a riverside pyre at twilight. Never on an electric or wood furnace in a dreary municipal crematorium, where about 75% of the dead end up in most cities.

Urban crematoria are all function and little form: grim and banal, they have nothing of the sublime beauty of graveyards or the enigma of the Towers of Silence. Interestingly, cities like Coimbatore, Erode and Surat have signature crematoria designed by private architectural firms and widely cited in global architecture magazines. Commissioned typically by charitable trusts that manage these public facilities, they are sleek, unique and fittingly moving.

For Mancini Enterprises, an architectural concern in Chennai popular for its clubs and resorts, the crematorium was a first. It was commissioned by GDK Charity Trust, a non-profit that had built and operated a crematorium on behalf of the Coimbatore City Municipal Corporation in 1992. The facility built then had to be replaced by a new structure that made more room for the living. "People who'd attend the last rites couldn't fit into the old crematorium; they'd spill over into the portico," says G Venkatesh — project coordinator at the trust, whose crematorium runs two electric furnaces where around 18 bodies are incinerated daily. The new facility, completed last year, cost Rs 1.5 crore.

A grey cubist structure, resembling an elegant stack of Jenga blocks, the crematorium is spread across two pavilions and gardens that mimic the wanton vegetation of a riverside where cremations traditionally took place. "It is the pavilion and not the furnaces that are central to the design," points out architect Niels Schoenfelder of

Mancini Enterprises, who conceptualized a modern, secular space. "The landscape is also fundamental to cremation in India. They used to take place on the open river banks outside a city, but now happen indoors. So we designed two 'gardens' that approximate the wild, natural landscape of riverbanks," he adds.

Several years ago the people of Erode decided that their own dead deserved a dignified send-off. So on cue from a son-of-the-soil surgeon, Dr E K Sagadhevan, they collected Rs 3.5 crore, got the municipal corporation to part with 2.5 acres and a local resident with one, and had Chennai architect Murali Murugan produce an eye-catching two-pyramid complex, the Rotary



DANTE'S PEAKS: Aathma in Erode was built with contributions of Rs 3.5 crore. (Top) GDK Trust Crematorium in Coimbatore

Aathma Modern Crematorium.

"In most crematoria the body is sent to the furnace, the mourners depart and the family is left alone to gather the ashes. I wanted to create a clean, mesmerising space where relatives could wait while the body was burning and listen to soulful music and bhajans," says Murugan, who worked pro bono on the project. "Many in small towns don't have a decent place to keep the body; and in places where flats are small, people erect a pandal on the street for people to pay homage. At Aathma, the body can be brought in straight from the hospital, relieving people from these constraints."

R Anandan, 29, a teacher in Erode, cremated her younger brother this January at Aathma. "It was an improvement from

what we had before, when bodies were cremated on the banks of the Cauvery," she says. "We had to pay almost Rs 5,000 before, for firewood, kerosene, diesel, cowdung cakes and to the person who performed the last rites. The undertakers were always drunk, behaved badly and demanded Rs 500 each, and new veshtis. They were blind to our sorrow."

While GDK crematorium charges Rs 750 per use and the one at Erode, Rs 600 (the very poor pay nothing), most civic-run crematoria are otherwise free.

One of the predecessors of the modern, architecture-school-conceived crematoria is perhaps the Ashwinikumar crematorium in Surat, on the river Tapi. Designed by Matharoo Associates in 1998, it was born of a national competition that sought a new incarnation of the crematorium. The design, which fleshed out such esoteric cosmic notions as 'the unknown after death' and 'the solitariness of the soul', was such a departure from the norm, it even won UK's Architectural Review's Editor's Choice Award in 2002.

But frills like these are possible only in private crematoria, argues a senior public health officer from the Municipal Corporation of Greater Mumbai, which recorded 93,000 cremations last year. "When a private trust builds and runs a crematorium (with license from the civic authority) the sky's the limit, as long as they meet the basic criteria of a crematorium, like providing a mourner's shed, a meditation hall, drinking water facilities and toilets," says the officer who did not want to be named. "Remember, a public crematorium is built with public money, and the authorities see no sense in using marble over Kota. Moreover, as government-run crematoria are completely free, there's no room for trimmings."

With inputs from Pratiksha Ramkumar in Coimbatore

HARD TO HANDLE

GHMC CREMATORIUMS AT

- **Punjagutta ● Amberpet**
- **S.R. Nagar ● Bansilalpet**

“ The operation of modern facilities is being affected owing to objections raised by locals, mainly at Punjagutta, Amberpet and S.R. Nagar. Also, unclaimed bodies are not released immediately because of the medico-legal circumstances. Hospitals and police, too, do not try to hasten up the procedure.

— GHMC OFFICIAL

PROBLEMS GALORE

- **All crematoriums in the city have been facing resistance from local residents**

- **Police and mortuaries take time to hand over unclaimed bodies to crematoriums**

- **By the time unclaimed bodies are brought to crematoriums, they are in a decomposed state**

- **Machinery at crematoriums is developing snags due to the decomposed state of bodies**

५ कोटींचे वैकुंठधाम



हा बगीचा नाही तर गुजरातमधील बारडोली येथील वैकुंठधाम (स्मशानभूमी) आहे. येथे कॅन्टीनसहित सर्व सुविधा आहेत. जेणेकरून अंत्ययात्रेत सहभागी झालेल्या लोकांना कोणतीही अडचण येऊ नये. हे वैकुंठधाम तब्बल ५ कोटींची रक्कम खर्च करून तयार करण्यात आले आहे. येथील बाथरूममध्ये गरम व थंड पाण्याची व्यवस्था आहे कारण अंत्यसंस्कार झाल्यावर अंत्ययात्रेतील लोकांनी स्नान करण्याची परंपरा आहे. बारडोली परिसरातील ४५ गावे या स्मशानभूमीचा वापर करतात. त्यात भगवान शंकराच्या प्रतिमेव्यतिरिक्त ५१ देवीदेवतांच्या मूर्ती स्थापित करण्यात आल्या आहेत. दोन गॅसच्या व तीन उंच चिमनी असलेल्या शवदाहिका आहेत. त्यामुळे लाकडांचा वापर कमी होतो.

Plans for CNG crematorium in pet cemetery

Wednesday, 22 December 2010 - 12:51pm IST | Place: Pune | Agency: DNA

The Pimpri Chinchwad Municipal Corporation has decided to make budgetary provision for a compressed natural gas crematorium in its pet cemetery located in Nehrunagar, Pimpri.

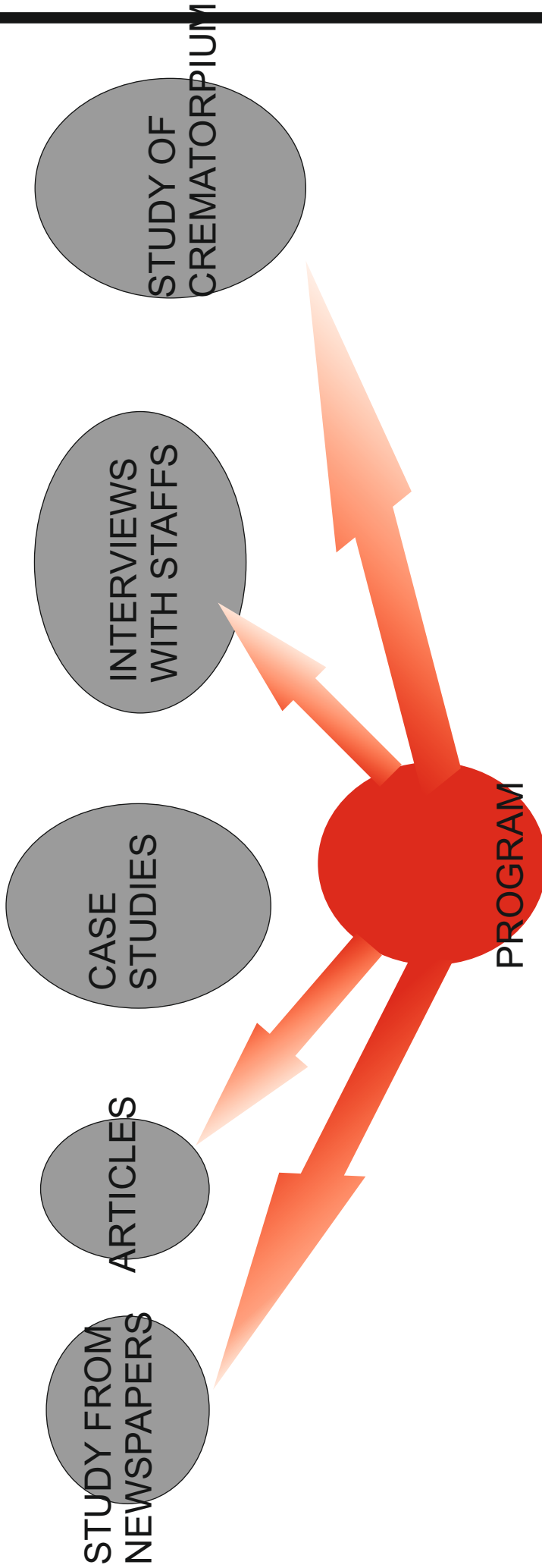
The Pimpri Chinchwad Municipal Corporation (PCMC) has decided to make budgetary provision for a compressed natural gas (CNG) crematorium in its pet cemetery located in Nehrunagar, Pimpri.

PCMC veterinary department head, Dr Satish Gore, told *DNA* on Tuesday, “We are planning a CNG crematorium as it is cheaper than LPG. The expenditure for the project is around Rs25 lakh. A proposal will be tabled in the standing committee.”

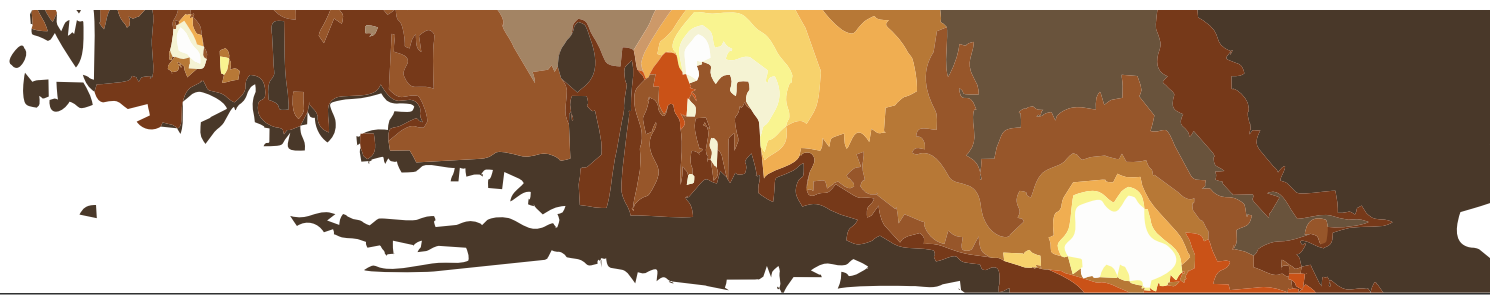
According to civic officials, it will not only speed up the disposal of animal carcasses, but also save space.

At present, the cemetery is nearly full. Over the last three years, it has witnessed as many as 1,080 burials at the rate of approximately one animal per day.

Gore added that the new CNG crematorium will dispose of the body in three to four hours and will also save space.



Site



THE PROPOSED SITE IS CURRENTLY USED FOR THE SAME PURPOSE. THE PROPOSED SITE WAS SELECTED DUE TO ITS CONTEXT AND EVEN DUE TO LARGE AREA ALLOTTED FOR ITS PARTICULAR FUNCTION BUT NOT USED WISELY, DEVELOPED SPORADICALLY.

LOCATION:

The site is located in worli one of the original seven islands of bombay. It is located in g-south ward. The site is located well near mahalaxmi race course on dr e moses road. There are two jewish cemetery islamic as well as christian cemeteries.

PRESENT CONDITION :

The site which is around 10.9 acre constitutes a japanese cemetery which is among the oldest cemetery in mumbai built in 1907 and the only one in mumbai. The site even has a parsi praying hall which is under construction. The site has admin block , storage for wood, electric crematorium and has 10 wooden pyres out of which only 5 are in working condition, a shiva temple is also provided which is also in a bad state.



SITE GEOGRAPHY : The site has many raised ground levels since there is burial provision also.

SITE NETWORK : The only road that connects the site is Dr. E Moses road.



SURROUNDING LANDUSE :

The site is majorly surrounded by slum clusters. Near the site there are other cemeteries as well, there are few industrial areas and even residential.

STRENGTHS:

- The site which is 43890 SQM is big enough to accommodate the program.
- There is Dr. E Moses road which makes the site easily accessible by road

WEAKNESSES:

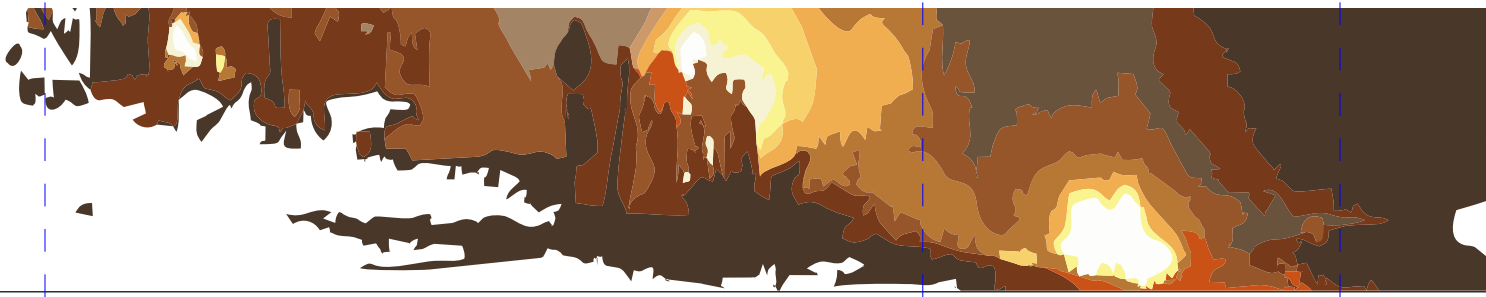
- Due to negligence of the authorities the existing crematorium is in quite delapidated state.
- Due to low security the site is used by drunkards
- The site has too many overgrown trees which uproots the graves during rainy season.

OPPORTUNITIES:

- A well designed space will reduce the current threats on the site
- Provision for accommodating staffs would maintain the space.



Design



USER	No.	ACTIVITY	SPACE	No.	SERVANT SPACE	NATURE OF SPACE	AREA SQM.
VISITORS	300	PARKING FOR THE VISITORS	CAR PARKING	100	-----	ACTAS A BUFFER SPACE, WITH LARGE ENTRANCE MAKING IT A LANDMARK	3000
CLERKS	2	ADMINISTRATIO N	RECORD OFFICE	1	TOILETS WAITING AREA	SHOULD BE WELL VENTILATED , NEAR THE ENTRANCE.	15
PANDITS	3		STAFF OFFICES	3			15
PEONS	1		----	----			-
FAR RELATIVES OF THE DECEASED/PEOPLE COMING TO THE PARSI PRAYER HALL	60	TO EAT	CANTEEN	1	KITHCHEN STORAGE	SHOULD BE SECLUDED FROM OTHER AREAS CONNECTED TO THEROAD WELL VENTILATED NEAR EXISTING PARSI PRAYER HALL	120
STAFF WORKERS	2-4	TO STORE URNS	URN ROOM	1	COUNTERS	CLOSED OR SEMIOPEN NEAR THE ENTRANCE	10
STAFF WORKERS	20	TO STAY	2 BEDS ROOM	10	TOILETS PANTRY	CLOSED WELL VENTILATED VIEWING OTHER AREASOF THE SITE	20
VISTORS		PRAY / MEDITATE	TEMPLE/SHRINE	1	COURTYARD	NEAR ENTRANCE EASILY ACCESIBLE SEMI OPEN SPACE	300
VISTORS	10-50	TO ASSEMBLE DURING THE PROCESSIONS	ASSEMBLY AREA	10	-----	SURROUNDING CREMATION PYRES OR CREMATION CHAMBERS SEMIOPEN SPACE FACING PYRES OF CHAMBERS	60-70
VISTORS	50-150	PLACE FOR OTHERS EVENTS	VIDHI AREA	2	PANTRY	SEMIOPEN AWAY FROM CREMATION PYRES WITH OR WITHOUT COURTYARDS	300

GRAVE YARD :

AREA FOR A GRAVE OF 1 ADULT HUMAN BODY = 3.5 SQM . TOTAL PLANNED 500 GRAVES TOTAL AREA = 1750 SQM

CREAMATION:

AREA FOR 1 WOOD BASED FURNACE = 3.5 SQM (2 x 1.75) . TOTAL PLANNED 4 , TOTAL AREA = 14

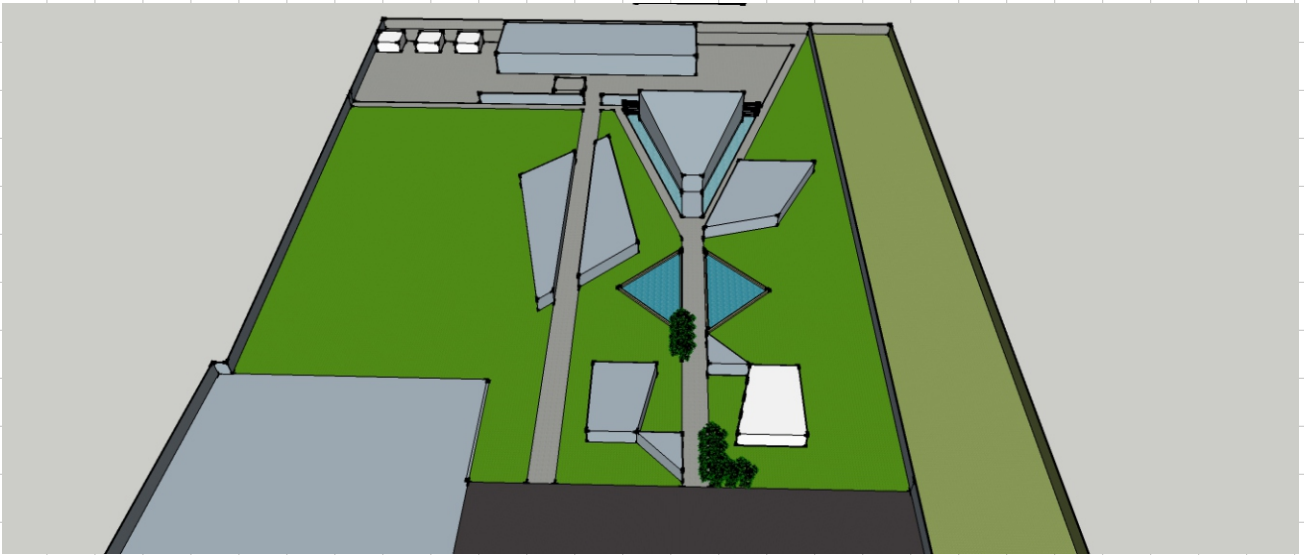
AREA FOR 1 ELECTRIC CREMATION CHAMBER 8000SQM . TOTAL PLANNED 6 TOTAL AREA 6000 SQM

BUILDINGS	SPACES	AREA (SQM) TOTAL + 10% SERVANT SPACE +20% CIRCULATION
ADMIN BUILDING	RECORD OFFICE STAFF OFFICE URN ROOM	75
CANTEEN		160
STAFF QUARTERS		260
TEMPLE		390
VIDHI AREA		780
BATHING AREA		50
GRAVE YARD		2280
WOODEN CREMATION		20
ELECTRIC CREMATION		780
TOTAL		4795

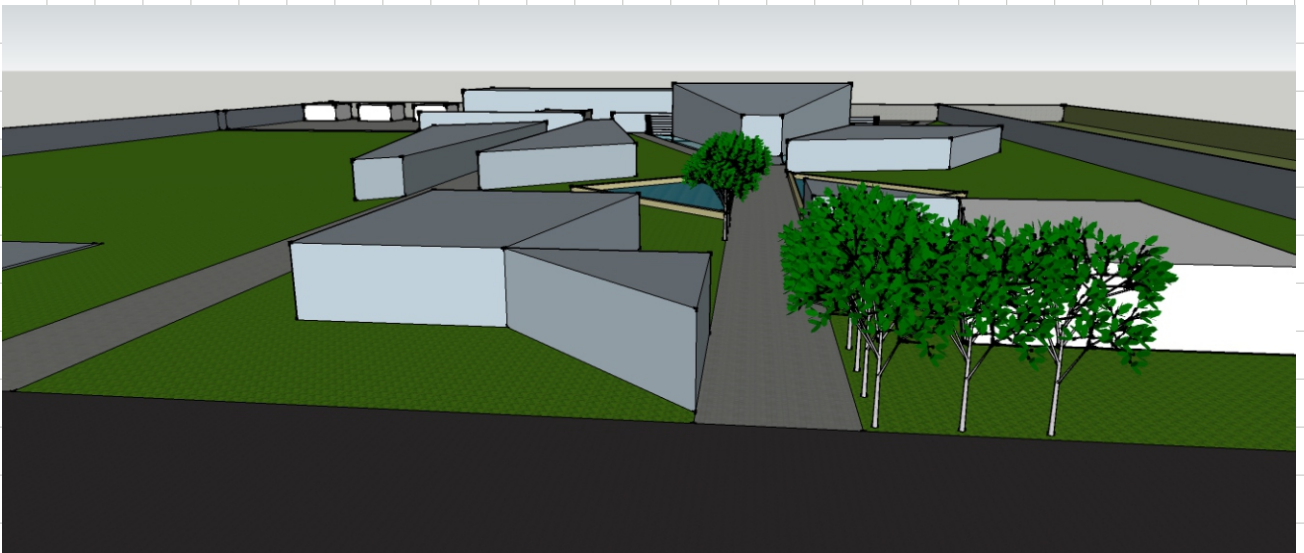
	AREA (SQM)
PARKING	3000
ASSEMBLY AREA	700
BUILTAREA	4795
TOTAL	8095
15% CIRCULATION	1214
10% LANDSCAPE	810
TOTAL SITE	10159

THE MINIMUM SITE USED WOULD BE 10119 SQM WHERE AS THE ACTUAL SITE IS 43700 WHICH ALLOWS ME TO INCREASE GRAVE YARDS AND ADD LANDSCAPE ELEMENTS.

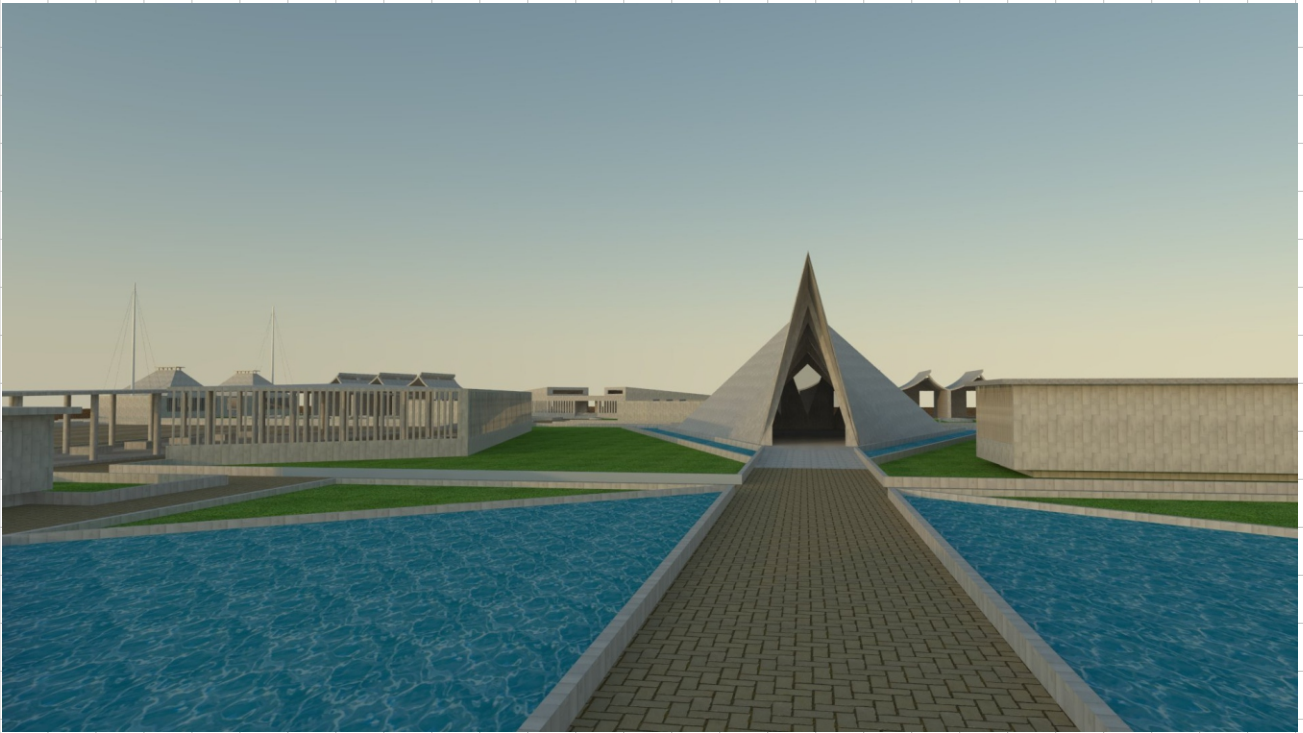




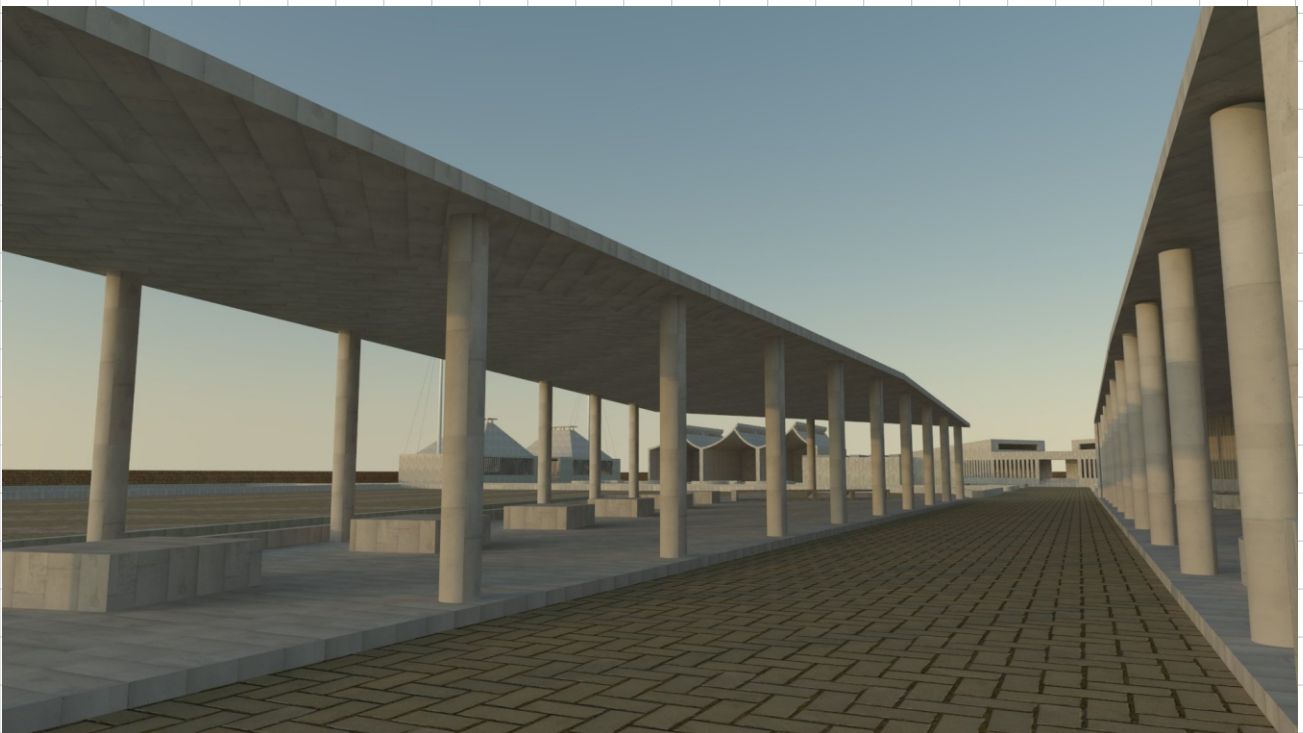
MASSING



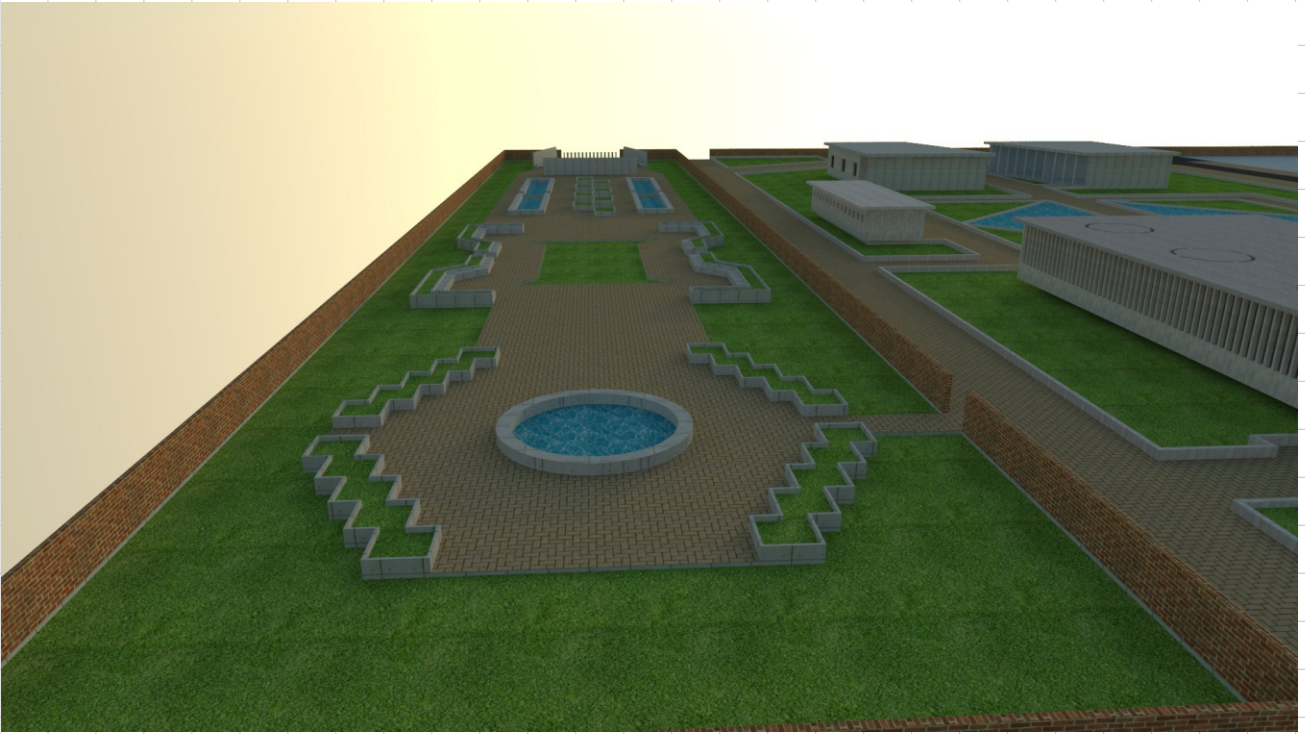
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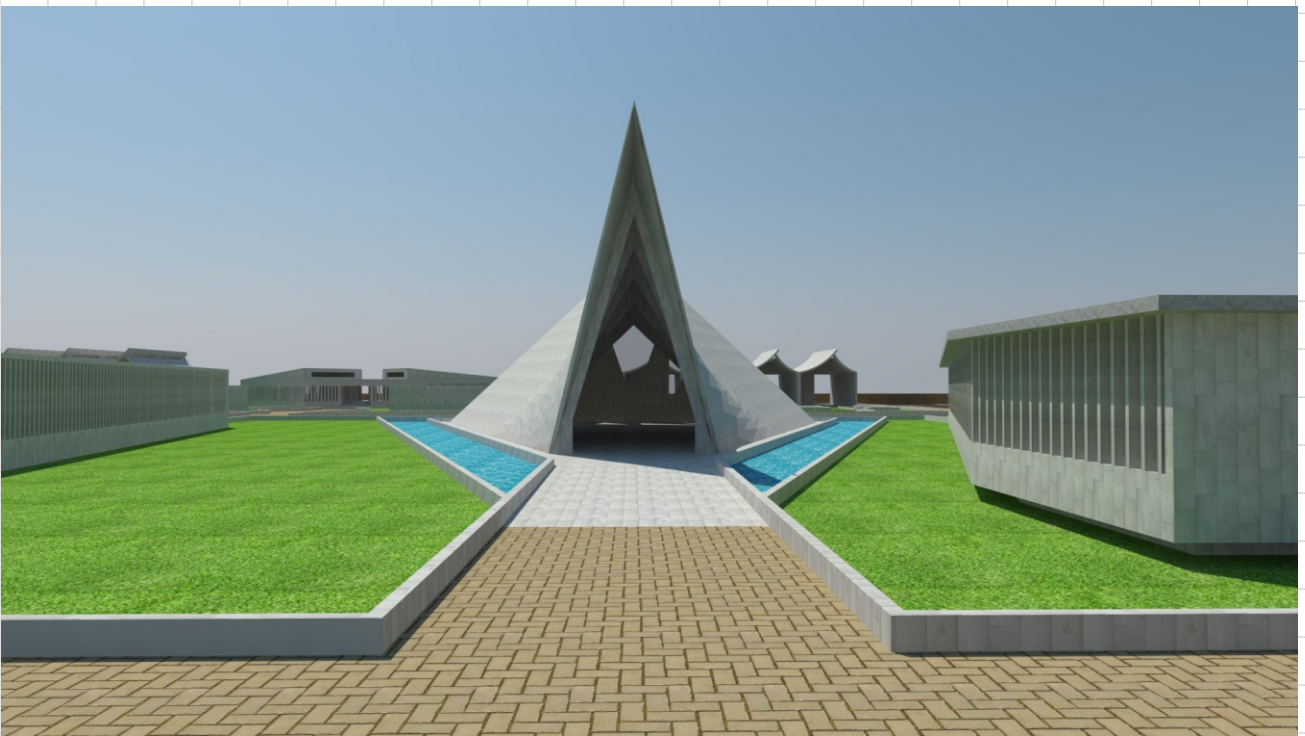
ENTRY TOWARDS VIDHI AREA



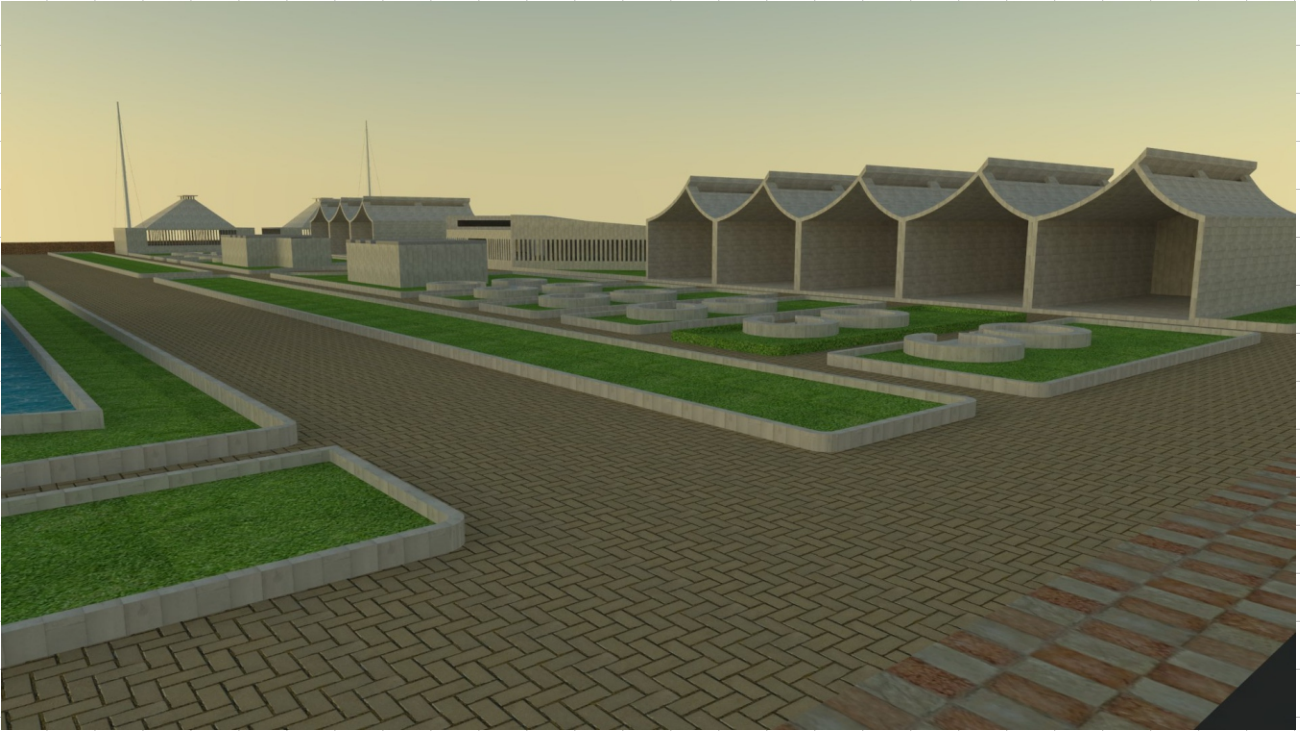
BURIAL RITUAL AREA



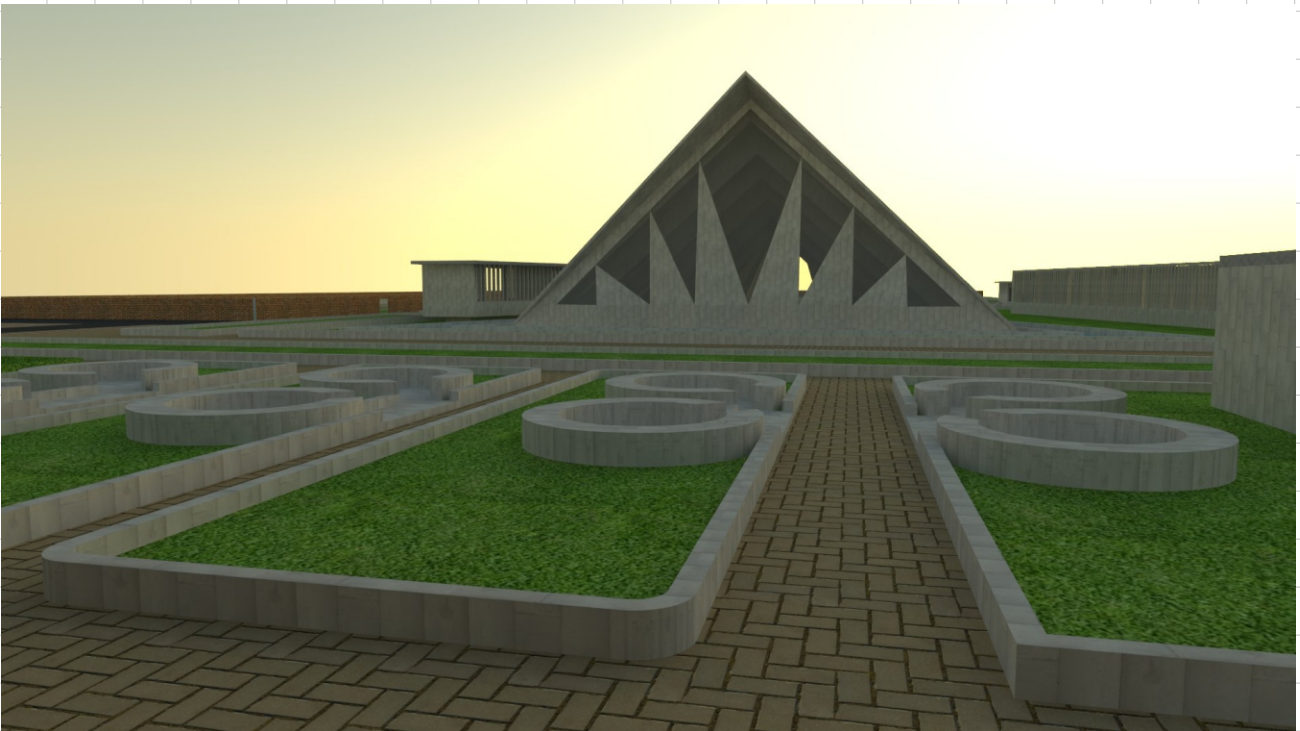
VIEW OF LANDSCAPE AREA



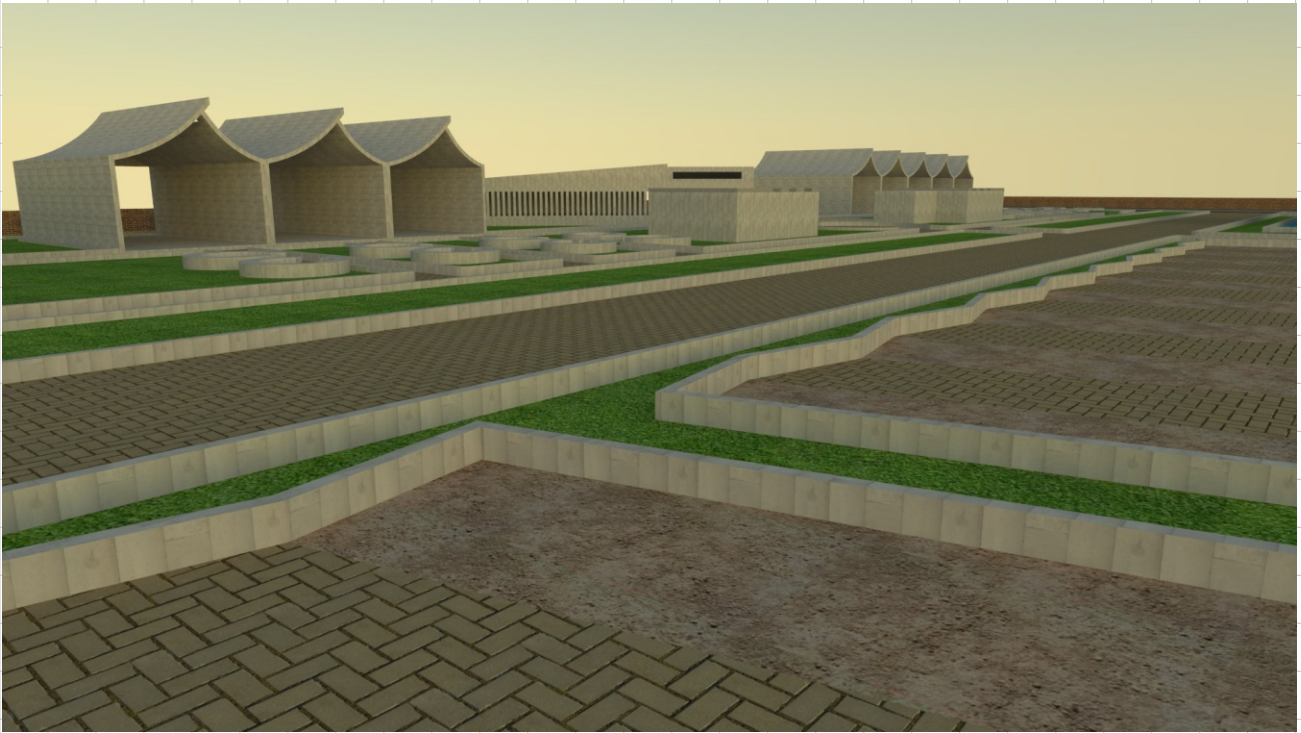
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VIEW OF ELECTRIC CREMATORIUM



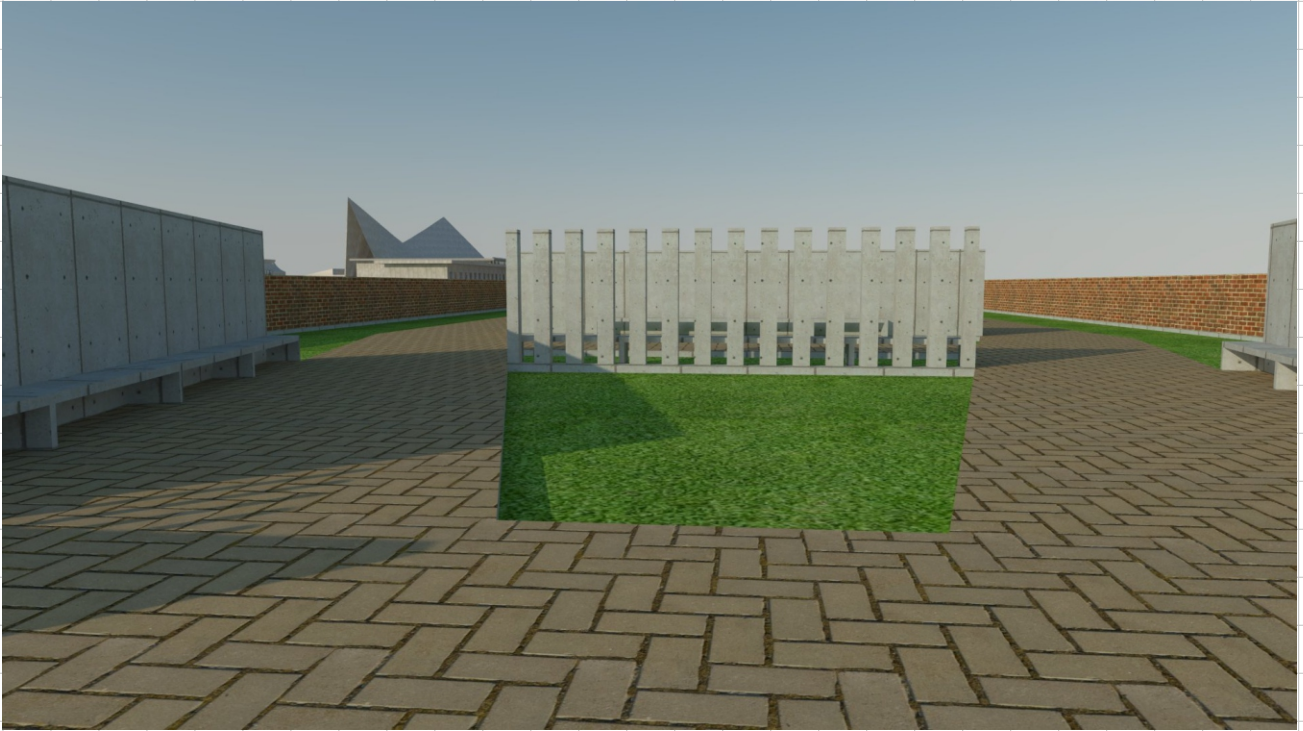
VIEW OF VIDHI AREA



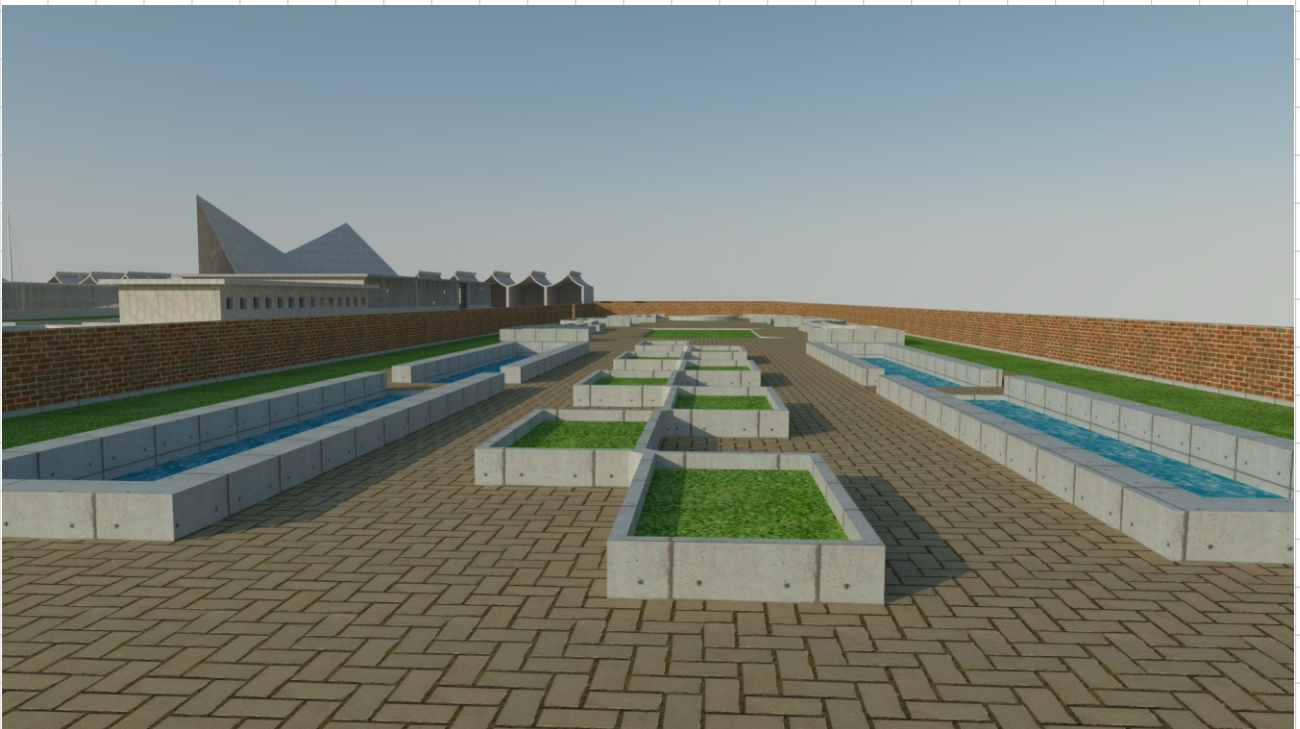
VIEW OF ELECTRIC CREMATORIUM



VIEW FROM VIDHI AREA

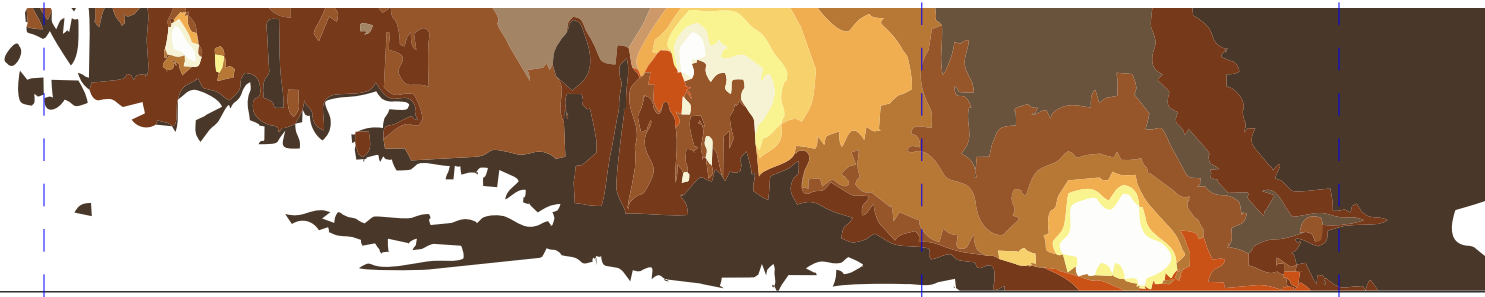


ENTRANCE TOWARDS PUBLIC GARDEN



PUBLIC GARDEN

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