I N T A C H

Indian National Trust
for Art & Cultural Heritage

INTERIM STATUS REPORT

31st January 1998

Restoration Of Terracotta Temple of Itonda

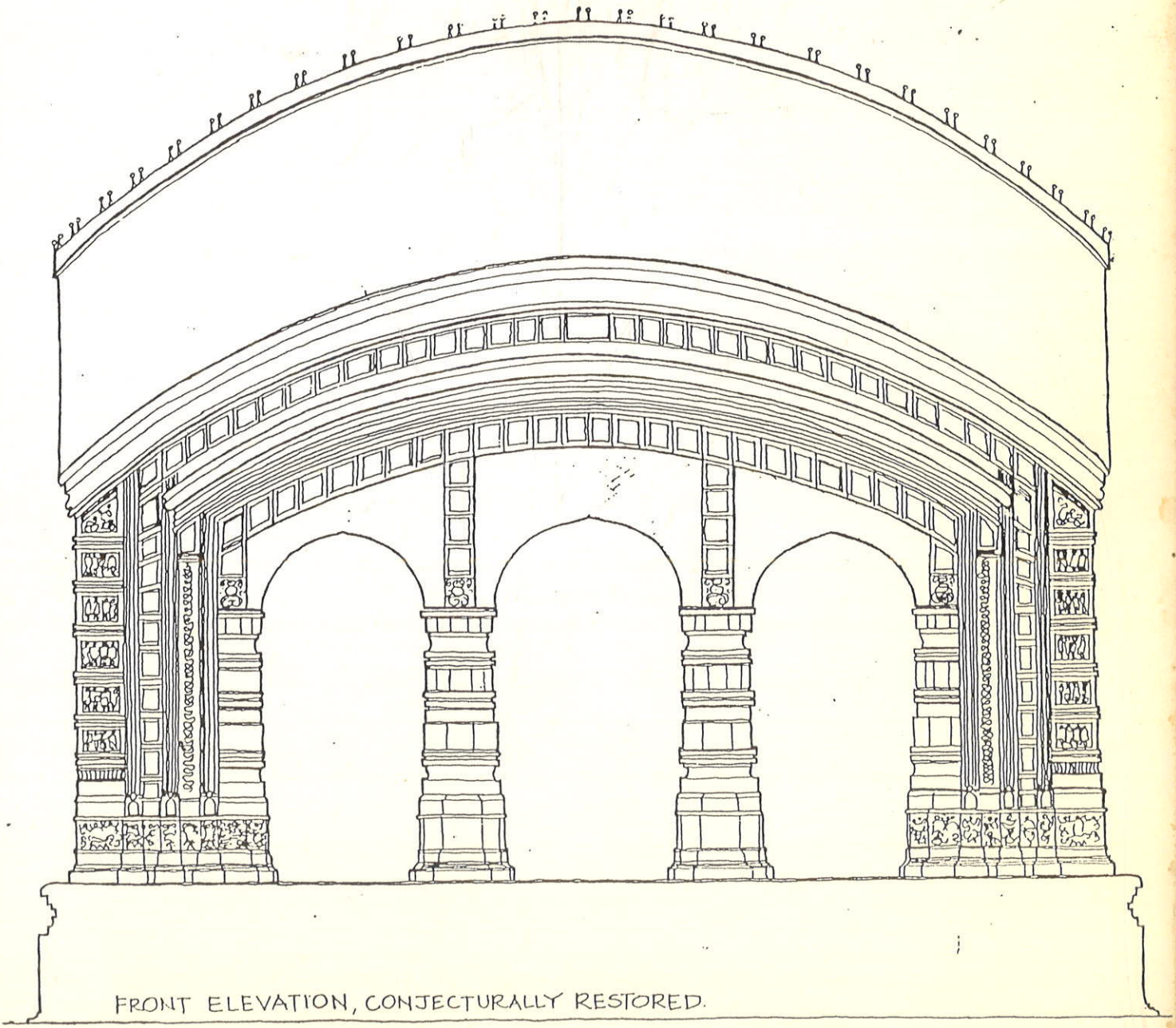
An Intach Conservation Project in district Birbhum West Bengal

Sponsored by
Rajiv Gandhi Foundation

Project Consultants
Rajat Ray &
Bishwadip Sen

Restoration Agency
Caltech Conservation Group
Caltech India, Calcutta

A Public Participation Project
Initiated by INTACH Shantiniketan Chapter &
Neighbourhood of Itonda



FRONT ELEVATION, CONJECTURALLY RESTORED.

1. INTRODUCTION

1.1 The **Jor Bangla Terracotta Kali Temple**, popularly called **Itonda Temple** situated at Latitude 23°36 Min & Longitude 87°46 Min, in village named **Itonda** -- once a small Port beside now receded old course of River Ajay -- is approached by a good moram road to Panch Shoa off Bolpur -- Palitpur Road, at about 17 Km from Bolpur / Shantiniketan.

1.2 The magnificent Jor Bangla Temple of Itonda built around middle of **18th Century**, have been sustaining gradual deterioration & distress for more than twenty years & remained uncared for & neglected for long.

1.3 The Itonda Temple though duly declared **state protected monument** by the **Department of Archaeology**, West Bengal, inaction/indifference of the government in restoring it gradually led it to a state of virtual collapse.

1.4 The long and sustained efforts by the members of the **Shantiniketan Chapter** of **INTACH**, specially **Sri Chidananda DasGupta** and **Ms. Urmila Ganguly**, and the INTACH initiated growing public pressure inspired INTACH Head Office to take up the Cause of Conservation of Itonta Temple

1.5 On the initiative of **Mr Ashis Banerjee** Secretary and **Ms Monica Thapar**, Chief Programme Director, Chapters, INTACH commissioned a study for the Restoration of the monument.

1.6 The Report of Preliminary Studies & Scheme of Restoration by **Mr. Rajat Ray**, B.Arch(CU), M.Urban Planning (SPA), PG Diploma in Conservation (Florence), M. Conservation (York) & **Mr. Bishwadip Sen**, BSc. Hons, BMS, MSc, DIIT, C.Struct. Preservation (Rome), MIICer, MICI, MIRC, MACI (USA), MIABSE (Zurich) formed the basis of the Restoration project.

1.7 In a historic decision, the **Rajiv Gandhi Foundation** responded to INTACH appeal and agreed to **Sponsor** the project, on the basis of the Restoration Proposal by INTACH.

1.8 The project had the blessings of the renowned Conservation Expert **Sir Bernard Fielden**, who have meticulously gone through the Restoration Proposal and discussed the problem with Mr. R. Ray & Mr. B. Sen. The advise & recommendations of Sir Fielden shall be a valuable input for the work.

1.9 The Restoration of Itonda has been discussed with Dr. Gautam Sengupta, Director of Archaeology, WB, who has kindly given his consent for the work and assured his cooperation, support & personal involvement.

2. RESTORATION PHASES

In terms of the discussion between INTACH & Rajiv Gandhi Foundation, the Restoration work was devided in three phases --

PHASE - I : PRE RESTORATION WORK

A. PREPARATORY / ENABLING WORK

1. Providing support & protection of Foundation & Plinth.
2. Providing Structural Support to Superstructure
3. Providing Scaffolding & Staging
4. Removal of Biological growth

B. STUDY & DETAILING OF SCHEME

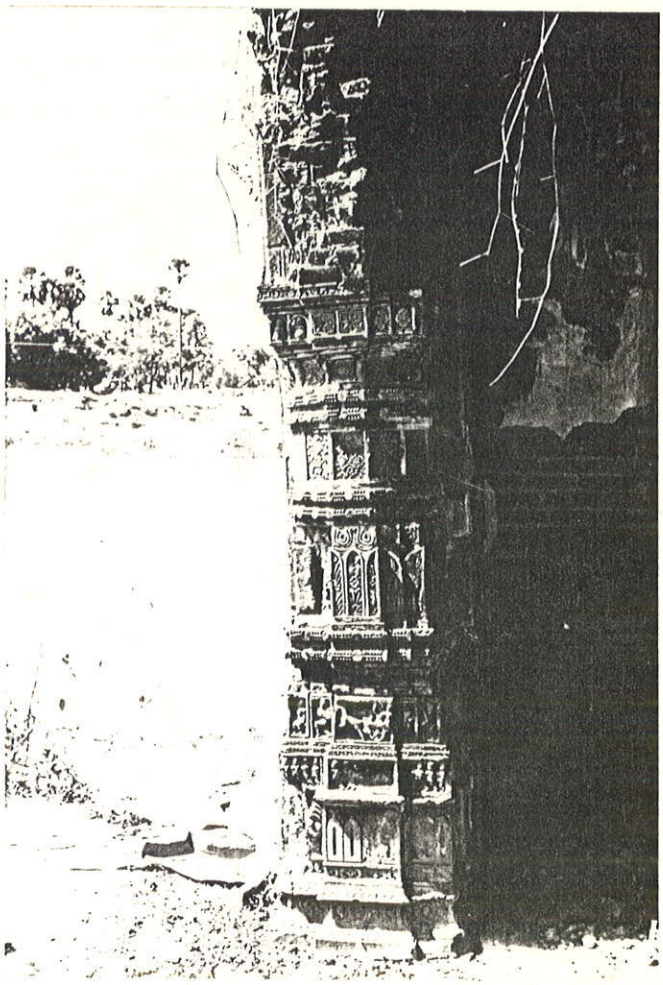
1. Detailed Study, Testing & Monitoring of the Structure.
2. Detailing of Scheme of Restoration -- the Implementation Scheme
3. Documentation & Measured Drawing

PHASE - II : RESTORATION WORK

1. Foundation Improvement & Protection
2. Structural Restoration work
3. Reconstruction work
4. Archaeological Preservation.

PHASE - III : FACIA WORK

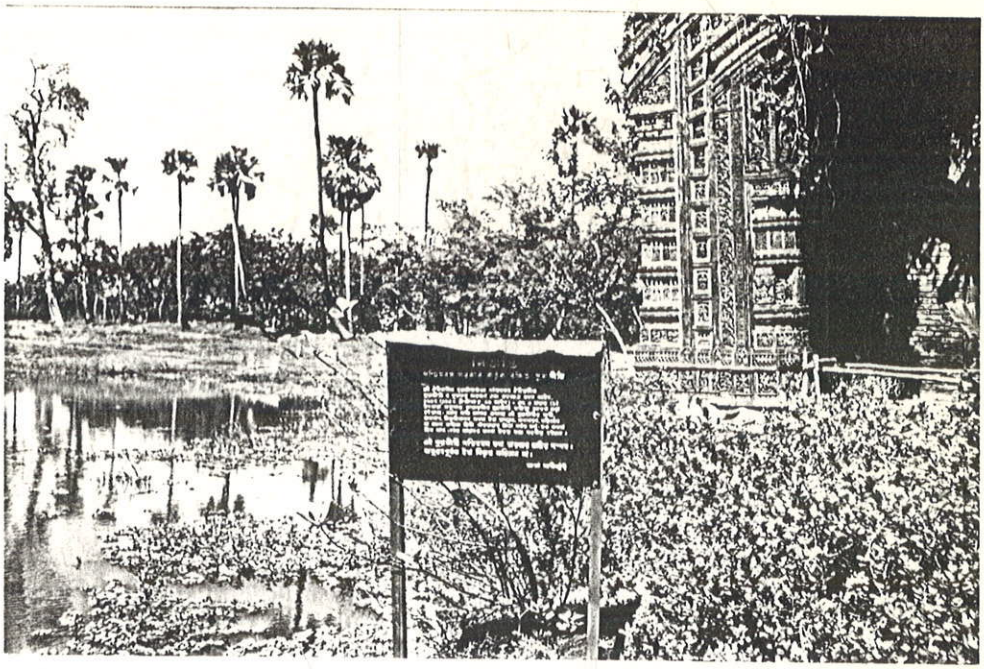
1. Providing Terracotta Tiles



3. TIME SCHEDULE & COMMENCEMENT OF RESTORATION

3.1 The first phase of work was originally scheduled to commence in October and completed in December 1997.

3.2 However commencement of actual Pre Restoration Study & Enabling work in Phase - I was not feasible & could be started only from 21st November 1997 due mainly to a situation arising out of the unusually extended monsoon & regular rains, continuing upto November &occassionally also December.



3.3 The extended monsoon caused the undernoted situation and consequent problems --

1. Rise in Water Table & Water Level of the adjoining pond flooding the Temple adjoining road & touching the plinth, which did not recede till December,

2. Swelling, Softening, Loosening & Weakening of the Lime Concrete & Mortar Joints under moist saturated state & consequent movement causing further distress and making it unsafe to work,

3. Softening & movement of foundation, founding soil and adjoining earth causing settlement, rotation and further distress.

3.4 The consequent situation resulted in dislocation of the plan, programme & scope of any major activity before end November and need of additional enabling strengthening measures and modifications and rescheduling of the scheme.

4. SITE INFRASTRUCTURE

Necessary infrastructure and facilities have been arranged / mobilised to the Temple site, the major input being --

1. Camp Office with Table, Chair etc
2. Preliminary Testing Facilities
3. Photography & Documentation Facilities
4. Survey & Measured Drawing facilities
5. Lime Maturing Vat
6. Brick Crushing facility
7. Lime Concrete Maturing Vat
8. Mild Steel Scaffolding & Staging Pipes
9. Mild Steel Heavy Duty Collapsible Props
10. Structural Steel & Channels
11. Sal Balla Props
12. Wooden Planks & Sections
13. Brick Stock
14. Brick Powder Stock
15. Katni Lime Stock
16. Shell Lime Stock
17. Electric Drill M/c & Drill Bits
18. Electric Saw
19. Grout Pump
20. Power Line & lights
21. Miscellaneous Plant, Machine, Tools, Tackles & Restoration Materials.

The Storage & Residential Accomodation for Restorers and Craftsmen have been arranged by courtsey of Tagore Society at their premises near Itonda Temple.

5. SITE MANAGEMENT, SUPERVISION & EXPERTISE

1. The Restoration work is being carried out by The Caltech Conservation Group of Caltech India -- one of the leading Restoration Agencies in the country.

2. The Restoration work is being carried out under the direct day to day supervision of a senior experienced Restoration Technologist, Mr Sumanta Roy supported by experienced Restoration Engineers & Technicians.

3. Routine monitoring of the project on behalf of Caltech India is being done under the guidance & supervision of Mr G. DasGupta, BSc.(Hons), MICI., Cert. Corrosion Engg. & Sc., Cert. Corrosion Control, Survey of Structures, NDT, Cathodic Protection & Inhibitors -- an experienced Expert in Structural Restoration & designated Dy General Manager, Caltech India.

4. In order to provide necessary expertise, guidance and supervision for the Restoration work and to undertake detailed study, testing & monitoring of the structure, the undernoted programme is followed as per schedule &/or as & when deemed necessary

    1. Programmed visit by Mr Rajat Ray for Policy decisions, intervention strategy & Architectural & Planning aspects,

    2. Regular periodic visit by Project Consultant Mr Bishwadip Sen every 2-3 weeks for 2-3 days for overall Restoration work & Study,

    3. Periodic visit by the Structural Engineering Consultant for the Project Mr D.K. Banerjee, BE, FIE, C.Eng, MICE(UK), MI.Struct.E.(UK), MIRC -- an eminent Structural Engineer, vastly experienced in Structural Restoration,

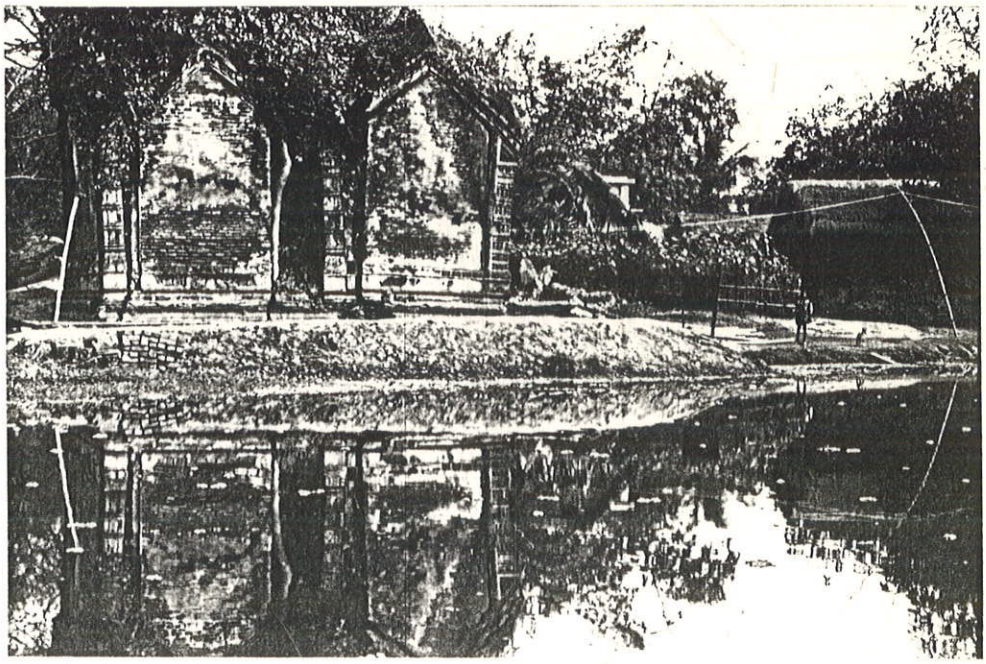
    4. Necessary visits by Soil & Foundation Consultant Mr. Shyamal Mitra, as & when deemed necessary,

    5. Necessary visits by other Experts/Consultants for the project, as deemed necessary, including

        1. Polymer & Restoration Material Expert Dr. Ashok Das, MSc. Tech, DIIT, PhD,

        2. Structural Fabrication Expert Mr B. Chakraborty, BE, MICI,

        3. Mr. V. Ramaswamy, MA (CU), MA (Cambridge), F.Solsburg, Conservation Planner & Social Economist.

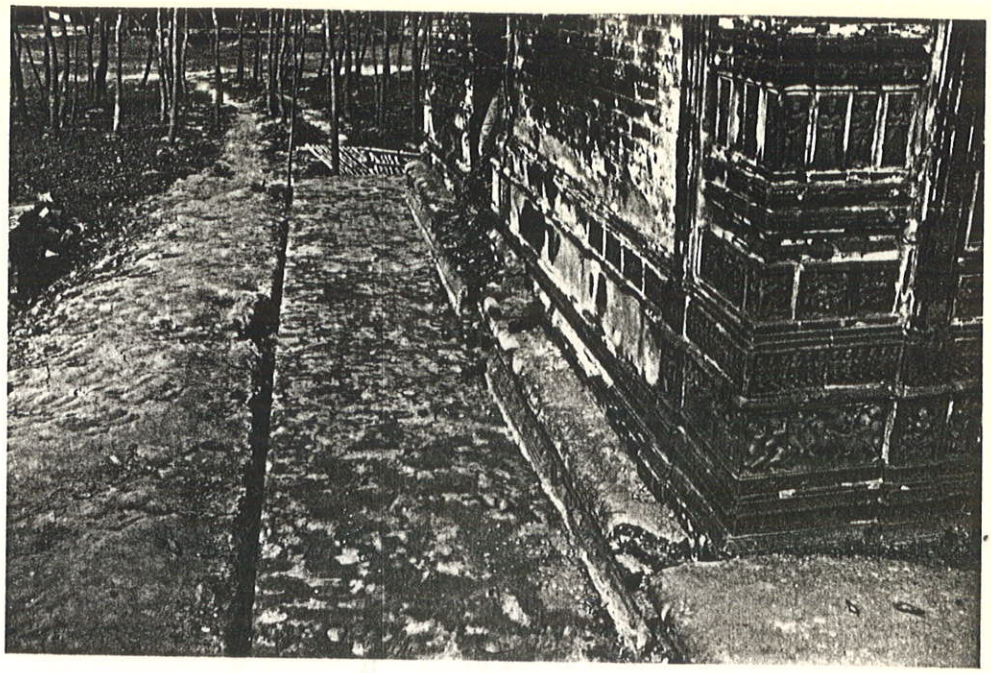


6. STATUS & PROGRESS OF WORK

6.1 FOUNDATION PROTECTION & SUPPORT – PHASE I & FOUNDATION IMPROVEMENT & STRENGTHENING – PHASE II

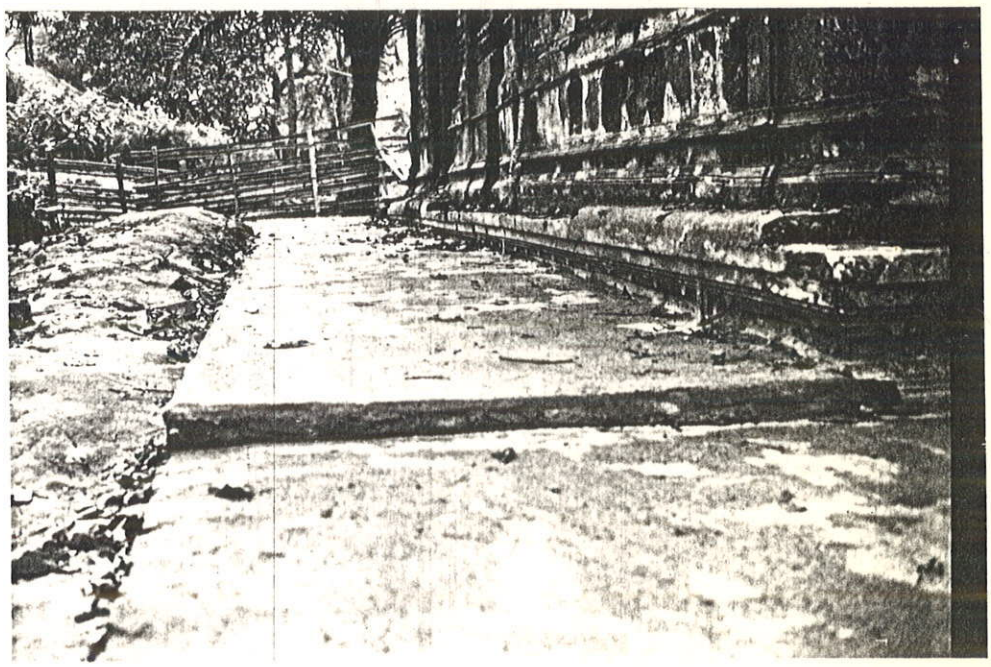
1. It was originally concieved that the Foundation Protection & Supporting work will be undertaken in Phase I while Foundation Improvement and Strengthening work comprising -- work of Control of Soil & Foundation Movement, Restoration and Strengthening of the Foundation & Plinth, estimated at Rs.1.00 Lakh, shall be taken up In Phase II.

2. Under the situation arising out of high rainfall & consequent problems as referred earlier, it was felt necessary to undertake both the works of Foundation under Phase I & II, in order to save the structure from further progressive damage & possible collapse and also to take additional improvement/ strengthening measures for the foundation along with additional & more elaborate & stronger supporting measures for the Foundation & the Superstructure.



3. The condition of the structure & overall situation, was kept under observation and different possible alternative measures were designed and considered thread bare and their feasibility studied before adoption.

4. For the control of the movement of soil towards western side, particularly after the water level of the pond recedes, three rows of Sal Balla piles were concieved. However, on the basis of the vibration generated by the trial driving of a smaller pile at about 2m away. Piling could not be recommended -- in order to avoid chances of vibration induced damage.



5. Earth filling, compaction & raising the level of the earth around the plinth was proposed and considered as a feasible solution especially on the western side, in order to

   a. Displace water from the zone adjoining plinth,

   b. Have sufficient surcharge pressure to arrest movement of soil

   c. Creat a stable workable strata on which scaffoldings and supports can be erected.

   The work was accordingly carried out in western side and on other sides ground dressing and levelling was done with necessary earth filling

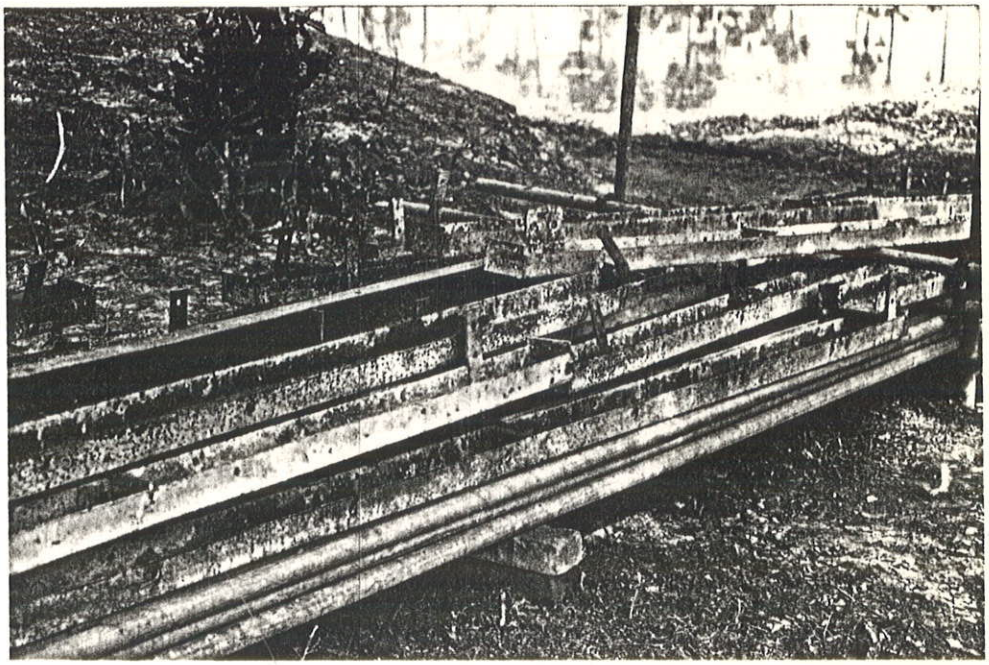
6. In order to consolidate and strengthen the zone, undernoted works were concieved, found feasible & carried out in stages --

    1. Consolidation of the plinth by Pressure Grouting with Lime Cement Grout,

    2. Consolidation of the Foundation by Pressure Grouting with Lime Cement Grout,

    3. Consolidation of Soil adjoining the plinth by Pressure Grouting with a combination of Lime, Cement and POLYSIL G -- Soil consolidant.

7. Subsequent to consolidation of soil, a 300 mm deep 1000 mm wide trench was excavated around the plinth, filled up with Brick Bat/Khoa, compacted and grouted with Lime Cement combination -- on which 2 layers of Brick Soling was done using Lime Cement Mortar, followed by a levelling plaster layer on top.



6.2 SCAFFOLDING, STAGING & STRUCTURAL SUPPORT TO SUPERSTRUCTURE

1. In order to accomodate above work of Foundation, Scaffolding, Staging & Structural Support work, the same could not be started earlier.

2. The detailing of more elaborate sacffolding & structural support system was designed and is now being erected with necessary modifications, as per site deviations & requirements, including use of timber or timber steel composit, as found appropriate & feasible for soffit support.

6.3 BIOLOGICAL GROWTH

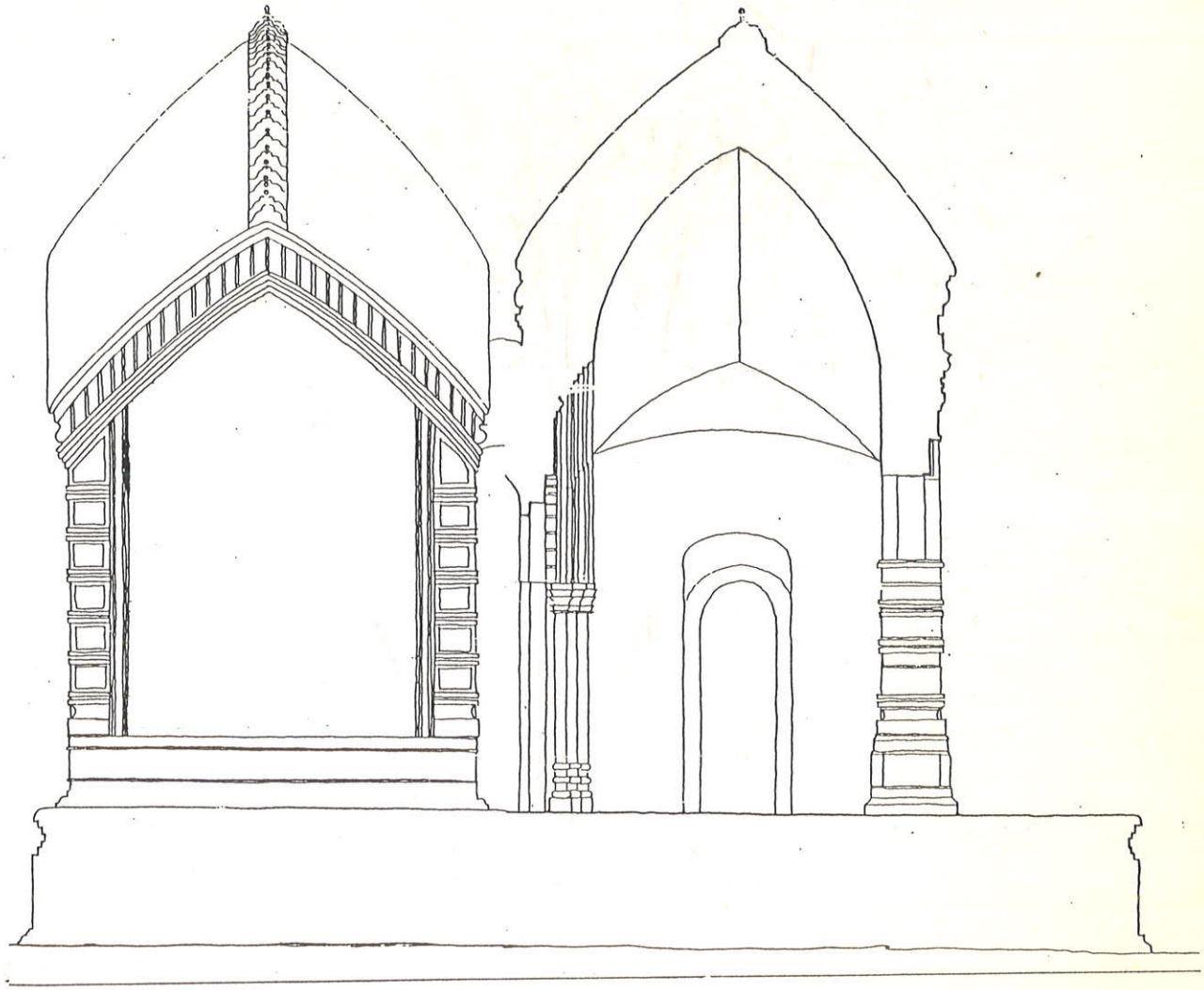
1. Testing and study of effectiveness of different weedicides is being carried out.

2. Progressive removal of the large trees which could not be done earlier, in absence of a load bearing scaffold & appropriate Structural Support will commence by middle of February.

3. It appears that it would be difficult to remove/kill the roots going through structure -- without breaking/dismantling the zone in part

6.4 STUDY, TESTING & MONITORING

The Study, Testing & Monitoring of the structure, is being carried out as a regular routine & periodically by the Experts & Project Consultants and shall continue through the entire Restoration period.



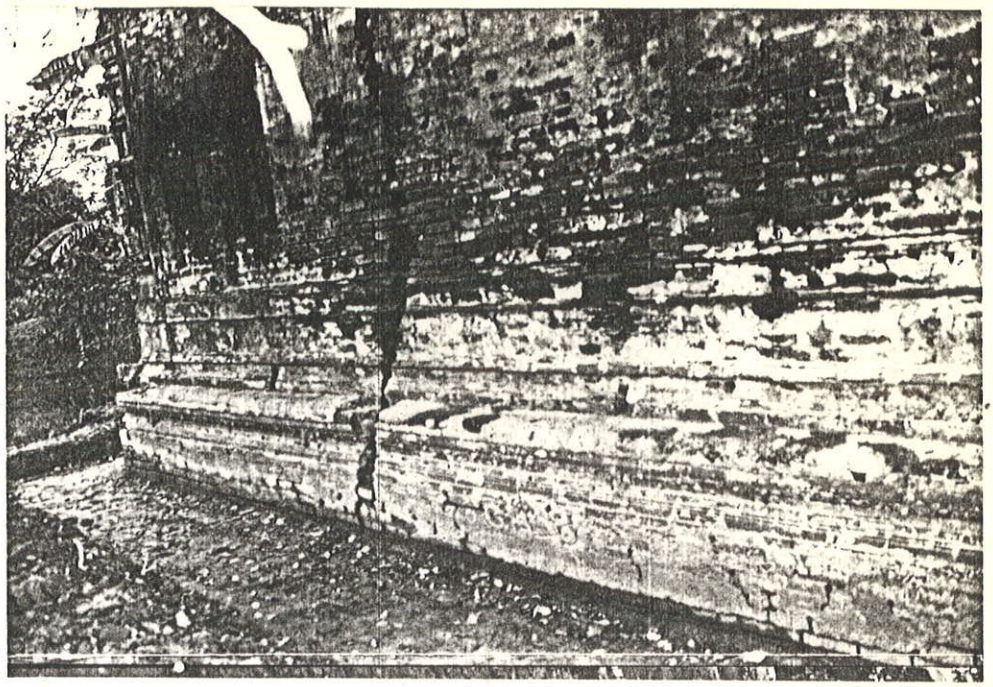
6.5 DOCUMENTATION & MEASURED DRAWING

1. All the Terracotta Tiles are being numbered logged, documented,

2. Location of each Terracotta Tile is being demarcated in drawing,

3. All ornamentations, curvings, 'Pankha' (Lime) decorations are being documented.

4. Measured drawing work have been partly done. Detailed measurement & drawing shall start by mid February and shall continue.



6.6 DETAILING OF SCHEME OF RESTORATION -- IMPLEMENTATION SCHEME

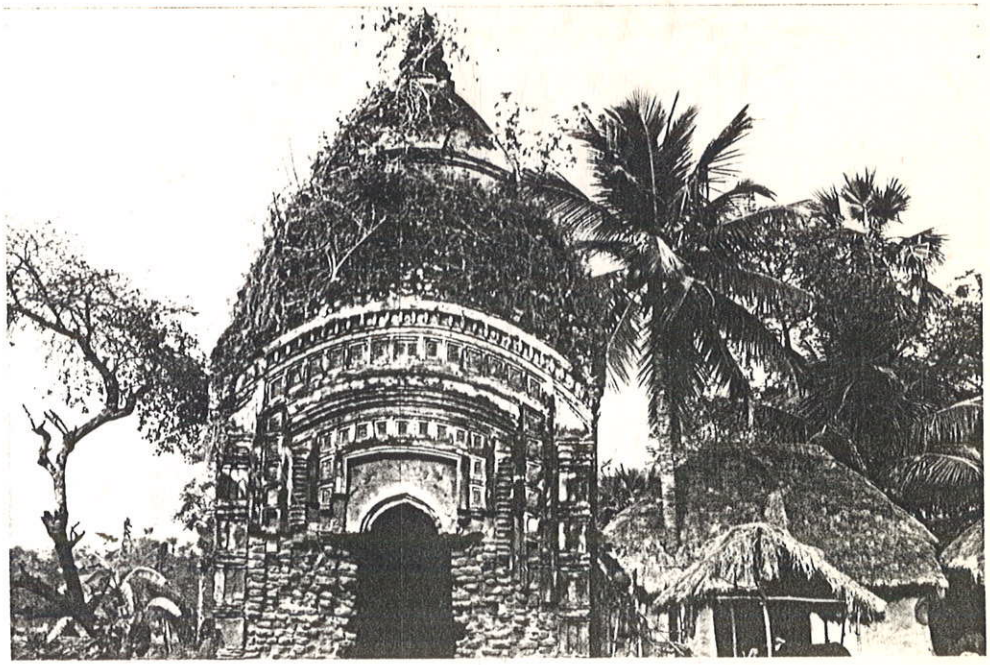
Broad outline detailing of the Restoration Scheme -- to be implemented i.e. the Implementation Scheme have been drawn. With progress of work prior to each stage of work, finer detailing of the stage is being done -- subject to modification and change prior to or during execution depending on its feasibility of adoption or a more appropriate approach, that may develop and deem better for implementation.

6.7 CONCLUSION OF PHASE I & COMMENCEMENT OF PHASE II

1. The major part of Phase I work will be completed by end February & middle of March with overlap of balance ongoing work with Phase II work.

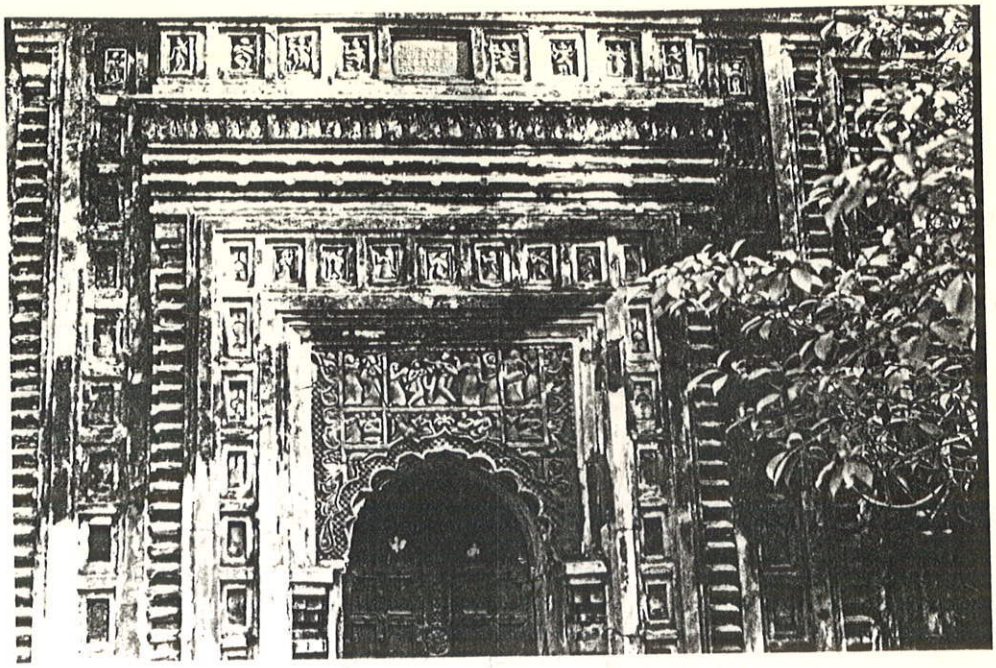
2. The Phase II work, excluding the part already undertaken for Foundation, will commence from 1st week of March.

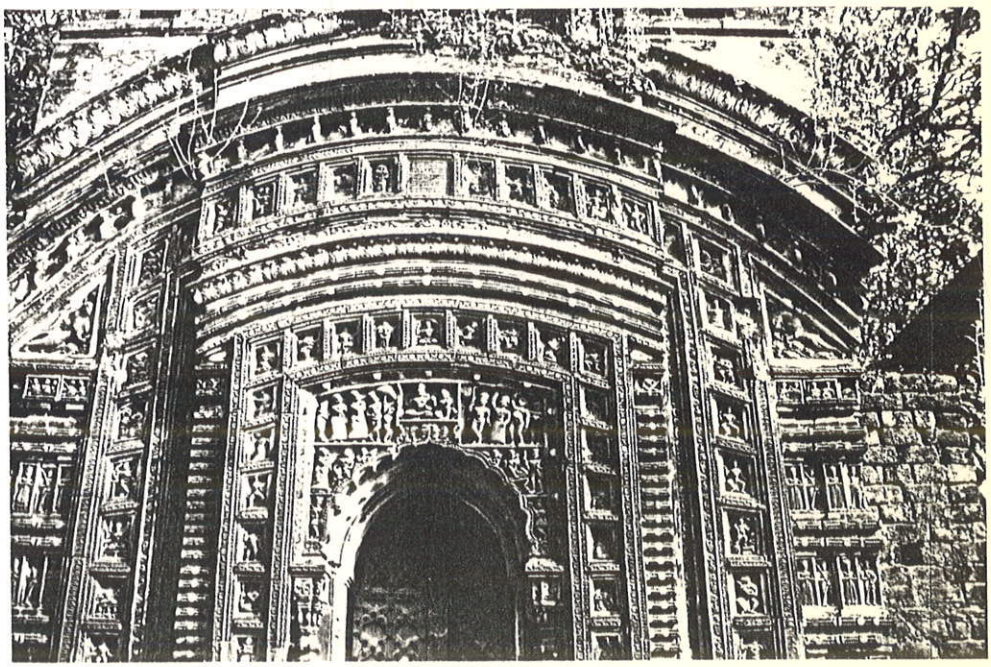
3. The Restoration work being a slow thought based process at each and every stage, the progress of work would be slow and difficult to be bound by time schedule -- for the best interest of the work & the structure.



7. THE NEIGHBOURHOOD & PUBLIC PARTICIPATION

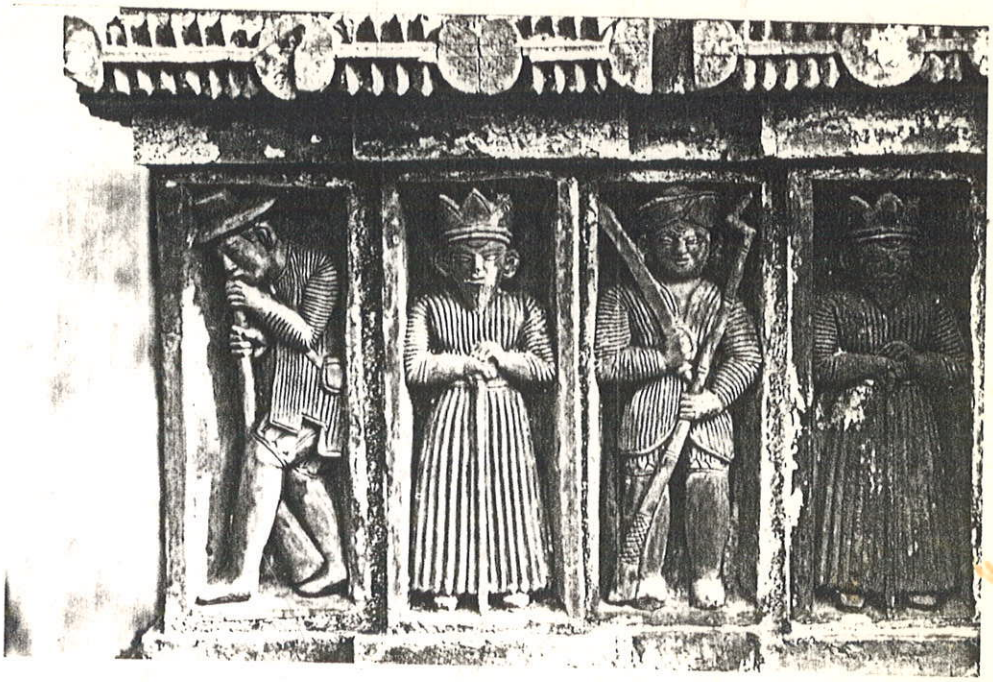
1. The people of the neighbourhood, particularly residents of Itonda village, the members of the Tagore Society and the Art lovrs & Conservation activists & INTACH members of Shantiniketan, who are very pround of their precious monument, have slowly & gradually been involved in the Restoration work with valuable cooperation and input to the project.





2. The Restoration of the Jor Bangla Temple of Itonda, may be utilised to act as a catalist to initiate series of socio economic activities in the neighbourhood, to improve the earnings of the village, in order to sustain and perpetuate the regular upkeep and maintenance of the Temple.

3. There are three more Terracotta Temples in the village of much smaller size, It would be a very good gesture, if these smaller temples are also taken up for Restoration, which may be possible within a small budget.s



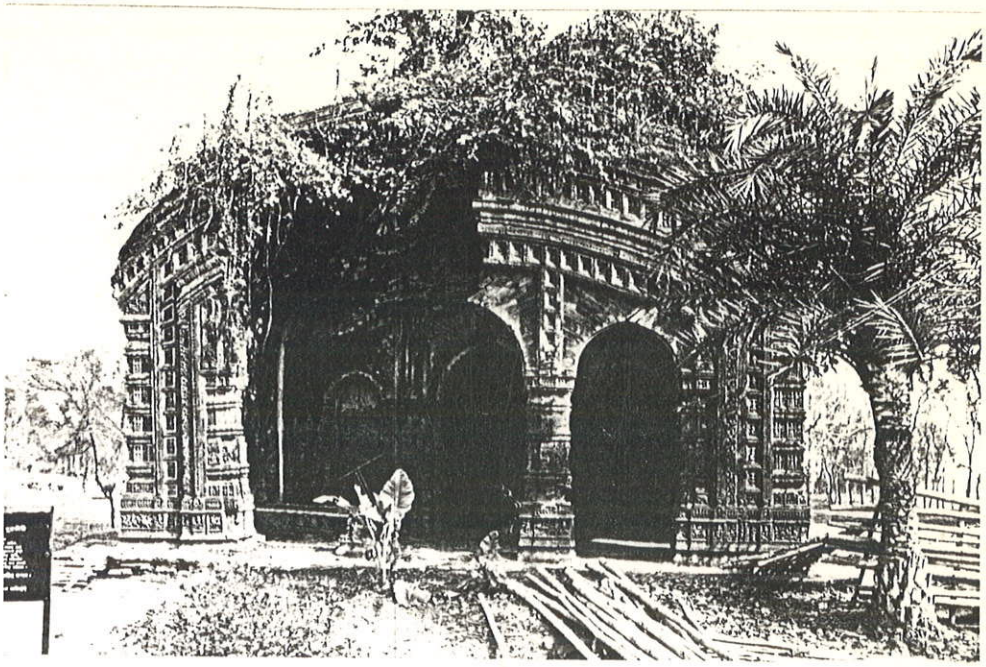
8. CONCLUSION

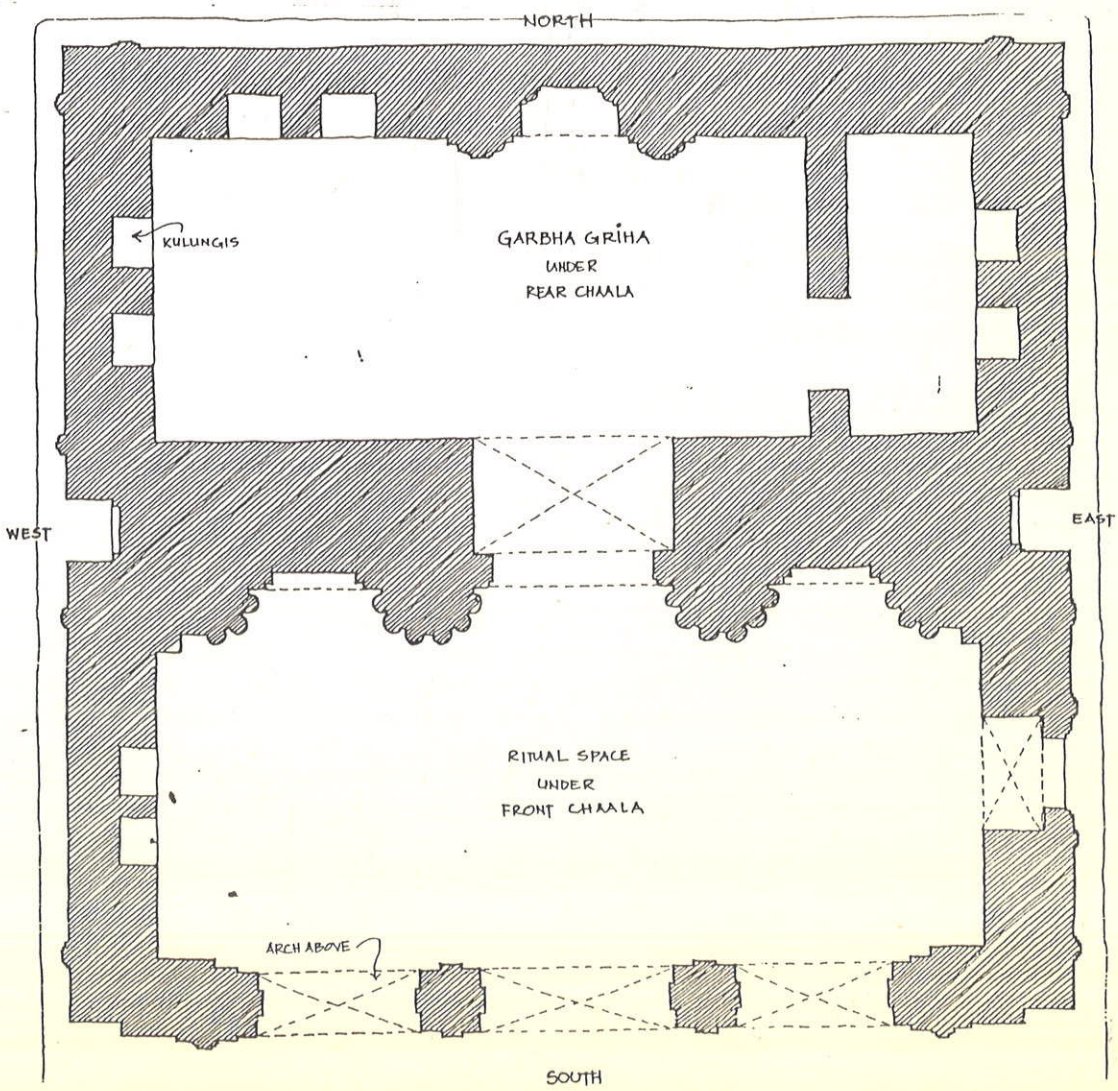
The Restoration of Itonda Temple with further distress that has occured till recently, has become one of the most difficult tasks/projects.

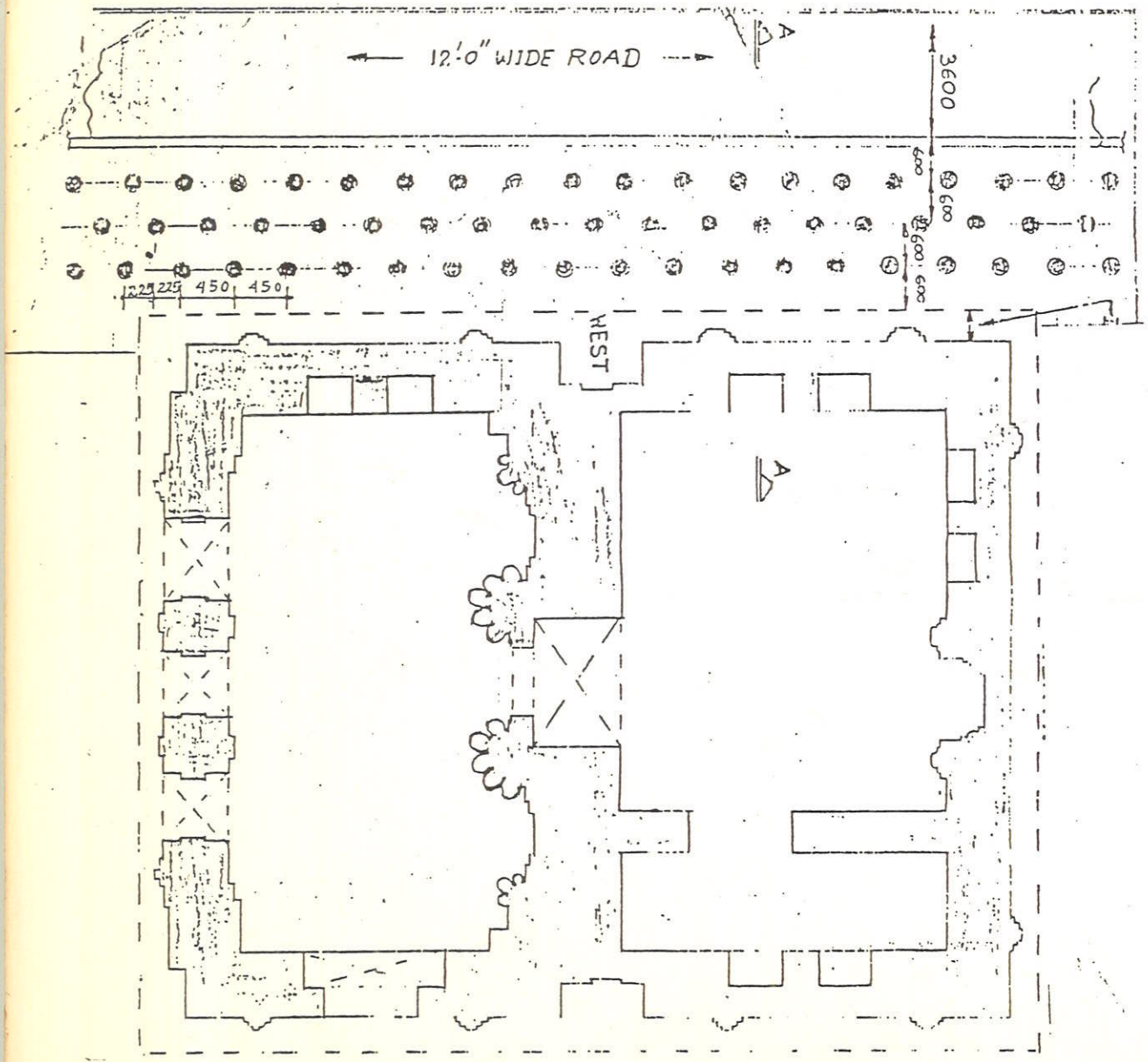
The success of the work will depend on meticulous operations at each & every stage, with appropriate thought based input in every step and cooperation, coordination of all concerned.

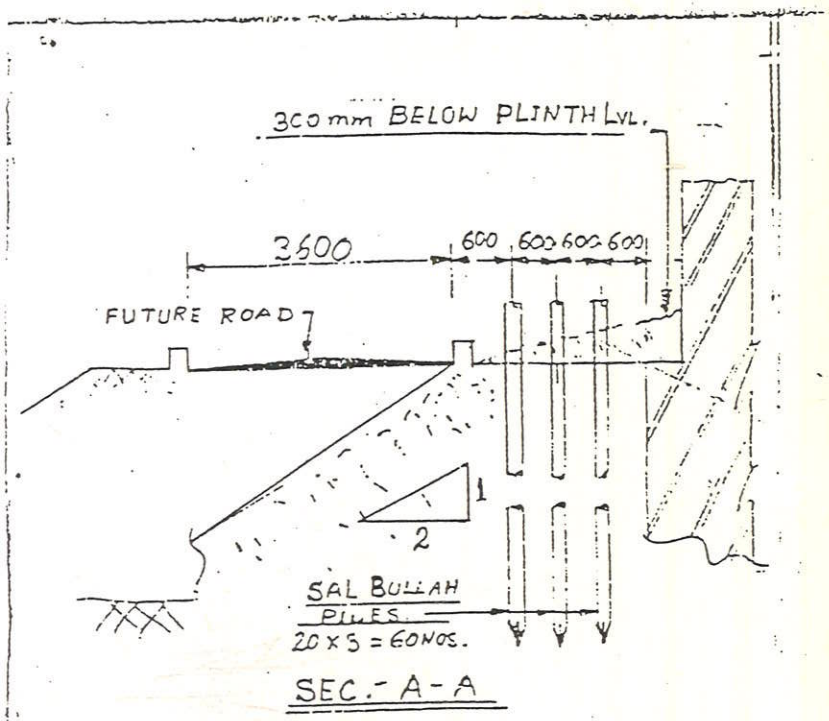
The support given by Rajiv Gandhi Foundation, for the project and its rich experience, we are sure, will catalyse many more conservation initiatives in the sub region and other parts of the country.

The work will perpetuate the long cherished bondage of the Gandhi family with Shantiniketan.



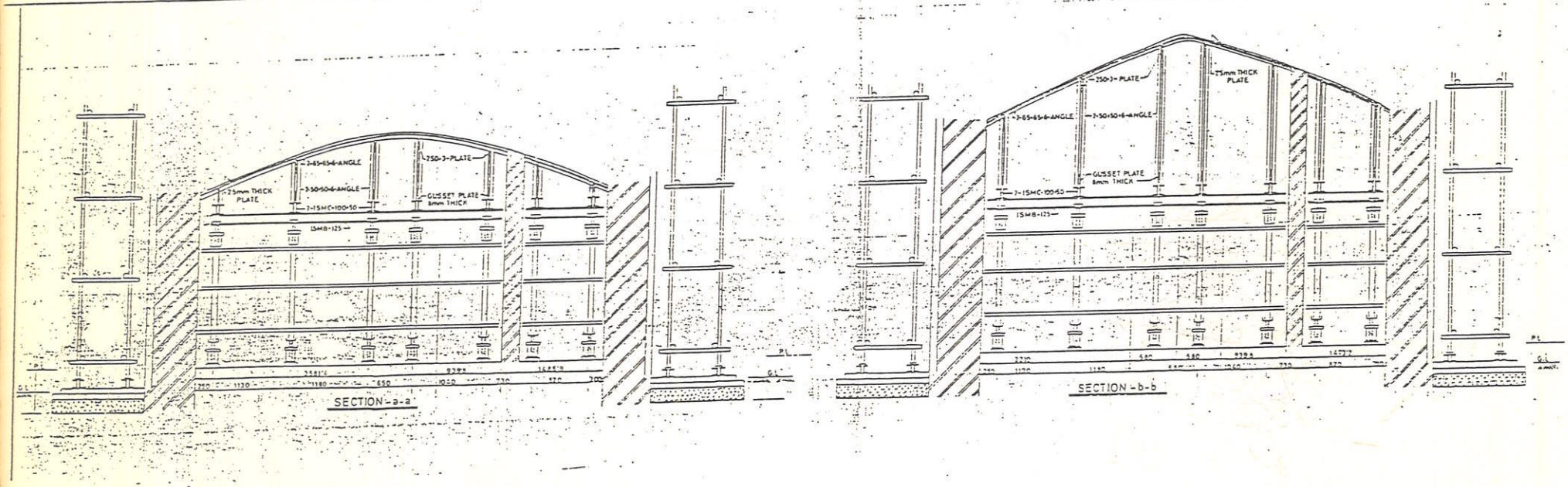

NORTH
KULUNGIS
GARBHA GRIHA
UNDER
REAR CHAALA
WEST
EAST
RITUAL SPACE
UNDER
FRONT CHAALA
ARCH ABOVE
SOUTH



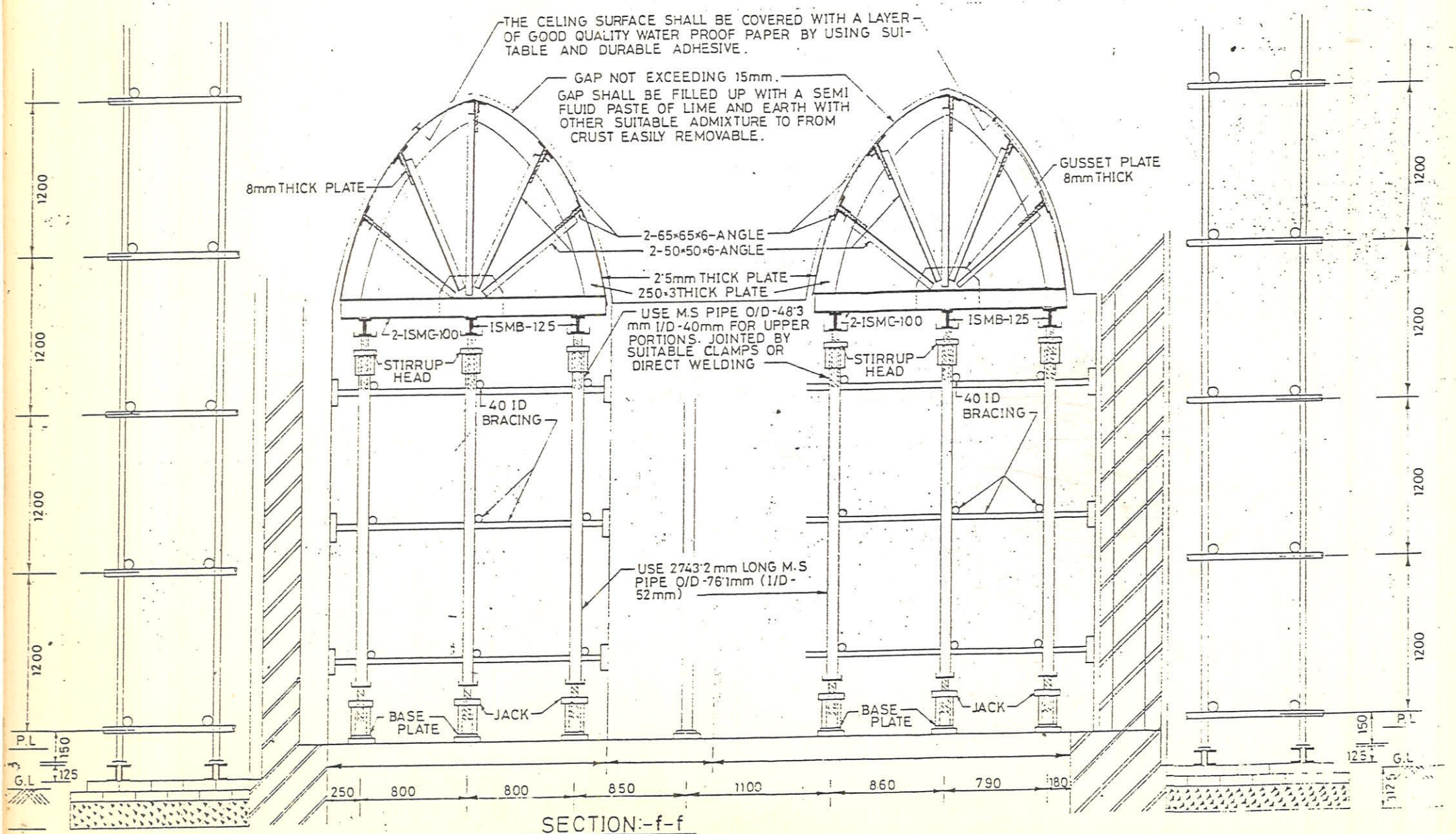


SEC. - A - A

SAL BALLA PILING OPTION
NOT IMPLEMENTED
-SINCE NOT FEASIBLE

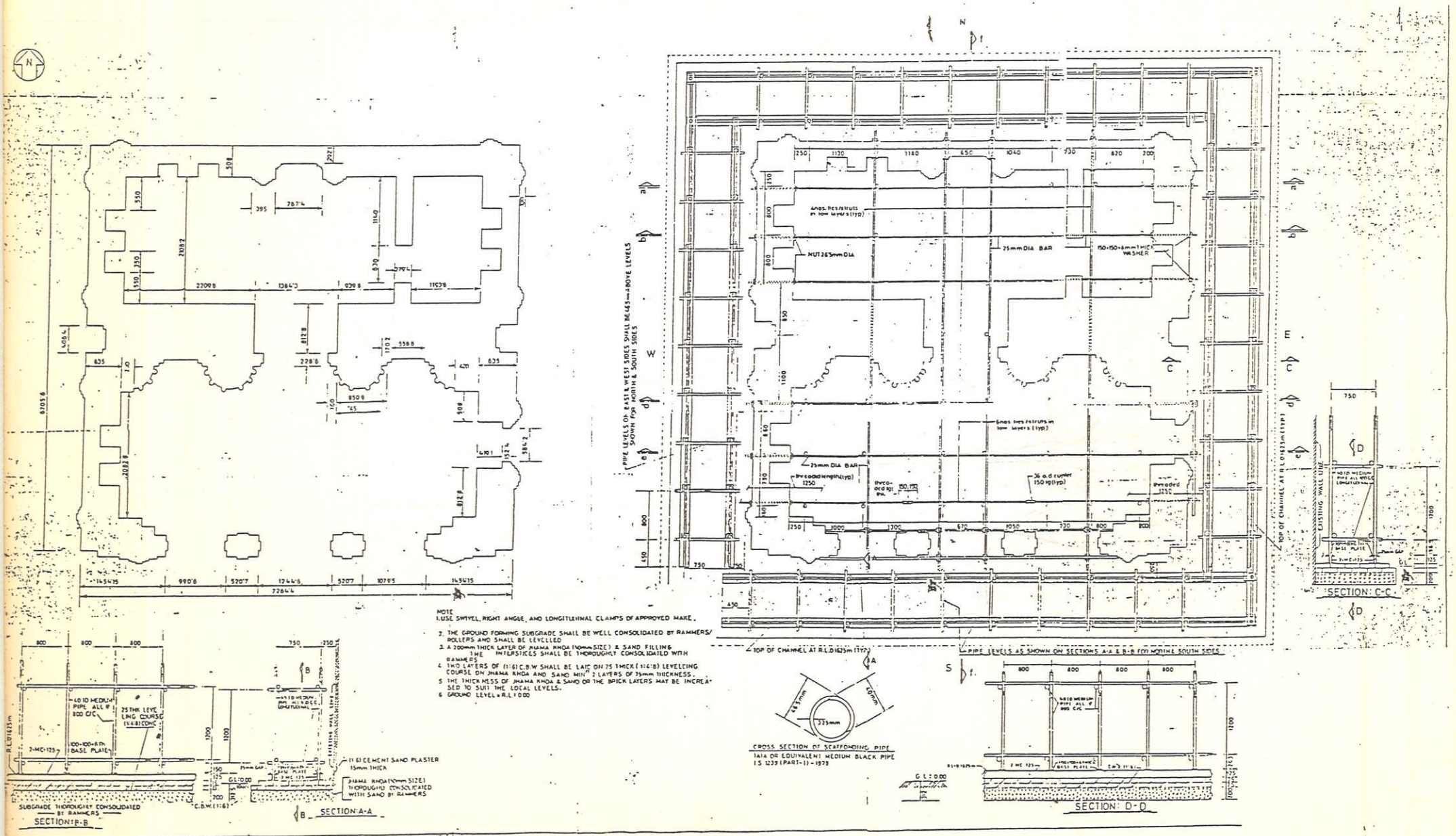


STRUCTURAL SUPPORT DETAILING



SECTION:-f-f

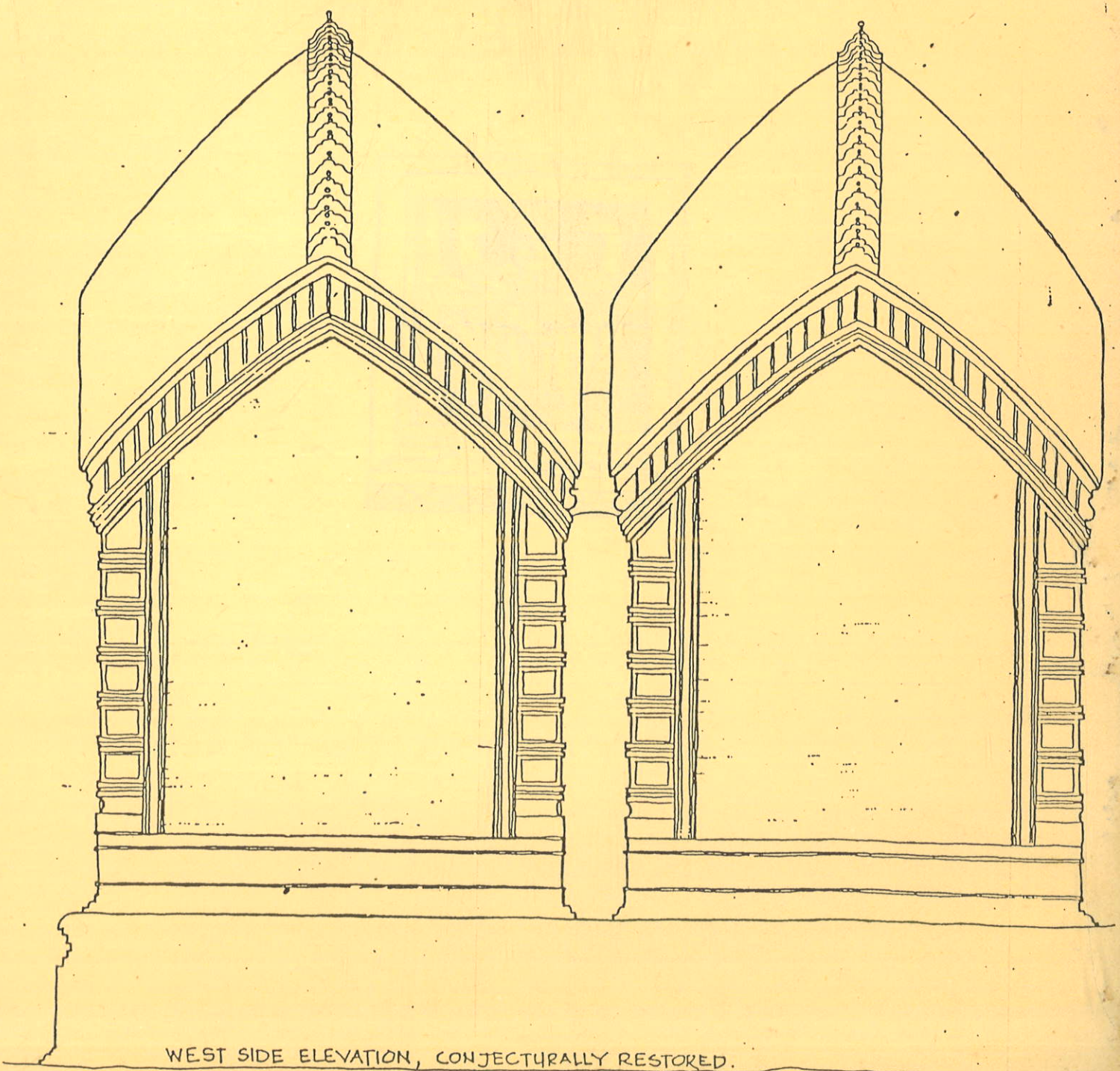
STRUCTURAL & SUPPORT OPTIONS



NOTE

1. USE SWIVEL, RIGHT ANGLE, AND LONGITUDINAL CLAMPS OF APPROVED MAKE.
2. THE GROUND FORMING SUBGRADE SHALL BE WELL CONSOLIDATED BY RAMMERS/ ROLLERS AND SHALL BE LEVELLED
3. A 200mm THICK LAYER OF JHAMA KHOA (50mm SIZE) & SAND FILLING IN THE INTERSTICES SHALL BE THOROUGHLY CONSOLIDATED WITH RAMMERS
4. TWO LAYERS OF (1:6) C.B.W SHALL BE LAID ON 75 THICK (1:4:8) LEVELLING COURSE ON JHAMA KHOA AND SAND MIN. 2 LAYERS OF 75mm THICKNESS.
5. THE THICKNESS OF JHAMA KHOA & SAND OR THE BRICK LAYERS MAY BE INCREASED TO SUIT THE LOCAL LEVELS.
6. GROUND LEVEL = R.L 1.000

STRUCTURAL SUPPORT OPTIONS



WEST SIDE ELEVATION, CONJECTURALLY RESTORED.