

## *Appendix C*

# ENVIRONMENTAL IMPROVEMENT OF MANIKARNIKA GHAT VARANASI

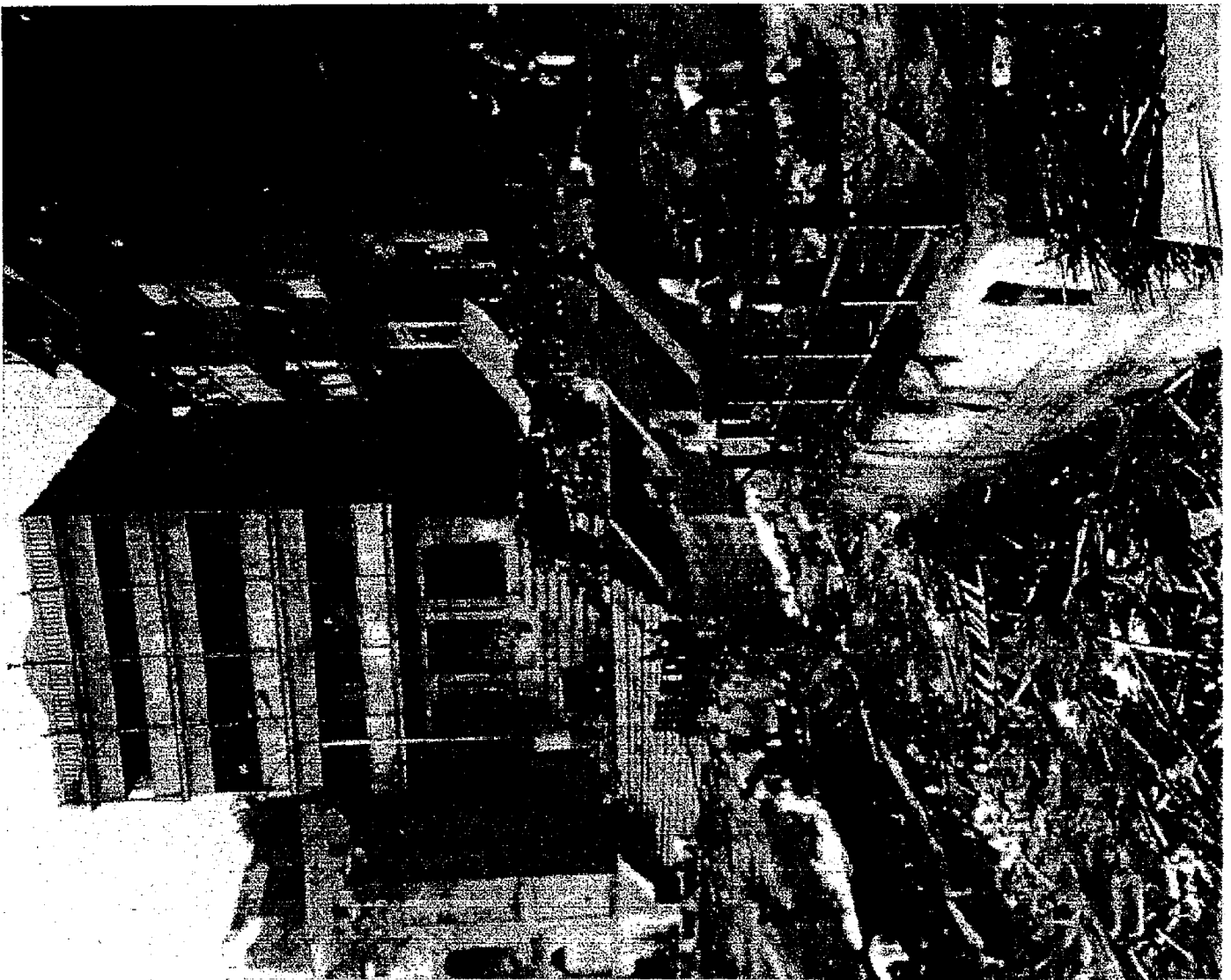
REPORT  
Volume-I

Clients

JAPAN INTERNATIONAL CO-OPERATION AGENCY (JICA)

Consultants

HOUSING AND URBAN DEVELOPMENT CORPORATION (HUDCO)



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prepare Master Plan for sewerage and non-sewerage activities aiming to reduce pollution load on River.

**2.3** One of the main components of the ongoing Master Plan project is to improve conditions of the sanitation and hygiene standards of Ghat in Varanasi on pilot basis.

**2.4** Therefore, JICA has undertaken the Pilot Project for Construction and Renovation of Facilities at Manikarnika Ghat, Varanasi within the Improvement under the JICA Study on Water Quality Management Plan for Ganga River. The JICA shall be financing and monitoring this Project and has appointed Housing and Urban Development Corporation (HUDCO) as "Local Consultants" for providing consultancy services.

**2.5** it is envisaged to create some facilities like public toilets, bathing room, cloakroom, waiting room, de-silting pump facility etc. besides improvement/rehabilitation of existing steps and platform for cremation. The proposed Pilot project will be implemented by JICA as grant-in-aid.

## **2.6 Other Activities**

The Japan International Cooperation Agency shall hold Stakeholder Workshop for identifying the Pilot Project components. In the conceptual, basic and detailed design stage, the following workshops, comprising of the local stakeholders are planned and will be hosted by the JICA Study Team to assist the formulation of conceptual and basic design, operation and maintenance (O&M) plan and public participation and awareness (PP&A) programmes.

## **1.0 AIMS & OBJECTIVES**

**1.1** Japan International Cooperation Agency (JICA) and Varanasi Municipal Corporation (VMC) have initiated the task of Environmental Improvement and revitalisation of the manikarnika ghat with the following aim:-

To demonstrate the possibility of improvement of a Ghat by undertaking environmental improvement, provision of basic amenities and facilities while keeping the cultural attributes, ambience and architectural value intact. This exercise if successful, would help in evolving such improvement schemes for other ghats as well.

**1.2** The objectives of the Pilot Project are as follows:

1. To construct and/or renovate facilities to improve sanitation, hygiene and environment of the Manikarnika Ghat, and
2. To maintain the facilities properly by appropriate Operations and Management mechanism and Public Participation/awareness activities.

## **2.0 ROLE OF JICA: JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)**

**2.1** Japan International Cooperation Agency is the official agency responsible for the implementation of technical programs of the Government of Japan.

**2.2** On request of Govt. of India, Govt. of Japan is implementing the JICA Study on the Water Quality Management Plan for Ganga River since March 2003. A Steering Committee was constituted by the Ministry of Environment & Forests, Govt. of India for the JICA study. From time to time meetings are convened in the National River Conservation Directorate, Ministry of Environment & Forests. The Study is focused on four Cities i.e. Varanasi, Allahabad, Kanpur and Lucknow and the major objective of the Study is to

disciplinary professional background of architecture and town planning, civil engineering, environmental engineering and management, community development, urban infrastructure, finance, law, systems, economics, human resource development etc. HUDCO has its office network all over India.

### 3.4 Major Thrust areas in Consultancy Services

- Township Development
- Disaster Rehabilitation
- Community Development Efforts:
- Waste Management Efforts
- Urban Conservation And Tourism Development
- Landscape Planning And Environmental Conservation
- Weaker Section Housing
- Affordable Materials And Innovative Technologies

### 3.5 Scope of Work for the Project

HUDCO is the providing "Comprehensive Architectural and engineering consultancy services" to JICA on the Pilot Project for Environmental Improvement of Manikarnika Ghat. A study of the existing scenario of Manikarnika Ghat area had been conducted and the various proposals pertaining to the pilot project have been finalized by HUDCO. The participation of the various stake holders has been garnered for discussion on the various project proposals. Based upon the findings and suggestions the locations and design for the nine components have been finalized.

The Scope of work as per the contract document shall include conceptual, basic and detailed design, tender preparation, tendering and construction supervision. The scope of work is expected to cover the following:

### 3.0 ROLE: HOUSING & URBAN DEVELOPMENT CORPORATION LTD. (HUDCO)

Housing & Urban Development Corporation Ltd. (HUDCO) is a premier institution in the Urban development sector in the country. HUDCO was set up in 1970 as a fully owned Government of India Enterprise.

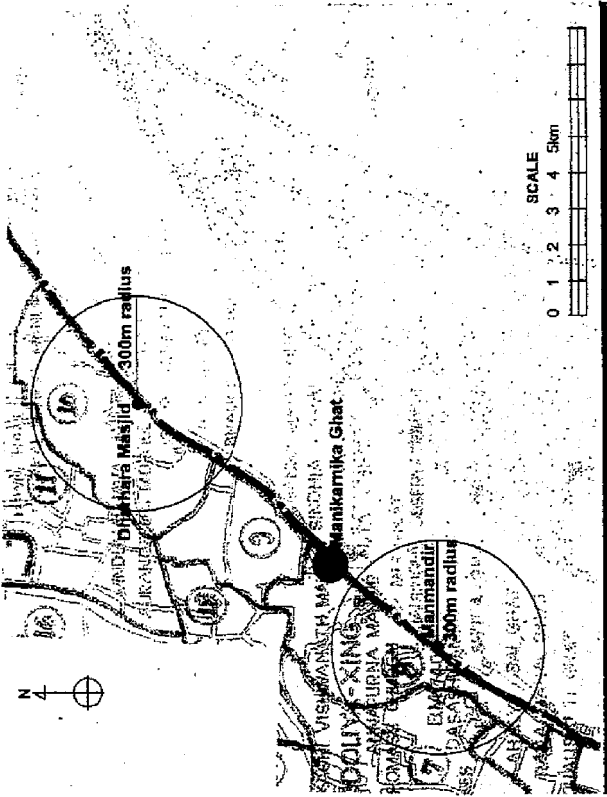
3.1 HUDCO has emerged as the leading national technological institution with the major objective of financing/encouraging the housing activity in the country and also the development of urban infrastructure of human settlements. In the year 2002-2003 HUDCO made Sanctions worth Rs 15627 crores and releases worth Rs. 8179 crores for Housing and Urban Infrastructure Projects.

### 3.2 HUDCO's cardinal objectives:

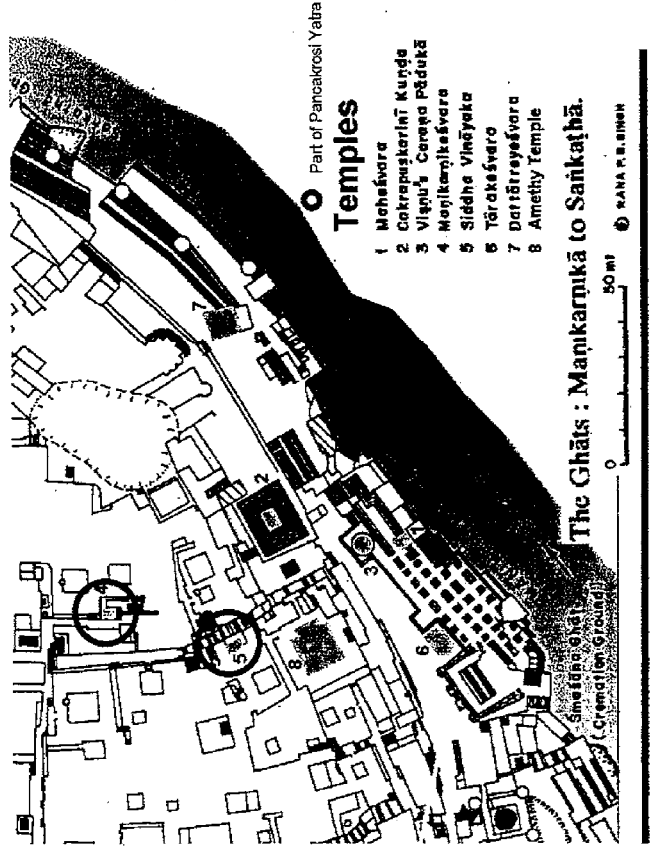
- To finance or undertake housing and urban development programs in the country
- To provide long term finance for construction of houses for residential purposes in urban and rural areas
- To finance or undertake, wholly or partly, the setting up of new or satellite towns.
- To finance or undertake the setting up of building material industries
- To promote, establish, assist, collaborate and provide consultancy services for the projects of designing and planning of works relating to housing and urban development programs in India and abroad.

### 3.3 Organisation Capabilities

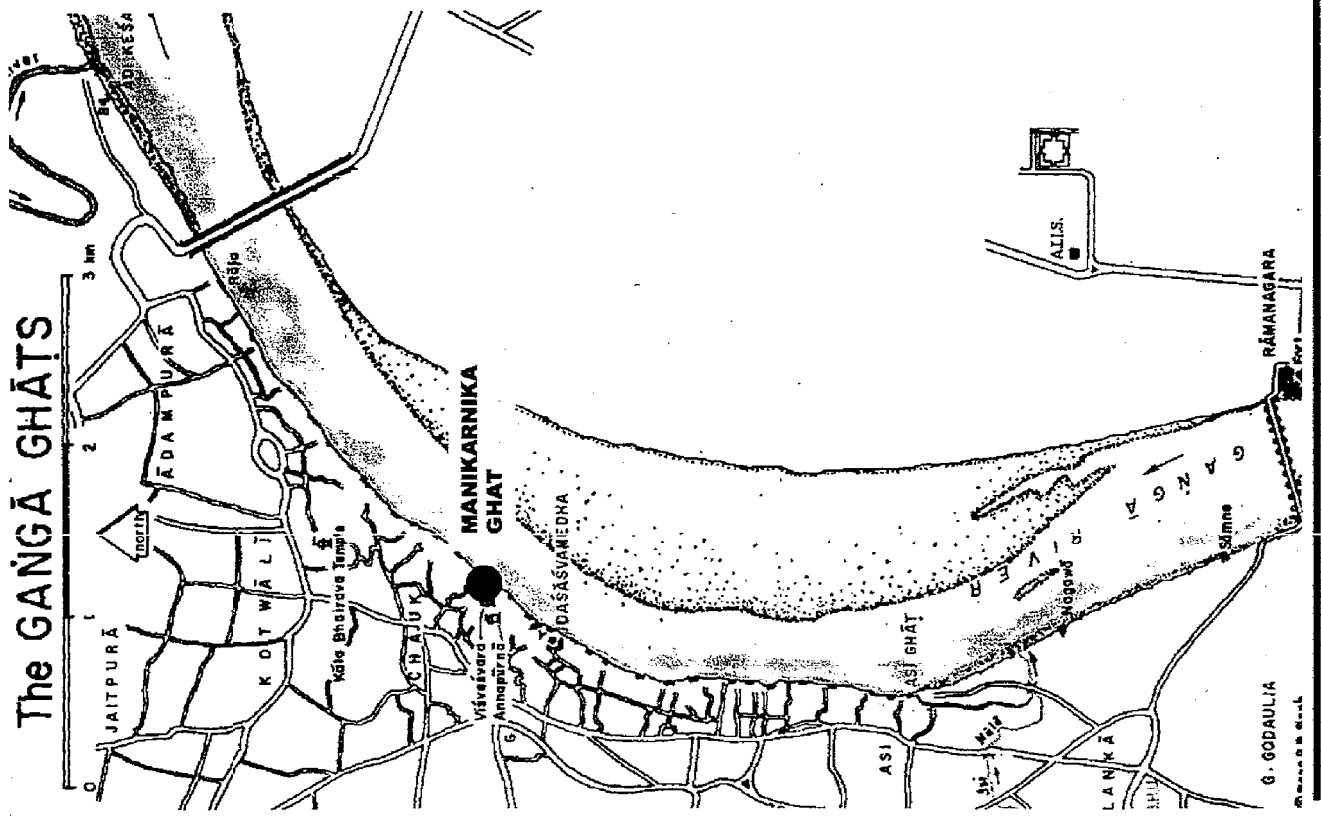
HUDCO is a professionally run organisation with about a thousand employees, more than 550 of which are executives with multi-



Plan showing A.S.I. Boundaries



Cultural Resources



Location of Manikarnika Ghat

### **3.5.1 Study on present condition of the Manikarnika Ghat**

- Data Collection and study on existing facilities.
- Data Collection, review and study on design flood water level and monthly mean water level.
- Data Collection and study on local contractors and their qualification.

### **3.5.2 Topographic Survey for whole the Manikarnika Ghat**

- To reveal topographic condition of the Ghat.
- Technical Specifications (Topographic Survey) for details).

### **3.5.3 Soil Mechanics Survey of the site**

- To reveal soil type by core boring and the condition of foundation by standard penetration test or equivalent method.
- To recommend type of foundation to support facilities.

### **3.5.4 Conceptual and Basic Design (C/D, B/D) of the proposed facilities**

- Study of conceptual design (location, arrangement, scale, quality, etc.).
- Review of design criteria and standards.
- Preparation of design alternatives.
- Basic design and preliminary cost estimate.
- Preparation of basic design drawings.
- Preparation of a bird's eye view picture.
- Socio-environmental impact assessment, and

- To assist the JICA Study Team in the workshops of working group in Varanasi.

HUDCO shall incorporate the results of the workshop in their design. The design shall be approved by the workshop stakeholders.

### **3.5.5 Detailed Design (D/D)**

- Structural design.
- Preparation of detailed design drawings.
- Preparation of bill of quantity and unit price.
- Cost estimate.
- Construction schedule.

### **3.5.6 Tender Document Preparation**

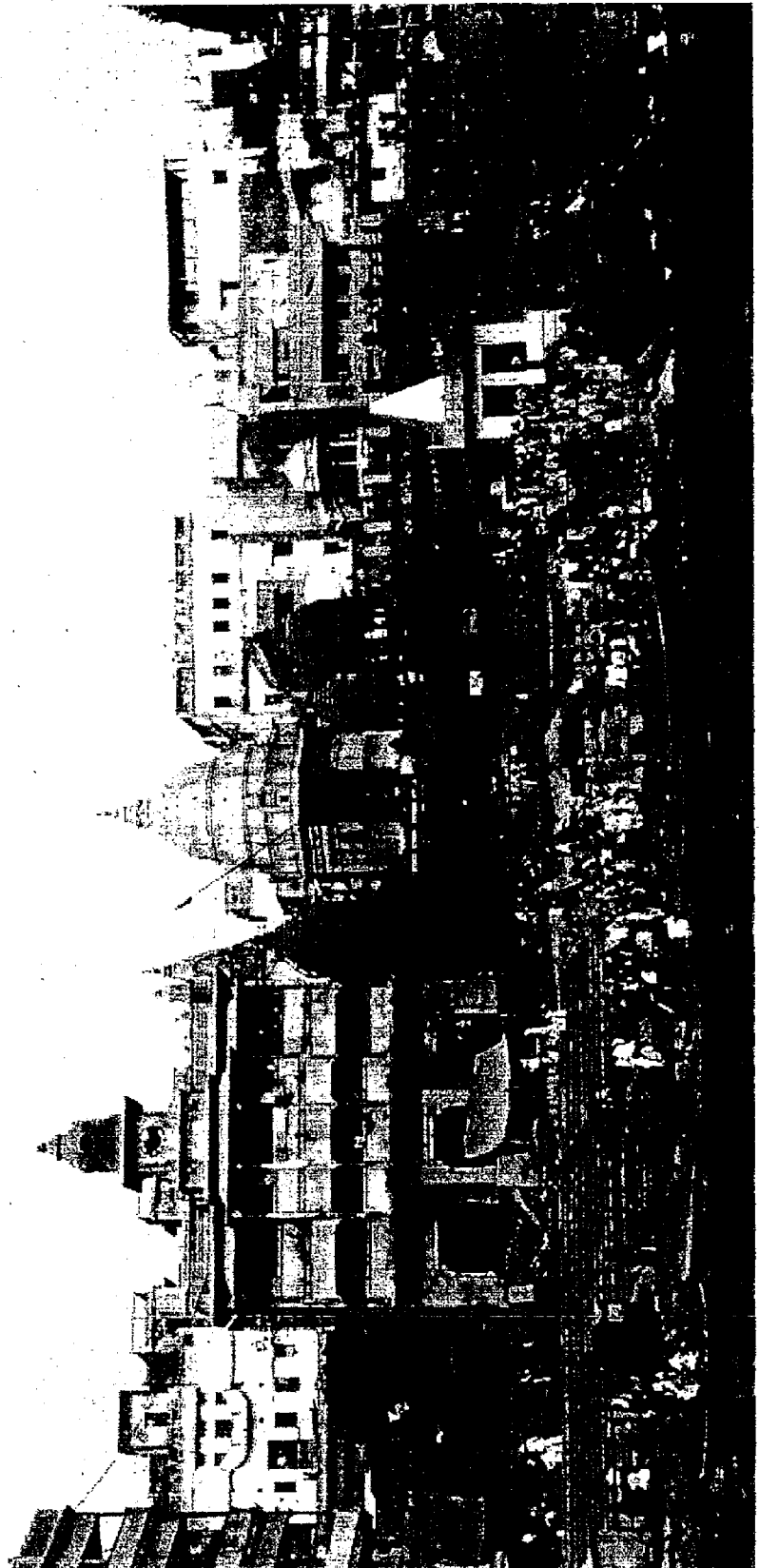
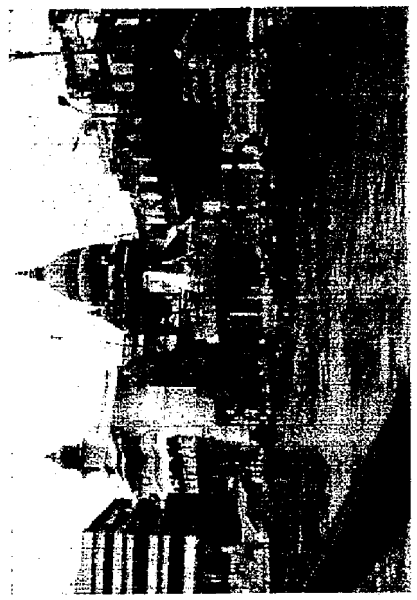
- Preparation of tender document with tender drawings.

### **3.5.7 Tender and Evaluation**

- To assist the JICA Study Team in tender call, tender open, evaluation and contract.

### **3.5.8 Construction Supervision**

- To hold periodic supervisions during the implementation of the project.



**Glimpse of Manikarnika Ghat from river side**



- iii) The spot where the holy River Ganga turns towards Himalayas as she does at Varanasi is considered supremely auspicious. The River Ganges is the all-determining symbol at the heart of the Kashi cosmogram and is the first deity of Kashi. Like the return current of the Ganges, and the upward movement implicit in the temple's structure, the subtle human energy courses upward along the spinal column on a return path to union with the All.

#### 4.0 VARANASI-AN OVERVIEW

A town with 9.32 lakh population and a decadal growth rate of 32%, is a mainframe tourist and pilgrim centre, known for historical, cultural, religious and archaeological importance. The present tourist traffic is 10,000 -15,000 persons/ day with a Foreign: Indian tourist break up of 7:1.

#### 4.1 The City Of Pilgrimage

- i) Varanasi or Benares is arguably the oldest living city in the world and a centre of learning since antiquity. Varanasi also known as Kashi (City of Light) is situated on the banks of the holiest River of Hindu's - The Ganga. A city known for its temples dedicated to Lord Shiva, it is renowned for its 84 Ghats on the banks of Ganga attracting a large pilgrim population. Its fame as the spiritual capital of India received a boost two thousand and five hundred years ago when the Buddha commenced his ministry there.

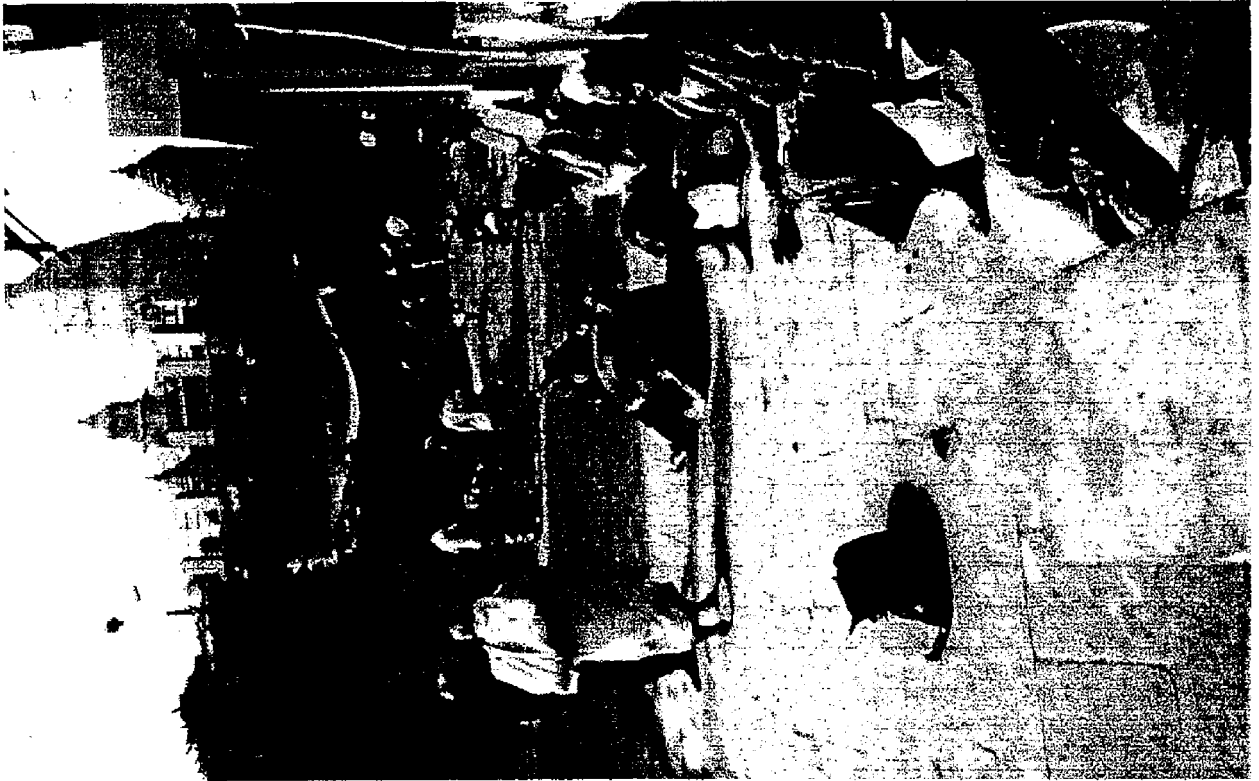
- ii) Varanasi is a mandala of the Cosmos. The symbolism of the city as well as the physical structure and layout is encircled by the pilgrim's way. Pilgrimage is a journey to the centre of the world in search of self renewal and an act of consecration. Kashi is rightfully called the centre of the World or the whole world because all the sacred places of India are represented as shrines scattered through out the city. It is also symbolized as a city in the void balanced on Shiva's trident. The layout of the city conforms to the 'Cosmic Cross' of the "Mansara". Kashi is a cosmogram where the light of the cosmos concentrates and illuminates in a circular territory. Kashi regards Jnanavapi Kupa, 'Well of wisdom' as its axis mundi where it is said that Shiva resides and controls the rhythm of the cosmos.

#### 4.2 Religious Importance:

The metaphysical aspect of the city is organized as a microcosm of the Universe with Varanasi as cosmogram and Centre of the World. Varanasi finds a mention in the oldest scriptures of Hindus i.e. the Vedas. Though the exact age of Ghats and Kunds has not been ascertained but these certainly belong to the age before Christ. In Benares the unique way of cremating the dead within the very heart of the city is encountered. According to Puranas, God Shiva has been described as the first human being and Varanasi is his place of residence on earth. Varanasi is also an important place for Jains and Buddhists as Lord Buddha delivered his first sermons at Samath and Jain Tirthankar- Parshvath was born here.

#### 4.3 Cultural Significance:

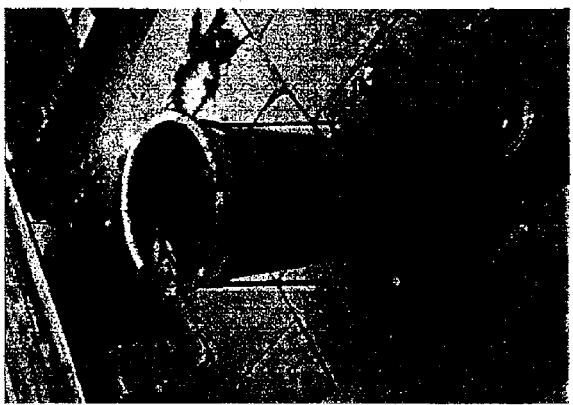
The Ghats and Temples of Varanasi are the symbols of Indian Culture. Annually, about 400 festivals are celebrated in Varanasi which attract a lot of crowd all round the year. Besides saints and scholars such as Ramanand, Kabir, Shankaracharya, Ravidas, Bhartendu Harishchandra, Mahamana Malviya, Jai Shankar Prasad, Premchand, M.M. Gopinath Kaviraj, Hazari Prasad Dwivedi and numerous other, it has been the homeland of musicians and artists of world fame such as Hari Prasad Chaurasia.



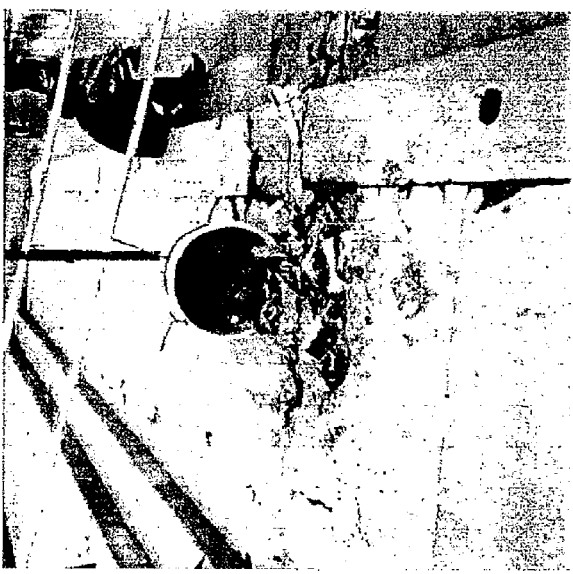
**Pavement of Ramlika Maidan, requires renovation**

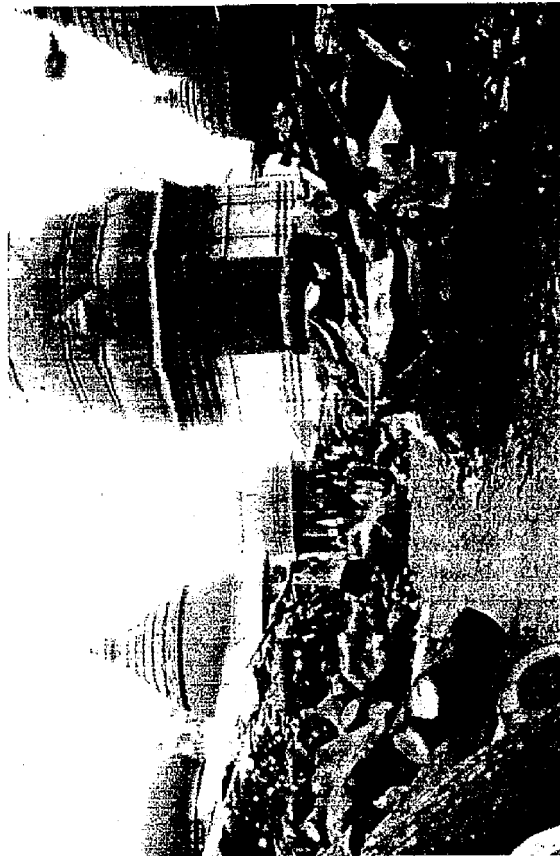
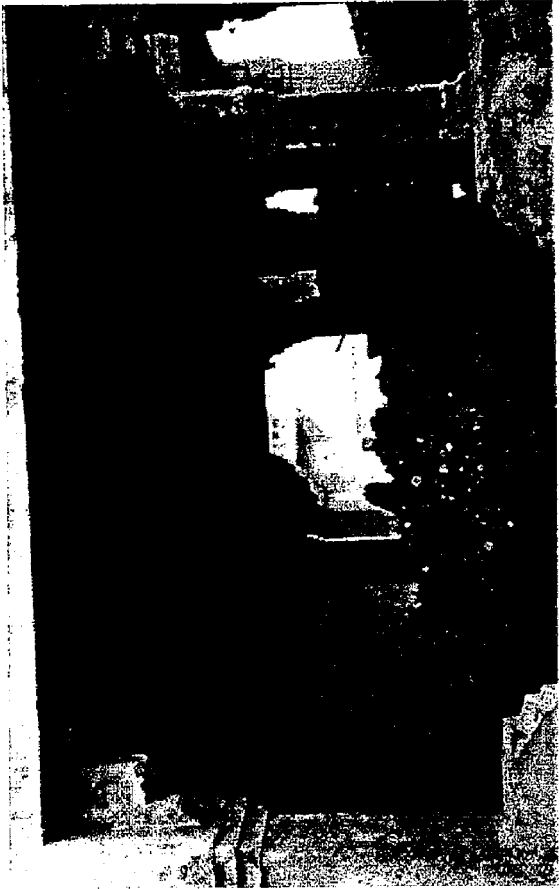


**Lack of public conveniences – open urination  
Site identified for Changing rooms for ladies only at Janana ghat**

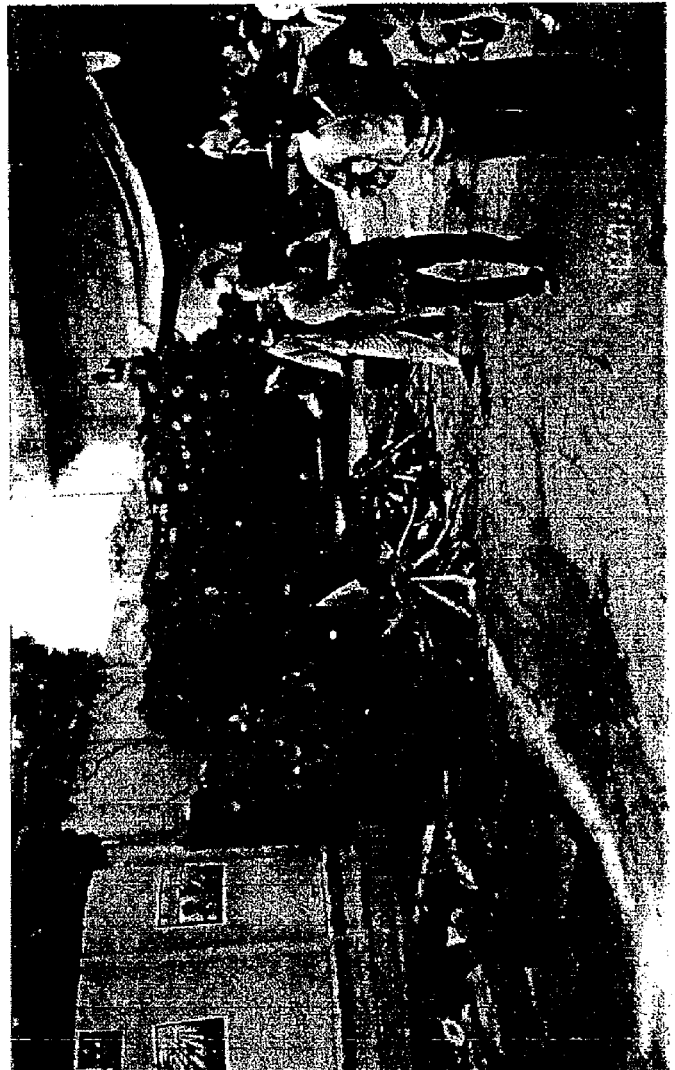


**Poor Waste collection and management  
Needs immediate improvement**





Haphazard timber storage behind cremation ground



Encroachments making the lanes further narrow site earlier identified for toilets is not appropriate

#### 4.4 Significance Of 84 Ghats

There are reputed to be 84 Ghats precisely for numerological reasons. However, 30 are identifiable by the eye today. Almost the entire three-mile waterfront now possesses stone causeways and terraces, some of them of great beauty. The five Ghats known as river tirthas are- Adi Keshava, Dashasvamedha, Panchganga, Manikarnika and Asi.

#### 4.5 Environmental Decay Of Ghats and need for Revitalisation:

4.5.1 The city of Varanasi is on the threshold of irredeemable decay. Fuel for the pyres is dwindling. At the current rate of Kashi Shmashana the ecologists foresee a day when Himalayan deforestation causes the Ganga to change its course, leaving Benares high and dry.

4.5.2 Within the Scope of JICA study, Government of India and the Government of Japan agreed to implement a pilot project on Ghat improvement in Varanasi where the condition of the Ghats is extremely deteriorated structurally and also the hygiene and sanitation condition is not satisfactory.

4.5.3 There is urgent need to create facilities for sanitation, garbage disposal, changing rooms, and drinking water in order to make the ghats more user and environment friendly. In this regard, all agreed that although there are many ghats which require attention, some ghats which are of more religious and historical significance may be considered for improvement by JICA.

4.5.4 The design concept is to make the facilities eco friendly and user friendly without changing the original settings of the ghat. The ghat improvement consists of the facilities on/around the ghat such

as changing rooms, toilet facilities, cloak room, drinking water facilities, waste management and safety for the users, etc.

#### 4.6.0 Selection Of Ghat For Pilot Project

4.6.1 Selection of the ghat for improvement was discussed among the stakeholders taking into consideration the following aspects:

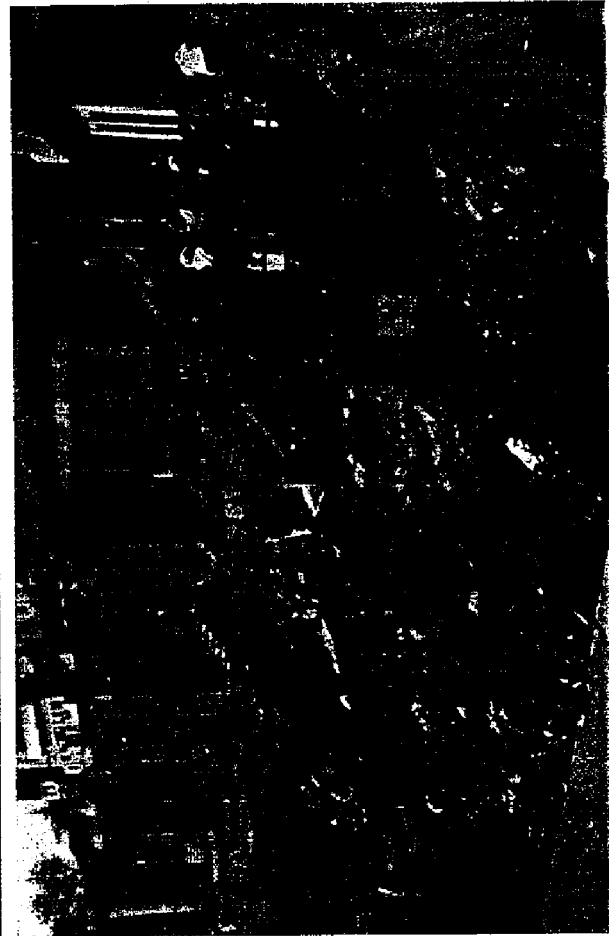
- i) Approach road and usage level.
  - ii) Traffic pressure.
  - iii) Religious and historical importance.
  - iv) Space availability on and around the ghat, etc.
- It was suggested to organise a workshop, involving various stakeholders such as users, priests and other decision makers and opinion leaders to discuss the issues in detail and incorporate their viewpoints.

4.6.2 Following alternatives for JICA were discussed:

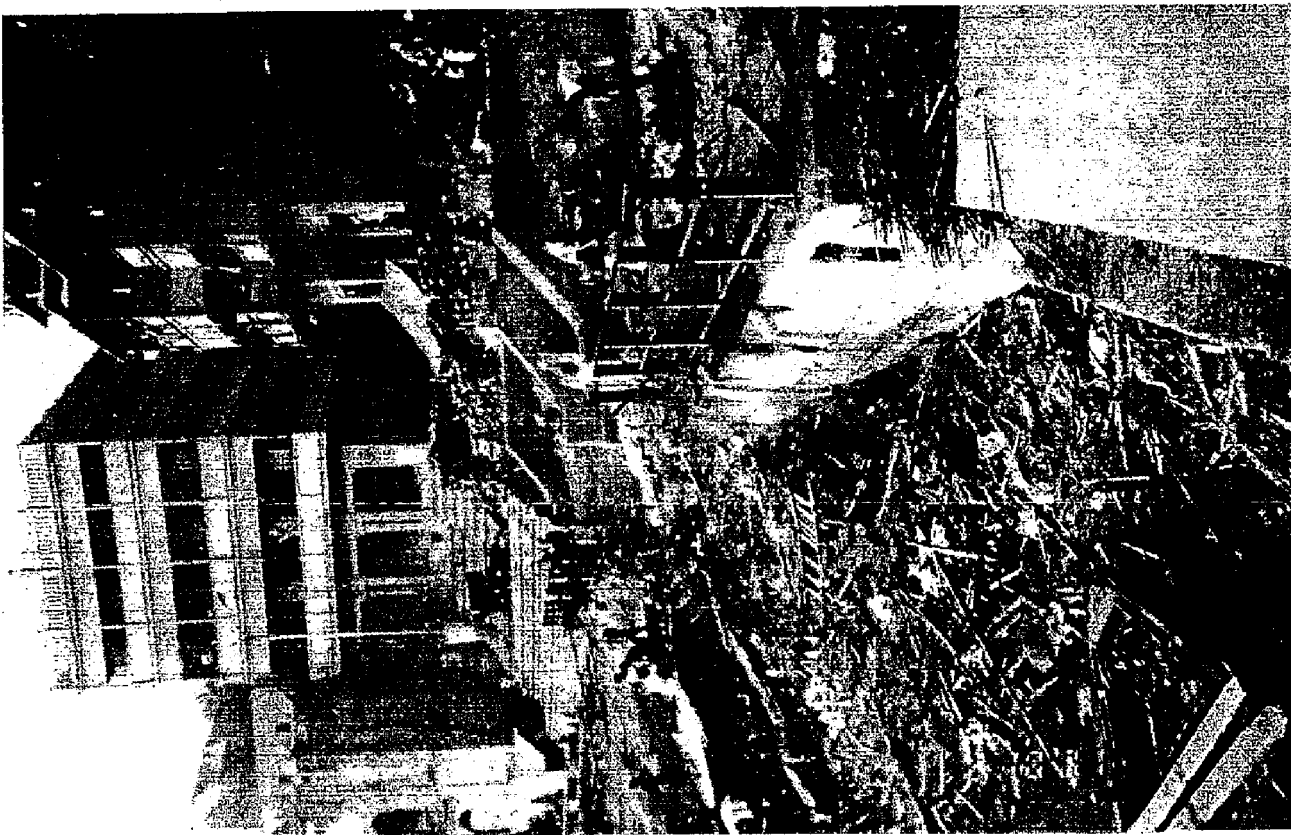
- i) Asi Ghat.
  - ii) Rajendra Prasad and adjoining ghats.
  - iii) Manikarnika Ghat.
  - iv) Repair/renovation of steps to sustain the stability of steps.
  - v) Installation of pumps for disilting of the ghats.
- The Local Government of Varanasi was requested to select the priority sites with necessary facilities to be adopted in the Pilot Project. For this, JICA Study Team made alternative study on site and necessary facilities based on the discussions with stakeholders.

4.6.3 The Ghat, which was finalized after consultation with different stakeholders was the Manikarnika Ghat and the project site covers the entire Cremation Ghat and its important components.

MANIKARNIKA GHAT



General view of Manikarnika Ghat



was Shiva's rapture that he shook with emotion and dropped his *manikarnika*, earing studded with *mukta*, pearl. Hence Lord Vishnu desired that this sacred place or *tirtha* should confer *mukti*, the liberation. Manikarnika is AUM -for this is not only where the Universe was created but also where it is destroyed at the end of each cosmic cycle, *pralaya*. That is when Kashi's position on Shiva's trident ensures her immunity to cosmic destruction, the Great Cremation of the Macrocosm.

### 5.3 Architectural heritage of Manikarnika Ghat

Manikarnika and its pendant Ghats forms a distinctive architecture close to the water level and overlooked by various temple towers. The historical sources mention this site in the Gupta inscriptions of C.E. 4th century. This is the first ghat made *pucca* by the two kind brothers in C.E. 1302; and was rebuilt and repaired in 1730 under the patronage of Bajirao Pesava, and in 1791 Ahilyabai Holkar rebuilt the entire ghat. Again in 1872 repairing and renovations were done. The prominent temples are:

**Amethy Temple:** Most conspicuous, beautiful and ornately carved is a Siva-Durga temple of Raja of Amethy. In the centre of the complex is the temple of Tarakeshwar (Lord Shiva) which reinforces the virtue of dying in Kashi.

**Other Temples:** In the vicinity are the shrines of Manikarnikesvara, Mahesvara (open air lingam at the ghat) and Siddha Vinayak and Manikama Vinayaka.

The Ghat witnesses heavy inflow of devotees as well as tourists throughout the year and specially in November.

### 6.0 STRATEGY FOR PROJECT IDENTIFICATION

HUDCO was appointed by JICA as a Consultant on the Pilot Project for Environmental Improvement of Manikarnika Ghat.

A brief presentation of existing scenario of Manikarnika Ghat area as well as the various proposals pertaining to the pilot project was made. It was asserted that the participation of the local people is

## MANIKARNIKA GHAT- PRESENT RELEVANCE AND EXISTING CONDITIONS

### 5.1 Importance and relevance in cosmology of Varanasi

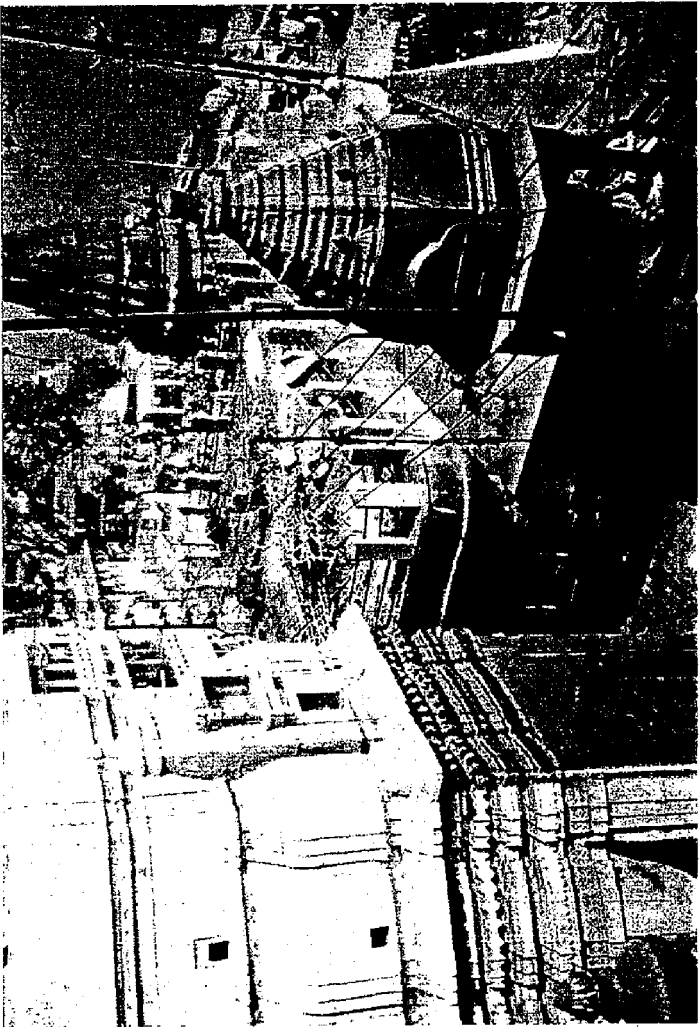
While the cultural heritage of Varanasi is doubtlessly rich, there are two things that have brought it fame: the pilgrims bathing in River Ganges and the disposal of the dead on the Burning Ghats. *Kashyam maranam muktih*- 'Death in Kashi is Liberation. Thus, the most celebrated place in Varanasi is the Burning Ghat- Manikarnika. This is popularly called as "the great cremation ground" (Mahasmasana) and more correctly known by the name *Jalasiya Ghat*. The name Manikarnika derives its origin from the dropping rings of Siva during his transcendental dance here. Siva is said to whisper the taraka mantra in the ear of the corpse here at Manikarnika Ghat. Ironically, it is here that Yama, the God of Death, has no power over the fate of the soul of the deceased. The Hindus believe that cremation at this holy venue provides a gateway to heaven. Before cremation the corpse is partially clipped in the holy water and then allowed to dry on the steps. The corpse is then burnt on wooden pyre surrounded by relatives and friends of the deceased. The ashes of the deceased are then immersed in Ganges.

### 5.2 Mythological Significance of Manikarnika Kund

The cosmic order is made from three strands: *the gunas- sattva and rajas* represented by Vishnu and Brahma respectively and *Tamas*, descending and dark belonging to Shiva. The symbiosis of Vishnu and Shiva at one of Kashi's holiest places, the **Well of Manikarnika**- immediately adjacent to the Ghat is itself a mythological rarity. The deep well, Manikunda is allegedly unconnected with Ganga and has an archetypal stepped and rectangular structure. Lord Vishnu himself dug this well and filled it with crystal clear water. Lord Shiva and Parvati watched and such

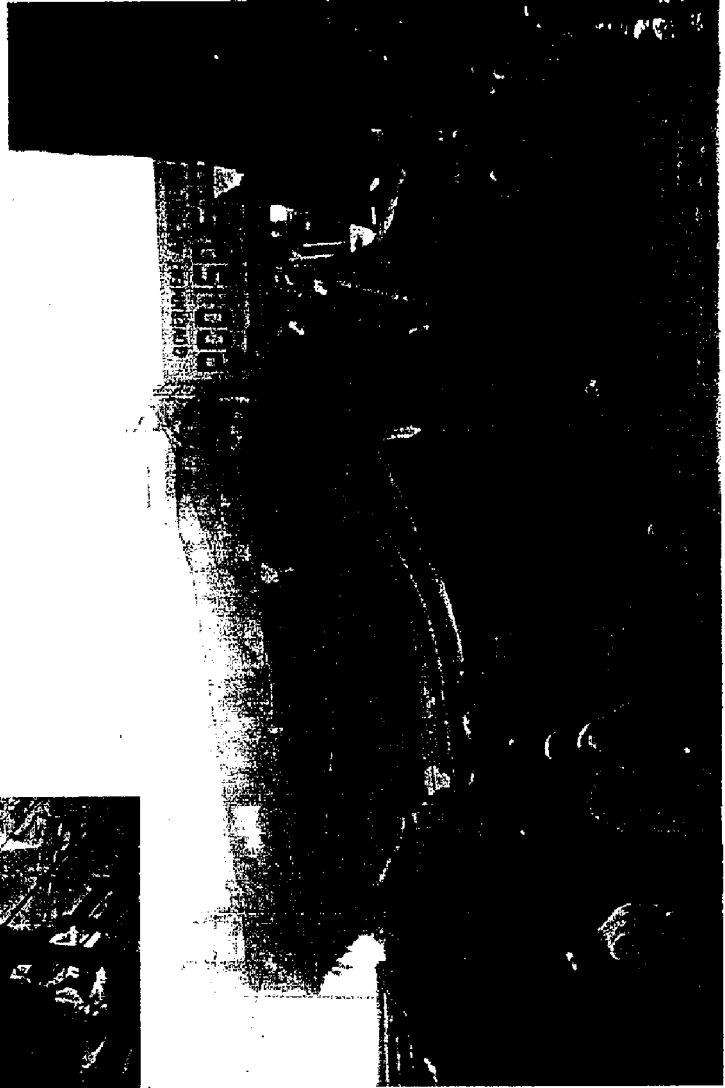


**RAISED CREMATION PLATFORM**



**View of raised Cremation Platform**

An elevated platform of size around 16 mt x 10 mt approx is currently being used for cremation during floods and rainy season. The existing structural elements like steps, flooring, parapet wall & building façade require immediate renovation.



**View of raised Cremation Platform**

necessary for the identification of the project components, the various possibilities of improvement keeping in view the implementation of all the components of the project. All the advantages and disadvantages of the various options were put up to the participants. Their comments were invited and a discussion was held to finalise the Project Proposals.

### 6.1 List of Stakeholders and Participants from Varanasi

- 1) Mr. R. P. Arora, Municipal Commissioner, Nagar Nigam.
- 2) Mr. D. Adhikari, Executive Engineer, Nagar Nigam.
- 3) Dr. S. S. Gupta, Asst. Supt. Archeologist, ASI.
- 4) Prof. Rana P.B. Singh, Prof. Of Geography, B.H.U (President – Indo Japanese Friendship Association, (JFAS).
- 5) Mr. Sandeep Agrawal, Social Worker.
- 6) Mr. Santosh Sharma, Corporator, Nagar Nigam.
- 7) Smt. Geeata Shastri, Corporator, Vard No. 89, Assi Ghat.
- 8) Mr. Rajiv Nandan Mishr, President, Shri Kashi Tirth Purohit Samiti.
- 9) Shri Onkar Das, Shri Satua Baba Ashram, Manikarnika Ghat.
- 10) Pandit Narayan Guru, Mangla Gauri Founder / President, Kendriya Dev Deepavali Mahasamiti.
- 11) Mr. Vageesh Dutt Mishra, (Social worker) Mahamantri, Kendriya Dev Deepavali Mahasamiti.
- 12) Mr. Raja Kishore Chandra, Spokesman, Kendriya Dev Deepavali Mahasamiti.
- 13) Mr. J. N. Dubey, Tirth Purohit.
- 14) Mr. Jagdeesh Chaudhary, Dom Raja.
- 15) Mr. Ram Darshan, Rajmandir.
- 16) Mrs. Vrinda Dar, General Secretary, Kautilya Society.
- 17) Mr. Prabha Shanker Tiwari, Advocate, Andhra Pul.
- 18) Mr. Kashi Prasad, Businessman.

### 6.2 Distance of Manikarnika Ghat from Manmandir and Dharhara Masjid

A query was put up to the official of ASI to clarify the distance of Manikarnika Ghat from ASI Monuments like Manmandir Ghat and Dharhara Mosque. It was clarified that both these monuments are more than 300 meters away from Manikarnika Ghat.

### 7.0 IDENTIFICATION OF PROJECT COMPONENTS AND CRITERIA FOR IMPROVEMENT

Keeping the objectives in mind nine components have been identified for facilitating the environmental improvement of Manikarnika Ghat.

#### 7.1 Janana Ghat

The platform of approximately 15m X3m with steps leading to the River is supposed to cater to bathing facilities for the ladies. Presently it is in a state of decay since people use it for urination. The stakeholders desired that changing room facilities may be provided for women incorporating aesthetic and environmental improvement also to prevent its misuse.

#### 7.2 Raised Cremation Platform

An elevated platform retained by an old wall in stone, of size around 16 mt x 10 mt approx is currently being used for cremation during floods and rainy season. The base of platform which cantilevers on four sides, is supported by traditional stone brackets. The stakeholders desired that the cantilever of the platform may be increased on all the sides. Suggestions were also made for installing an Improved Wood Crematoria (one number) on the upper raised platform, which would facilitate the cremation of people from economically weaker background. The elements like flooring, roofing, parapets and facade of the existing structure should be appropriately renovated.



**MANIKARNIKA GHAT**

Area available for cremation at Smasana Ghat is 500 sqm approx. the space available for the purpose of cremation is presently unregulated and un-hygienic, needs to be organised.



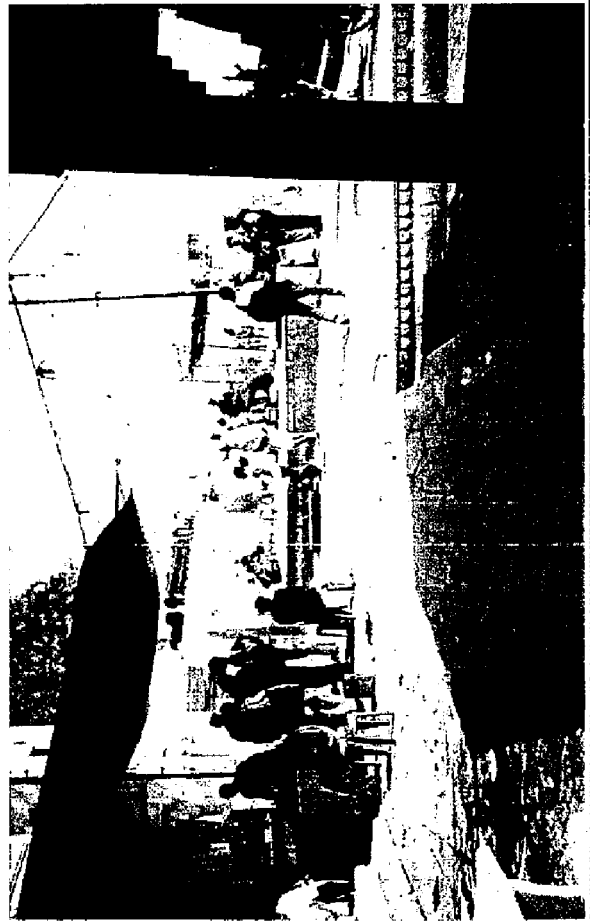
**Glimpse of Smasana Ghat - Unregulated cremation**

### TAKHAT HAZARA

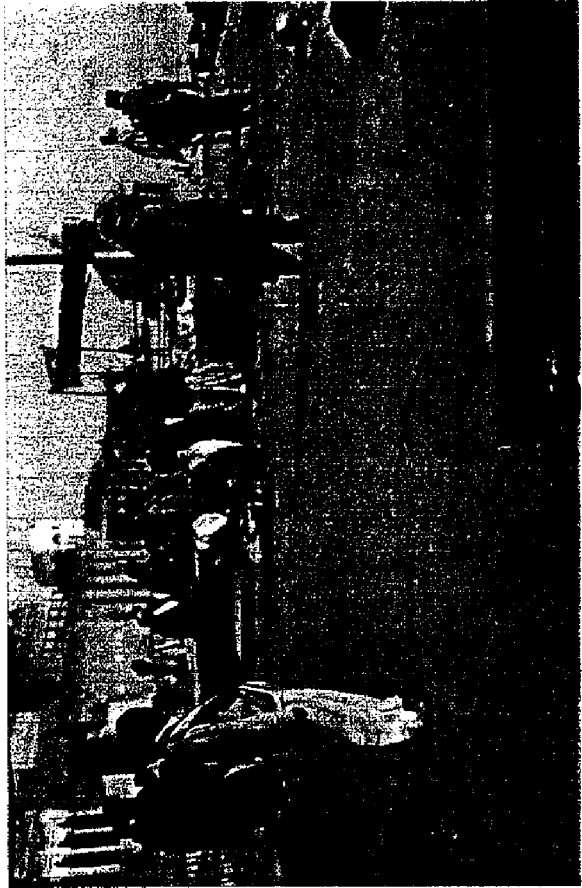
An open platform of size 16 mt x 5.4 mt approximately located just opposite Chakra Pushkarni Kunda near Ramliia Maidan is commonly used for the purpose of performing Pindadaan and Shradas. It was emphasized by the stakeholders that this open platform named as TAKHAT HAZARA should be appropriately covered so that the space could be used much more effectively by the Pilgrims, who generally come to Manikarnika Ghat for the purpose of cremation or to perform last rites for their relatives and friends.



View of Takhat Hazara from abandoned structure



View of Takhat Hazara from Ramliia Maidan



while carrying out of any renovation work. The scholars are of the opinion that there is a source of water beneath (Gomukh) and has no connectivity with the river Ganges. These original water channels need to be restored and desilted. In addition to this, there is need to provide proper and elegant railing / fencing, signage and sufficient lighting around this Kund to bring out its heritage and mythological significance.

### 7.5 Heritage Corner

The platforms of approximately 22m X 8m on the lower level and 22mx6.5m on the upper level are available near Chakra-Puskarini Kunda. Varanasi Nagar Nigam was in the process of constructing a Waiting Hall at lower level. However the effort has been abandoned in favour of the proposals being now formulated by JICA & HUDCO. There is total lack of information available on the various traditional / Religious / Cultural resources on the entire Ghat strip. It would be quite appropriate to allocate a space for the development of a 'Heritage Corner'. The appropriate signage would be developed along with seating and lighting.

### 7.6 Takhat Hazara

This platform is a 1000 years old structure used for the performance of "pind daan" and "shraddh" mainly amongst a gamut of various last rites of Hindus. This platform has hollow spaces and temples beneath it. It has raised platforms of different heights varying from 0.19m to 1.03m on a total area 15.87mX5.38m. Various alternative proposals of permanent light roofing were discussed and it was suggested that a conical / pyramidal roof type structure would be a feasible solution, as the silt will not get accumulated after the flood. All the stakeholders agreed on the suggestions.

However, it is imperative to analyse the feasibility of such a proposal keeping in mind the age and structural condition of the 1000 year old platform.

### 7.3 Lower Cremation Ground

The Lower Cremation Ground having average length 25m and average width of 15m is the main cremation area. Around 150 bodies are cremated daily. During rainy season this area gets submerged in water. The area has varying level and slope separated by a steel railing and becomes very congested as people have to wait for long to perform last rites. The ground is haphazardly occupied.

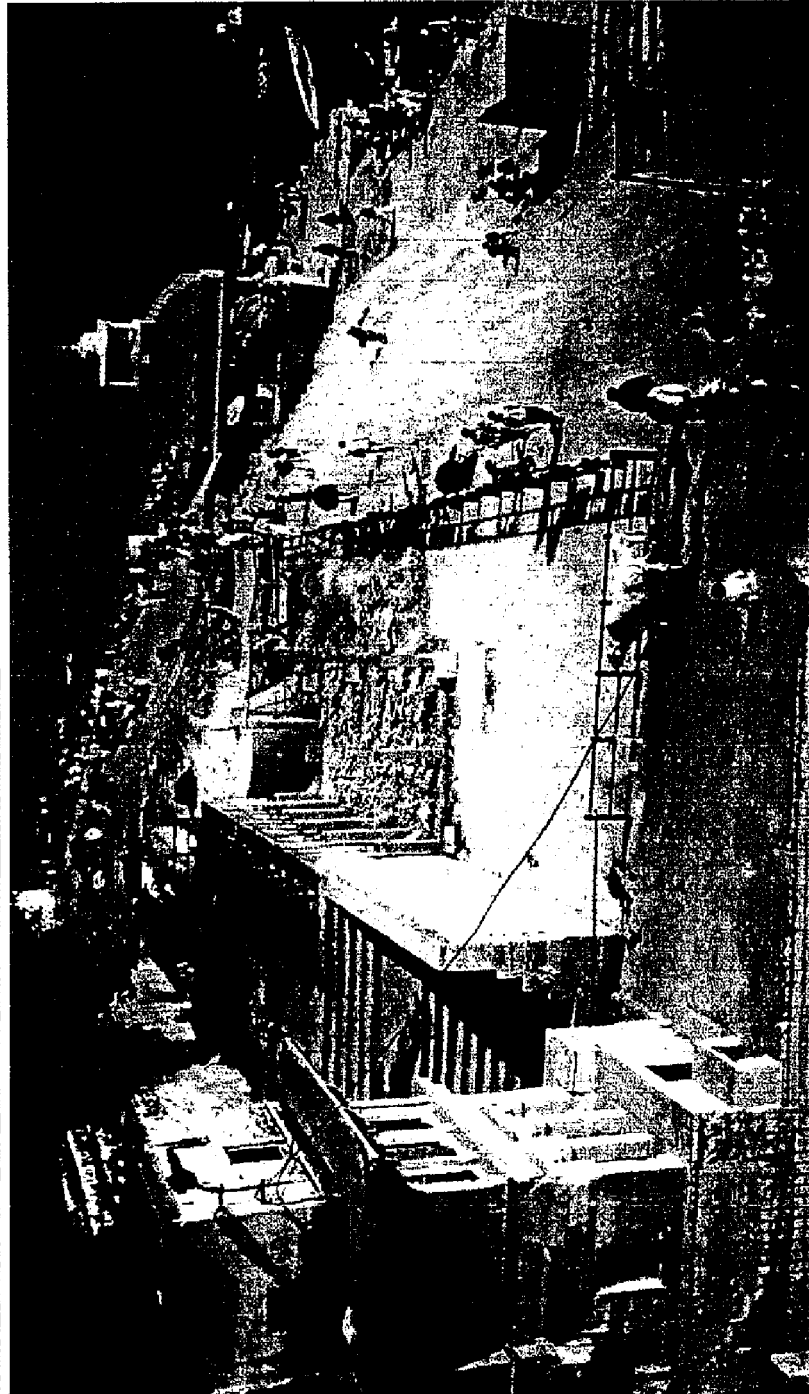
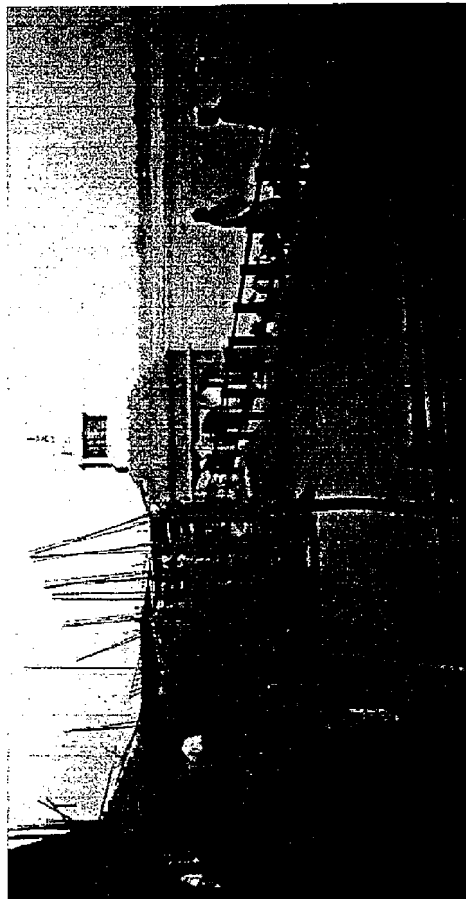
The stakeholders desired that the activities here need to be reorganised. This may be achieved by

- Making retaining walls for platforms of varying height and renovating the cremation area which is in levels
- The existing different level of the cremation platforms is best suited as per the technical and scientific reasons for burning of bodies. It was agreed that the existing three levels of cremation platform would be retained as it is and the same may be renovated. It was also suggested that the proposed cremation platforms should be barricaded in such a way so that the wild animals could not enter crematoria place.
- The boats in which wood for the cremation purposes is transported should be restricted on the western side of Smashan Ghat i.e. near Lalita Ghat.

### 7.4 Chakra Pushpkarni Kunda

There also exists a sacred pond, Chakra-Puskarini Kunda ("Discus Lotus-Pool") (Manikarnika kund). Along the sacred route, on the ghat itself, are the symbolic-holy footprints of Vishnu (Carana Paduka), set in a circular marble slab. This kund flanks the Takhat Hazara on its city side. The two features are separated by a 2.3 metre wide path- the main one carrying the pedestrian movement across the length of the Ghats.

It cannot be over emphasized that this component has a very great religious significance and therefore, utmost care needs to be taken



**View of the platforms having Nagar Nigam abundant structure, an appropriate big site identified for Heritage Corner**

Various options were studied

Option 'A'  
RCC roof supported by masonry/RCC columns, ultimately delivering point loads on the supports and transmitting to the existing structure.

Option 'B'  
Sheet roofing on MS truss structure. This will be an open structure providing only the shade and no walls around or inside.

#### **Observations**

**a. For Option 'A'**  
Case A- On the walls: To support a permanent structure at points 1 and 1a. This is not feasible due to the following two reasons: (Ref dwg)

1. The existing structures beneath Takht Hazara are of masonry and are apparently very old (1000 years). It does not seem to be appropriate to put point vertical loads, moments and hydrodynamic forces on the existing, old masonry structure which do not have any strength to resist these additional forces.

2. The existing structures being very old, have very high heritage value and ideally the existing skyline should be retained.

Case B- On the Sides: To support a permanent structure at points 2 and 2a. This is not feasible due to the following two reasons.

1. The riverside of Takht Hazara in section CC has a room underneath. This implies that the roof of this room will have to be punctured for supporting at point 2, which is not feasible.

2. The RCC columns to span about 5.5m will have to be about 0.45m x 0.30m, at point 2a. This will reduce the effective width of the passage between Takht Hazara and Manikarnika Kund from 2.35m to 1.9m a reduction of about 20%. This is not advisable as this is one of the most important pedestrian artery in the Ghat area.

Further, the construction of the foundations for these columns would render the pedestrian spine useless for a considerable period of time. Also, it is felt that it may damage the structure of the Manikarnika Kund.

#### **b. For Option 'B'**

1. The hydrodynamic forces during the flood season will carry away the sheet roofing.
2. The M.S. supporting structures while submerging in flood water will create navigational hazards.

#### **7.7 Ramleela Ground**

The famous Hindu epic Ramayan contains the traditional lore of Sri Rama besides traditional lore, moral instruction, metaphysics and folk wisdom. Kavi Tulsidas presented it to the world as Ramcharitmanas and it is the origin of the tradition of the annual thirty day Ramilla festival in the month of Ashvin (October). The Ramilla platform encounters the problem of water logging and uneven paving, which would require repaving with proper slope.

#### **7.8 Birla Dharamshala**

This derelict structure is used by pilgrims for waiting. The balconies of the building are used by foreign tourists for watching the progress of the last rites.

Three alternative buildings to be used as waiting space were identified such as existing Baba Dharmshala, existing Birla Dharmshala and new construction at Nagar Nigam site.

It was felt that the waiting space would be required by Pilgrims, by relatives and friends who come for the cremation activities and by Tourists.

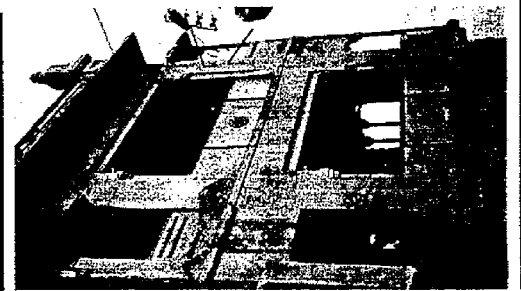
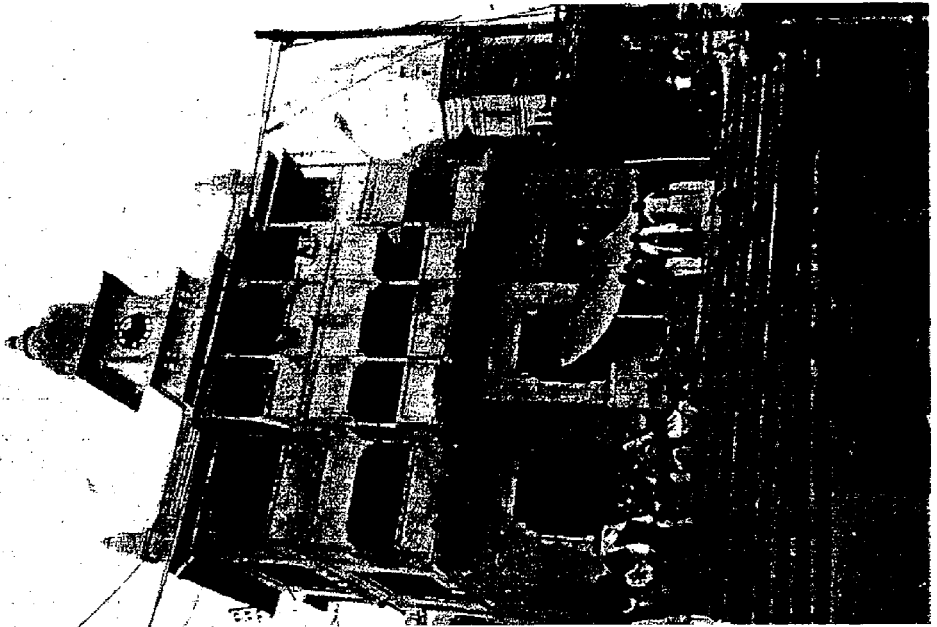
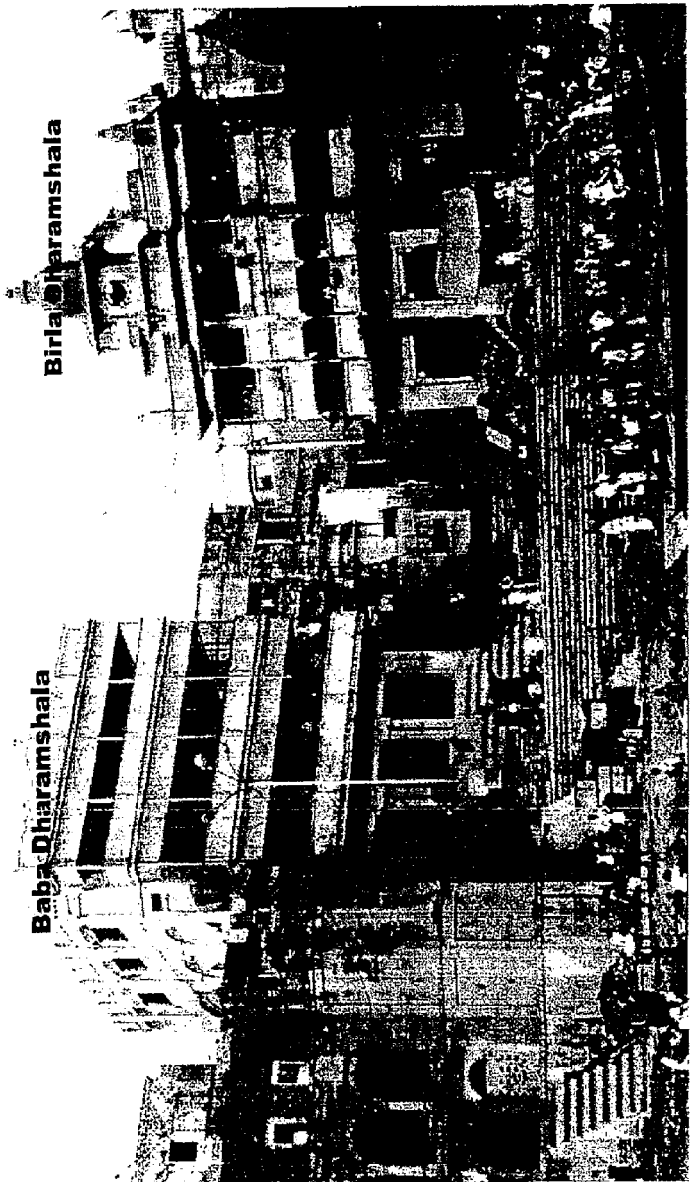
Keeping in view all the pros and cons of the available buildings/sites, it was finally identified that the waiting room for the 100 people with 10 lockers could be provided at first and second floor of Birla Dharmshala after appropriate retrofitting/repairing.

The building is in need of retrofitting. Major repairing components identified:

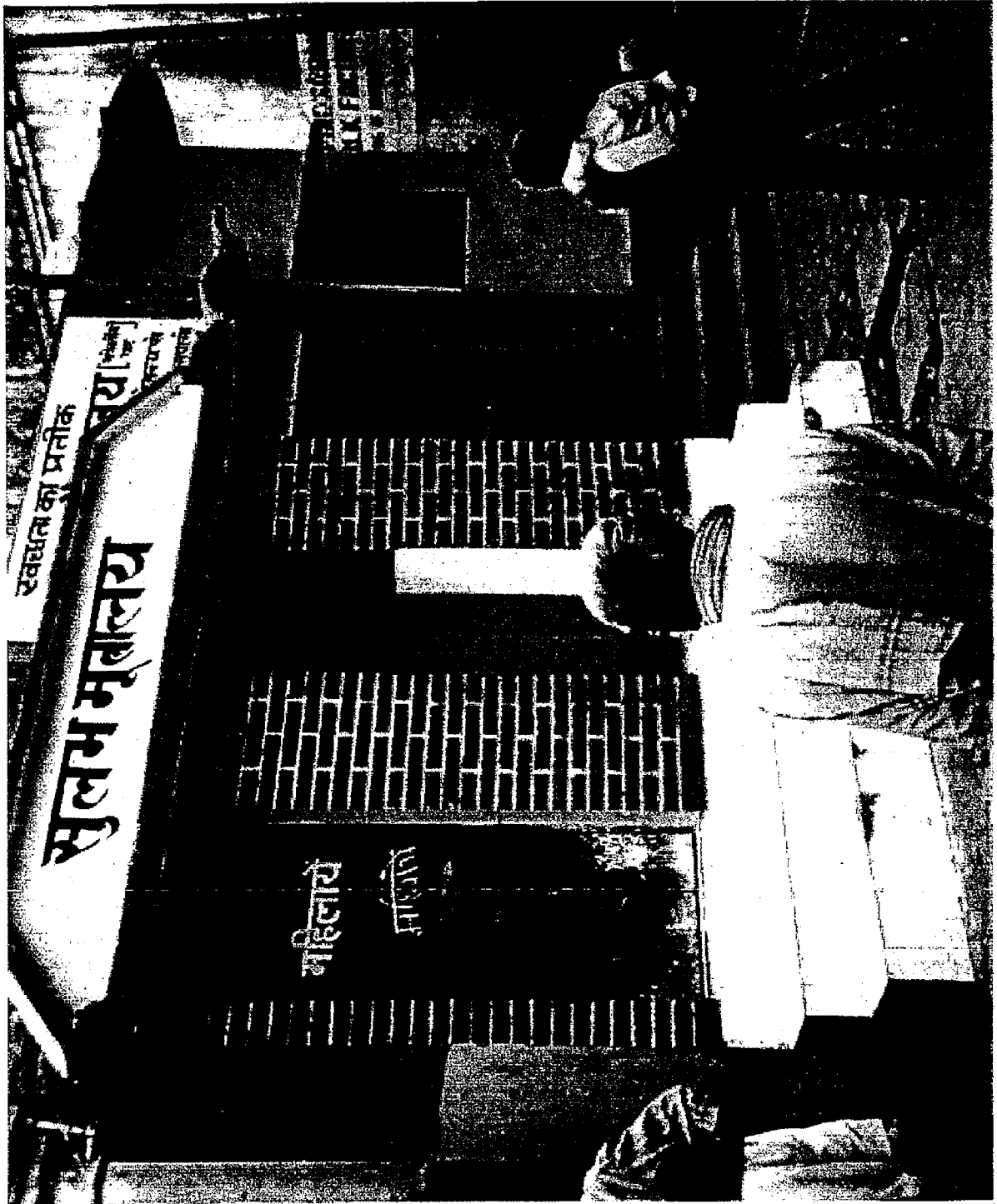
**EXISTING BIRLA DHARMASHALA**

**to be used as waiting hall for visitors**

Three storeyed building of size 12.0x7.0 mt. Approximately, property of Nagar Nigam. This building is in use by Shadhus and pilgrims. Foreign tourist also using its balcony for viewing the Ghat. Retrofitting of this building is also essential, which will improve the aesthetic look of Ghat.



SULABH COMPLEX SITE



- Existing toilet facilities on area around 7.19 mt. x 7.80 mt. have been provided by the local authorities. It is proposed to demolish this structure and convert it in two storey structure.
- Ground floor can be used as ladies & gents toilet and first floor as waiting hall for 50 persons.

Existing sulabh shochalaya building needs to be converted into two storey structure

Most structures in the area face cyclic flooding and subsidence due to flooding of River Ganges. The silt that gathers over the submerged areas of the Ghat has to be cleaned annually. The provision of pump for this purpose is essential.

## **8.0 IMPROVEMENTAL PROPOSALS**

The following are the improvemental proposals for identified nine components based on suggestions of stakeholders, incorporated from time to time.

- Repairing of floorings.
- Plastering of external walls, internal walls and roof.
- Ornamental plaster.
- Repairing of parapet of balconies.
- Repairing of roof.
- Internal and External white wash and colour wash.

The stakeholders desired that toilets may be provided in this building but this has to be carefully assessed with respect to the age of the building.

### **7.9 Public Toilet**

Three alternate locations for toilets were discussed in detail. It was observed that out of all three locations, the location of existing Sulabh Complex is above high flood level and would not pose any problem of maintenance.

However, it was felt that the present structure is dilapidated and there is a need for better toilet facilities for ladies and gents. There was a broad consensus that the existing Sulabh Complex, at present managed by Sulabh International may be demolished and replaced with a more appropriate building, catering to the toilet facilities and a waiting hall above. A provision of five Urinals, 5 seats for Gents Toilets and 5 seats for Ladies Toilets may be made. If funds are available the first floor can be developed as additional Waiting Room / Resting Place for visitors.

### **7.10 Garbage collection bins**

It was also suggested that proper garbage bins made of permanent materials like stone may be provided at important / key locations.

### **7.11 General Signages**

Appropriate descriptive and directional signage will be provided in the different project areas as per the requirements.

### **7.12 Pump for desilting**

### **8.1 Janana Ghat**

It is proposed to reserve this space for women devotees who come here for performing religious rites and taking a holy dip. The need for clean and hygienic changing rooms is self evident. Therefore, two small changing rooms of 4 sq. m. each are proposed abutting the existing enclosure wall. The materials used for walling are local bricks with Dholpur stone cladding. For the sloping roof, the RCC shall clad with Mangalore tiles to enhance the aesthetics. The removal of the depository sand after floods shall be taken up by the Varanasi Nagar Nigam.

### **8.2 Raised Cremation Platform**

The structure of the raised platform shall be retained upto the existing stone wall top and the brackets while the roof shall be removed. The RCC slab shall be laid on an area of 16m X 10m and the railing shall be in MS sections supported on concrete columns. It is proposed to install one improved wood crematoria. The improved wood crematoria offer the benefit of lesser consumption of fire wood for burning and the burning time too is reduced by half. The other seven cremation platforms shall be conventional ones.



### 8.3 Cremation Ground

The cremation ground shall have platforms at two to three levels and these shall be erected with the support of retaining walls. The retaining wall shall comprise of random dry stone masonry with Geo grid membrane at regular intervals which is more optimal as compared to the conventional RCC retaining wall. MS channel railing shall enclose these platforms. The new flooring shall be of PCC with brick-on-edge paving. At identified slots for the pyres 230mm thick fire brick paving shall be provided.

### 8.4 Chakra Pushkarni Kunda

This is visited by devotees and visitors alike and holds immense heritage and tourism potential. It is proposed to replace the existing railing and put up a good signage containing text explaining the importance of this area. Since the Kund is below the HFL, it is proposed to light this area by a 16m high mast light. This shall not only illuminate the Kund but also the adjoining Takhat hazara and the Heritage corner. The removal of the depository sand after floods shall be taken up by the Varanasi Nagar Nigam.

### 8.5 Heritage Corner

The heritage value of the Manikarnika Ghat shall be explained through text in Hindi (the local link language) and English (the global link language). The signage and seating for tourists is proposed to be laid out on a site measuring 22mX8.5m approximately on the lower level and 22mX 8m on the upper level. The traditional woven chattris- *ghatis*, that provide shade to pandits on Ghats shall be replicated here to give shade to the benches made in the local stone. A mural depicting the theme of Manikarnika Ghat heritage value is proposed on the existing 4.0m high wall as a backdrop to this area. The upper deck shall also be treated similarly for providing shaded seating. The lighting shall be housed in stone lanterns designed to evoke the flavour of the Havells of Varanasi.

All the benches, lanterns and signage shall be in red sandstone finish while the flooring shall be in the local Chunar stone available

### 8.6 Takhat Hazara

This platform is utilized by devotees for performing the last rites as well as other religious ceremonies. Being uncovered the blazing sun causes inconvenience to the people. It is proposed to provide shelter to all devotees by erecting a bamboo and thatch structure over it. Arrangements have been made to facilitate the removal of the structure during floods and re erect it after the water level has been subsided. The bamboo columns shall be anchored in concrete base and a bamboo roof structure shall be erected in the vernacular style. Improved thatch roof shall be provided over this structure. The second alternative is to provide the thatch chattris – *ghatis* so commonly used along the Ghats by the pandits.

### 8.7 Ramlila Maidan

This plaza along the Ghat suffers from water logging in the centre. To improve the situation it has been proposed to redo the paving. The Plain cement concrete will be laid to proper slope towards the River Ganges Ghat. The locally available Chunar stone shall be laid over the the PCC flooring to improve the aesthetics and durability of the finishes.

### 8.8 Retrofitting of Birla Dharamshala

The proposal is to retrofit the building so that the first floor may be utilized for ladies waiting room and the second floor for the men's waiting room. The hall dimensions are 11m X 4.5m approximately and it can accommodate upto 47 ladies/ gents. Lockers shall be provided in both the waiting rooms.

### **8.9 Toilet Facilities and Waiting Room**

These facilities are proposed on an area of 7.5m X 5.5m. The ground floor shall be for the ladies and gents toilets and the first floor shall be utilized as a waiting hall for pilgrims and tourists. The general practice of the Sulabh International in and around Varanasi is that the urinals are provided outside the toilets. The urinals if located outside shall lead to stinking smell, which shall be unsuitable for the surrounding residential locality and passer by visitors. The narrow congested lanes around the toilet shall be environmentally degraded. Therefore, it has been decided to propose the urinal facilities within the toilet so that this too may be regulated and charged. The inclusion of the urinals within the toilet complex shall ensure better maintenance and hygiene. This has been discussed with the Senior management of Sulabh International and they have in principle endorsed the decision quoting the example of similar arrangements in and around Delhi. The Sulabh International is currently maintaining the existing toilet blocks and shall continue to maintain and manage the proposed Toilet facilities.

**9.0 BRIEF COST ESTIMATES**  
**ESTIMATED COST OF PROJECT**

COMPONENTS	COST (RS)
1 Changing Room at Janana Ghat	201631.00
2 Raised Cremation Platform	736252.00
3 Cremation Ground	2398257.00
4 Manikarnika Kund	641952.00
5 Heritage Corner	533056.00
6 Roofing on Takht Hazara	30000.00
7 Ramlla Maidan	203196.00
8 Retrofitting of Birla Dharmashala	333351.00
9 Toilet Facilities & Waiting Room	836454.00
10 Construction of 10 dust bins	34758.00
11 Installation of Signage System	100000.00
12 Pump for de-silting	50000.00
Total=	6098907.00
Add 10 % extra due to hard working conditions, difficult transport situation, retrofitting nature of work etc.	609890.7
Total	6708797.70 'x'
Contingencies @ 3% of 'x'	201263.93
Total	6910061.63
<b>Say Rs. 69.10 lacs</b>	<b>69.10 lacs</b>
<b>Others Items, not to be tendered</b>	
1 Mural at Heritage Corner	5.00 lacs
<b>G.Total</b>	<b>74.10 lacs</b>

## 10.0 PROJECT DURATION AND CONSTRUCTION SCHEDULE

**10.1** The total Project duration is five and a half months.

**10.2** Total twelve components have been identified and construction is divided into two phases. Phase I comprises those components which are below high flood level and construction work of these components is required to be completed before monsoon. Phase II comprises rest of the components which can be taken up even after the monsoons. The Construction Schedule is placed on the following page.

## 11.0 SOCIO ENVIRONMENTAL IMPACT ASSESSMENT

- This project after implementation would give a face-lift to the entire Manikarnika Ghat area, which is visited by numerous devotees, tourists from abroad, apart from people performing the cremation and other religious rites.
- The nine components though, are scattered in the entire area but by improving the hygienic / environmental conditions and functionality, they would create socio environmental impact on the users.
- The implementation of these components would provide protection, sustainability and longevity to the area with respect to intense usage through various seasonal and behavioural conditions of the river.
- It would beautify and revitalise the ghat area, keeping the heritage, visual scenario and aura intact.

- Its implementation would help in enhancement of the archaeological and architectural values with a view to promote user friendly pilgrimage and tourism.
- It would streamline and upgrade the existing environmental conditions for better aesthetics and ambience.
- The materials adopted for physical upliftment of spaces / buildings proposed are modern application of indigenous / locally available materials which would merge with the existing colour and texture.
- The project will also help in sensitizing and educating the locals, stake holders and local bodies for taking up further improvement plans for other ghats as well.

11/12/20  
S. K. Singh

Construction Schedule (PHASE-I)

Environmental Improvement Of Manikarnika Ghat, Varanasi

Sub Project S.No.	Activity No	Activity	Time Period														
			Week1	Week2	Week3	Week4	Week5	Week6	Week7	Week8	Week9	Week10					
1		Changing Room at Janana Ghat															
	i	work comp up to plinth level															
	ii	work comp. up to lintel level															
	iii	work comp up to roof level															
	iv	Finishing															
3		Cremation Ground															
	i	Excavation															
	ii	Dry stone masonry(up to EGL)															
	iii	Stone Masonry (above EGL)															
	iv	Laying of GeoGrid															
	v	Earth Filling															
	vi	Brick paving ,complete															
vii	Fixing Railings/Finishing																

Sub Project S.No.	Activity No	Activity	Time Period														
			Week1	Week2	Week3	Week4	Week5	Week6	Week7	Week8	Week9	Week10					
4		Manikarnika Kund															
	i	Dismantling old components															
	ii	Reparing															
	iii	Fixing New Railing															
	iv	Fixing Mast lighting															
	v	Painting/Finishing															
5		Heritage Corner															
	i	Dismantling work															
	ii	Stone Paving															
	iii	Stone Cladding on wall															
	iv	Construction of Benches															
	v	Fixing Railings															
	vi	Fixing Chhatris															
vii	Finishing/Painting																

Sub Project S.No.	Activity No	Activity	Time Period															
			Week1	Week2	Week3	Week4	Week5	Week6	Week7	Week8	Week9	Week10						
6		Roofing on Takht Hazara																
	i	Construction of Bamboo Structure																
	ii	Laying of Thatched roofing																
7		Ramilla Maidan																
	i	Dismantling of existing paving																
	ii	Laying of New Stone Paving																

**Construction Schedule (PHASE-II)**

**Environmental Improvement Of Manikarnika Ghat, Varanasi**

Sub Project S.No.	Activity No.	Time Period	Week1	Week2	Week3	Week4	Week5	Week6	Week7	Week8	Week9	Week10	Week11	Week12	Week13
			Activity												
2		Raised Cremation Platform													
	i	Dismantling of Old Structure													
	ii	RCC Grid													
	iii	RCC/Steel Railing													
	iv	Laying of brick paving													
	v	Stone Cladding on wall													
	vi	Installation of improved Crematoria													
	vii	Repairing of Steps													
	viii	Finishing													



Sub Project S.No.	Activity No	Activity	Time Period															
			Week1	Week2	Week3	Week4	Week5	Week6	Week7	Week8	Week9	Week10	Week11	Week12	Week13			
8		Retrofitting of Birla Dharmshala																
	i	Removing of old Plaster/Cleaning																
	ii	Strengthening of Chajja/Perapet																
	iii	Repairing of Plaster																
	iv	Repairing of Flooring																
	v	Fixing of lockers/Gates etc																
	vi	Stone Paving on Entrance																
	vii	Electrical work																
	viii	Internal/External white wash																

Sub Project S.No.	Activity No	Activity	Time Period															
			Week1	Week2	Week3	Week4	Week5	Week6	Week7	Week8	Week9	Week10	Week11	Week12	Week13			
9		Toilet Facilities & Waiting Room																
	i	Demolishing of existing structure																
	ii	Work up to Plinth level																
	iii	Work up to lintel level(G.F.)																
	iv	Work up to roof level (G.F.)																
	v	Work up to lintel level(F.F.)																
	vi	Work up to roof level (F.F.)																
	vii	Plumbing/Electrical work																
	viii	Internal & External finishing																
10		Construction of Dustbins																
11		Directional & Descriptive Signage System																
12		Supplying of Pump																