

BARH KI CHOWKI, DELHI PROJECT COMPLETION REPORT

SEPTEMBER 2023



Prepared by:

Architectural Heritage Division,
Indian National Trust for Art and Cultural Heritage,
New Delhi



Project by:

Delhi Police, New Delhi



Funded by:

National Culture Fund, Ministry of Culture



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1. INTRODUCTION

Barh ki Chowki is located in Daya Basti, Old Rohtak Road, Delhi. It is one of the oldest police chowkis in Delhi, constructed in between 1800 and 1820 CE. INTACH was approached by Delhi Police for the conservation of the Chowki in December 2021. Further to this, the work of Conservation and Adaptive Reuse of Barh ki Chowki was divided in two phases.

- » The Phase-I incorporated civil restoration and structural retrofitting of the structure, which was carried out with INTACH's own fund over a period of five months from March to August 2022.
- » Following the phase-I, Delhi Police arranged for the funding of execution of Phase-II from the National Cultural Fund, Ministry of Culture. The execution of the Phase-II of the project was started on site in February 2023 and completed in August 2023.



Barh Ki Chowki before conservation, April 2022



Barh Ki Chowki during conservation, July 2022

2. PHASE - I (FUNDED BY INTACH)

The primary focus of the Phase-I works was site clearance, restoration of the structure wherein the roof was completely damaged, and walls had massive trees growing through them. Phase-I was carried over a period of over a period of five months from March to August 2022.



Barh ki Chowki before restoration, April 2022

i. Debris Clearance & Vegetation Removal

The Barh ki Chowki structure was concealed behind a temporary structure that accommodated the Anti Auto Theft Squad (AATS) of North District, Delhi. The chowki was in a dilapidated state wherein the damage of the roof caused it to fall down. These debris were collected within the chowki itself. During the phase-I these debris were cleared on the site. Similarly, the large trees that had grown through the walls of the chowki structure, were carefully removed.



Vegetation growth through the walls



Debris collected in the chowki

ii. Restoration of the Structure

The chowki is a rectangular structure made up of two rooms, with an arcade on the front. The roof of bigger room (as seen in the image) and the arcade had collapsed. A small fragment of the roof which was still intact showed signs of original jack arches. Based on these evidences, the jack-arch roof was restored using traditional techniques and material. The walls of the chowki were in a complete state of despair, with massive trees growing through them. This affected the structural stability and also resulted in collapse of certain portions of the wall. After removal of vegetation, the walls were restored reusing the existing material as much possible.



View of Barh ki Chowki front facade, February 2023



Barh Ki Chowki during conservation, July 2022

3. PHASE-II [FUNDED BY DELHI POLICE THROUGH NATIONAL CULTURE FUND (NCF)]

The Phase-II works were carried out over a period of seven months from February to August 2023. During this phase, the focus was on the waterproofing, finishes of the chowki walls, flooring, installing doors and windows. The building foreground was designed and developed with landscaping and parking space along with the repairs to the compound wall as well as provision was made for an additional gate. During this phase, information panels and signages stating the significance of the building and its restoration efforts were also designed and installed.



Barh ki Chowki Site during Phase-II landscape works



Barh ki Chowki Site during Phase-II works

i. Wall Finishes

The walls of the chowki are made up of exposed stone masonry. The interior and exterior walls of the building were mechanically cleaned and finished with recessed pointing. Additionally, the existing compound wall was repaired, wherein the crete plaster was removed and replaced with cement plaster. The external wall of the meter room in the south-east corner was also plastered in cement.



Barh ki Chowki Site during Phase-II works



Barh ki Chowki Site during Phase-II works

ii. Floor & Roof Finishes

The chowki structure is made up of two rooms and a corridor in the front. The flooring of the large room and the corridor was completed with IPS flooring. The flooring of the smaller room, however, was finished using arash lime flooring. Plinth protection was provided along the periphery of the building. After the restoration of the jack arch ceiling during the Phase-I, it was plastered in lime during the Phase-II. The roof was completed with a layer of lime mortar which will be followed by a water proofing layer, once the monsoon rains completely subside.



Flooring in progress in the chowki



Arash flooring in the small room



Plinth protection around the periphery of the structure



The application of lime mortar on the roof



Testing of waterproofing samples for the roof

iii. Doors & Windows Installation

The door openings in the Chowki building were found in a despair and were missing door shutters, at the inception of the project. During this phase, 7 teak wood doors were made on site along with sal wood frames. The four window openings were provided with red sandstone jalis along with mosquito mesh in a wooden frame.



Installation of Red Sandstone window jali and mosquito mesh



Making and installation of Teak wood doors



Making and installation of Teak wood doors

iv. Landscape Design

The foreground of the Chowki was covered with a temporary structure which hid the building completely. This structure was dismantled and moved to the rear of the chowki as a part of the interventions. The foreground was therefore designed with a concrete pathway in front of the building surrounded by a garden lined with Wedelia plants. The existing well on site was also repaired, and a seating space has been created.

The compound wall was repaired and a pedestrian gate was added to its centre, while the existing gate for car access was moved to the west corner of the wall. A car park accommodating four cars was also provided through the entrance from this gate. The rear and the sides of the building was covered with paver blocks. All these added elements together with the restored structure, enhance the Barh ki Chowki complex.



Concrete pathway work in progress in front of the Chowki building



Planting of Wedelia plants in the garden

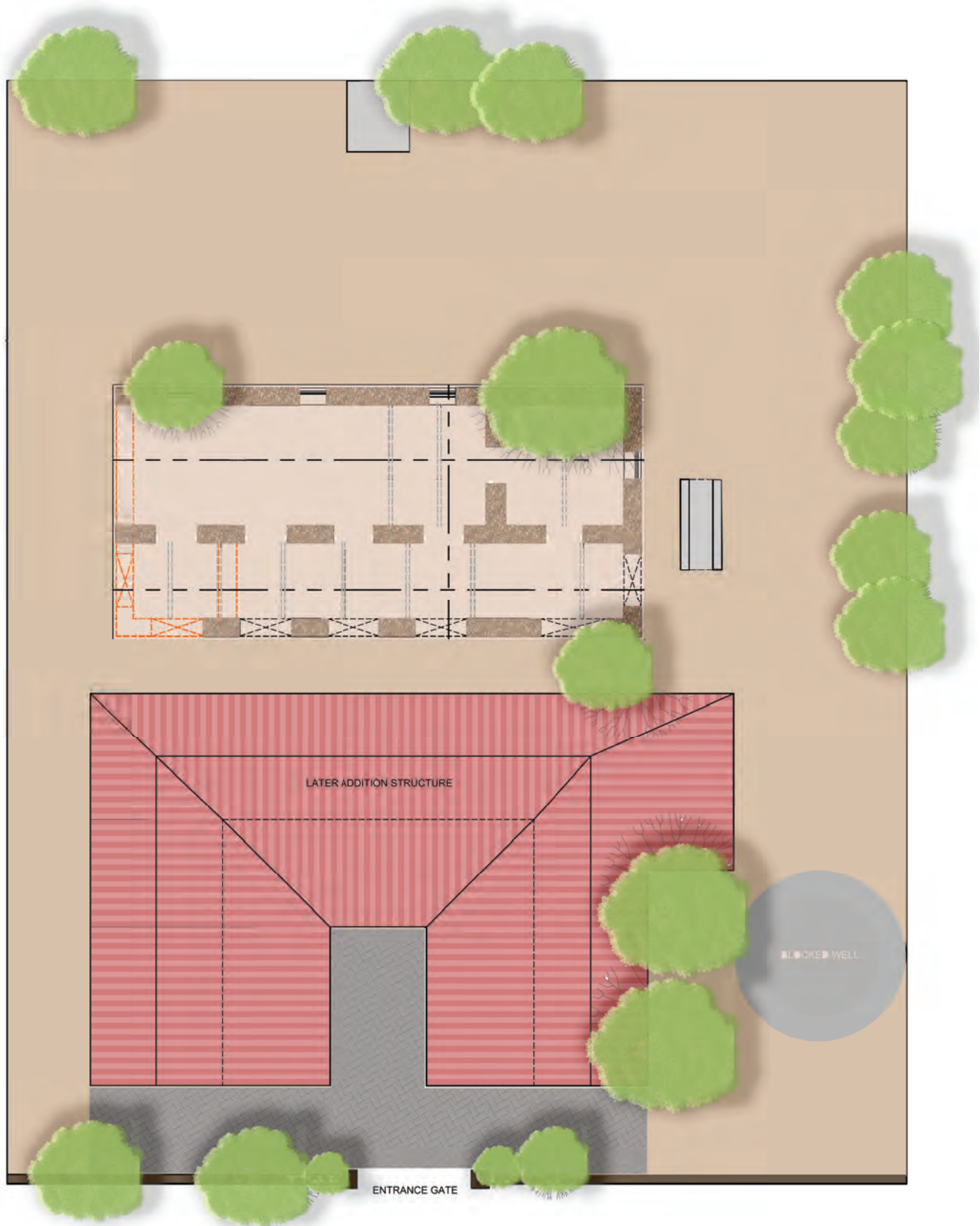
Metal cage addition and plaster of the well



Replacing of the gate for car entrance

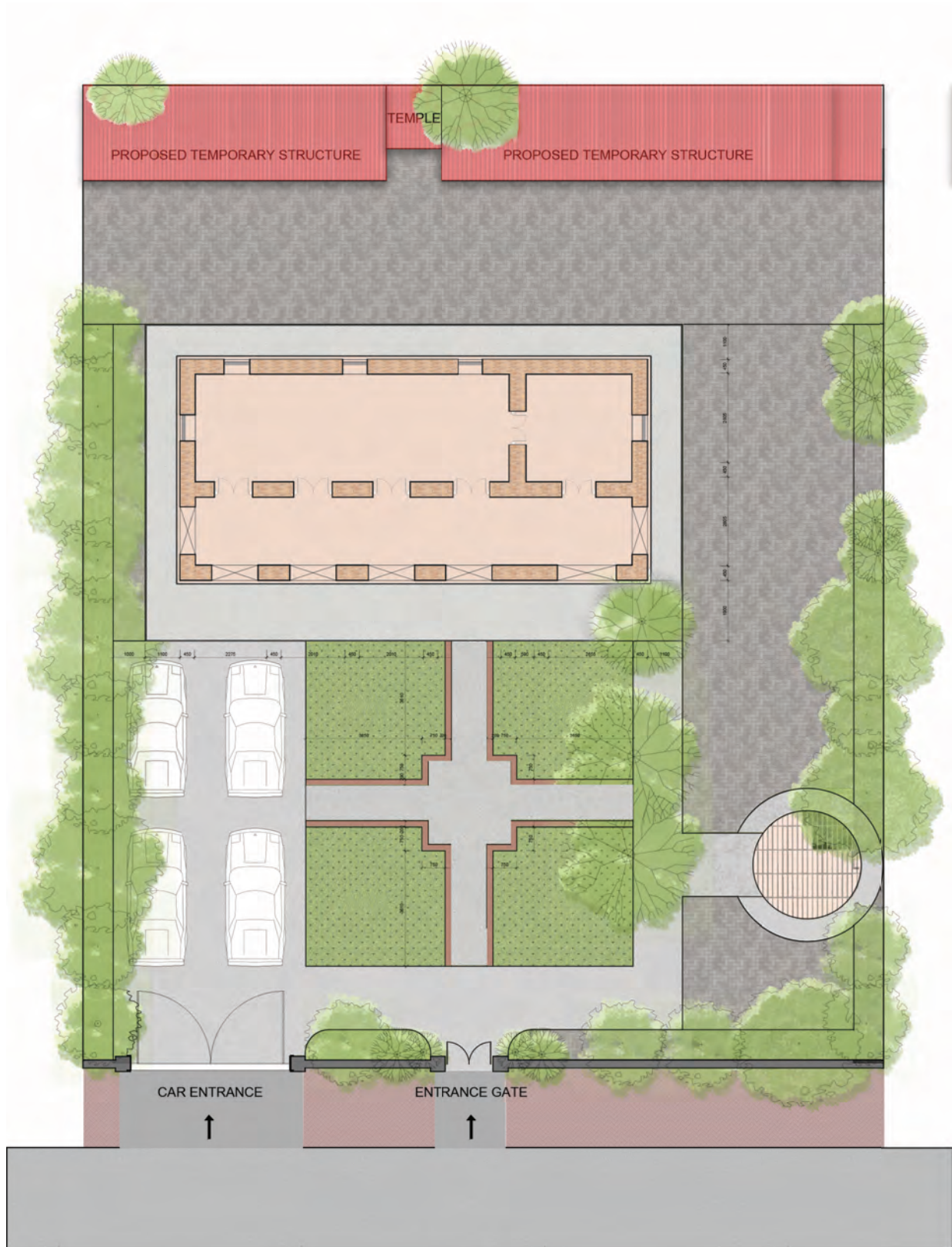
Cement repairs of the compound wall

BEFORE CONSERVATION



BARH KI CHOWKI SITE PLAN (EXISTING)

AFTER CONSERVATION



BARH KI CHOWKI SITE PLAN (AS EXECUTED ON SITE)



Landscape design of the complex showcasing pathway and garden

v. Electrical Works & Illumination Design

In addition to the conservation works, illumination design to enhance the restored façades of the structure was carried out on site. The interior spaces were lit with 7 nos of LED wall lights in the rooms and the corridor. Additionally, lighting fixtures were provided and installed free of charge by **Lightup Plus Pvt Ltd**. The electrical works for the same namely the wiring and conduiting was carried out by SP Safe Control Systems Pvt Ltd. The front and the side façades were provided with water-proof underground LED lights.

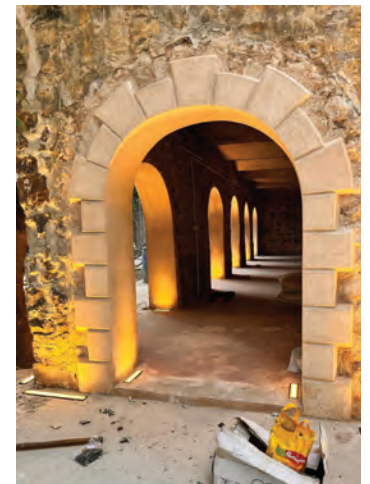
The lighting fixtures used are listed as follows:

1. Model No. - FC2438, 1000 mm length, 10 nos.
2. Model No. - FC1318, 600 mm length, 4 nos.
3. Model No. - F0407, 300 mm length, 15 nos.



Installation of the lighting fixtures on site

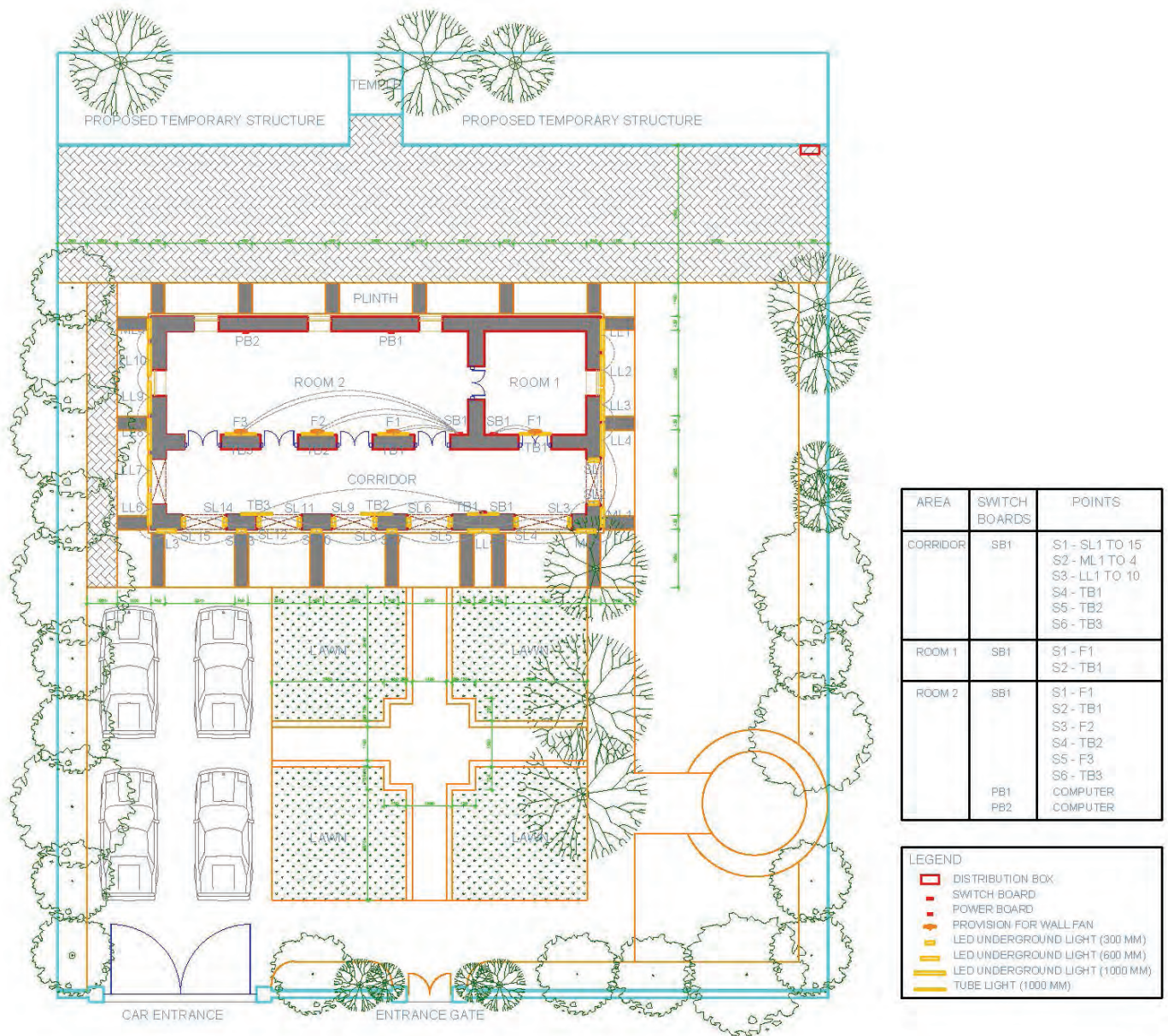
Facade Lighting preview



Facade Lighting preview



Front and side façades after installation of the lighting fixtures



BARH KI CHOWKI PLAN SHOWING THE ELECTRICAL LAYOUT

vi. Well Restoration

The existing well on the site had been closed off in the past with a RCC slab. During this phase, the slab has been completely dismantled to open it up for use, the well has been cleared of any debris. The external wall has been plastered and the internal wall pointed, and a metal cage was added with a openable door. Thus helping revive the well for continuing its usage.



Well before opening up the slab



Well during restoration



Well during installation of metal cage



Well during installation of metal cage



Well post restoration

vii. Porta Cabin Construction

During the Phase-I, the porta cabins from the front of the chowki structure were dismantled under the supervision of INTACH, to open up the foreground. During the Phase-II, INTACH also supervised the construction of porta cabins to be used as office and residential spaces for the Delhi Police staff. These are constructed behind the chowki structure towards the north end of the site. These consisted of four office spaces, a kitchen and wash rooms. These works were carried out by the Delhi Police.



Existing Porta Cabins in front of the Chowki building



Porta Cabins constructed behind the Chowki building

4. BEFORE & AFTER RESTORATION IMAGES



Barh ki Chowki interiors



Barh ki Chowki external facade



Barh ki Chowki front facade



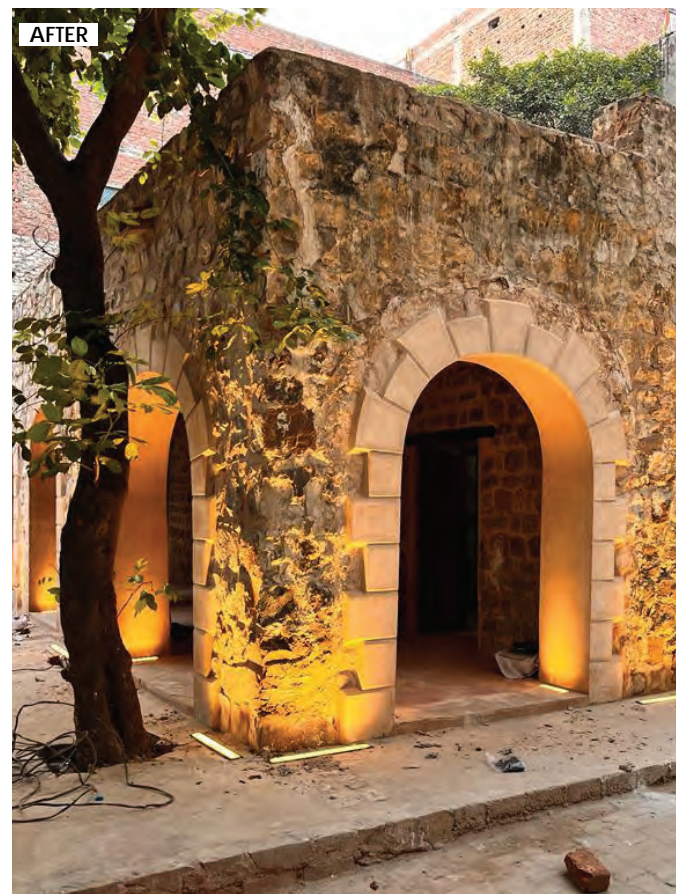
Barh ki Chowki rear facade



Barh ki Chowki landscape design in the front of the structure



Barh ki Chowki entrance gate



Barh ki Chowki side facades



Barh ki Chowki well

Restoration of Barh ki Chowki, Delhi										
Running Bill - 2 (April to August 2023)										
Sr. No.	Reference Code	Description	Unit	As per BOQ			As per RA 1 (February to April 2023)		As per RA 2 (May to August 2023)	
				Rate	Quantity	Amount	Quantity	Amount	Quantity	Amount
A SITE CLEARANCE & SCAFFOLDING										
1	DSR I 2021 1.1.18	Disposal of moorum/building rubbish/ malba/ similar unserviceable, dismantled or waste material by mechanical transport including loading, transporting, unloading to approved municipal dumping ground for lead upto 5 km for all lifts, complete as per directions of Engineer-in-charge and for sorting lifting & stacking charges for architectural parts up to 50 m lead.	cum	₹ 903.11	109.2	₹ 98,619.61	65.52	₹ 59,171.77	30	₹ 27,093.30
2	DSR II 2021 14.72	Providing and fixing double scaffolding system (cup lock type) on the exterior side, up to seven story height made with 40 mm dia M.S. tube 1.5 m centre to centre, horizontal & vertical tubes joining with cup & lock system with M.S. tubes, M.S. tube challies, M.S. clamps and M.S. staircase system in the scaffolding for working platform etc. and maintaining it in a serviceable condition for the required duration as approved and removing it there after .The scaffolding system shall be stiffened with bracings, runners, connection with the building etc wherever required for inspection of work at required locations with essential safety features for the workmen etc. complete as per directions and approval of Engineer-in-charge .The elevational area of the scaffolding shall be measured for payment purpose . The payment will be made once irrespective of duration of scaffolding.	sqm	₹ 285.00	187.92	₹ 53,557.20	120	₹ 34,200.00	₹ 42.00	₹ 11,970.00
SUBTOTAL						₹ 152,176.81		₹ 93,371.77		₹ 39,063.30
B DISMANTLING WORKS										
1	NS	Careful removal, hoisting and lowering of debris and collapsed parts from any height, to sort serviceable material from unserviceable material and stacking of usable material with disposal of left out Malba to nearest approved municipal dumping ground including loading, transporting and unloading. Careful removal of existing deteriorated/ damaged/ weathered lime plaster without damaging the surface below it.		₹ 25,000.00	LS	₹ 25,000.00				
2	DSR II 2021 15.3	Demolishing R.C.C. work manually/ by mechanical means including stacking of steel bars and disposal of unserviceable material within 50 metres lead as per direction of Engineer - in- charge.	cum	₹ 2,928.10			0.16875	₹ 494.12	50	₹ 146,405.00
SUBTOTAL						₹ 25,000.00				₹ 146,405.00

C									
RESTORATION WORKS									
		Random Rubble Masonry (Construction)							
1	NS	Masonry Random rubble masonry with hard stones in foundation and plinth including levelling with 50mm thk lime concrete (1 lime: 3 surkhi: 6 coarse sand) with 20 mm stone aggregate upto plinth level with lime mortar 1:1:1 (1 Lime: 1 Surkhi: 1 Coarse sand), using existing stones salvaged from site clearance	cum	₹ 2,477.05	35.67	₹ 88,356.37			
2	DSR I 2021 8.14	Providing precast stone jambs for the existing door and window opening	cum	₹ 4,824.75	5.60	₹ 27,018.60			
3	DSR I 2021 4.17B	Making plinth protection 50mm thick of cement concrete 1:3:6 (1 cement : 3 manufactured sand derived from Recycled Concrete Aggregate (RCA) : 6 graded stone aggregate 20 mm nominal size (Recycled Aggregate (RA) over 75mm thick bed of dry brick ballast 40 mm nominal size, well rammed and consolidated and grouted with fine sand, including necessary excavation, levelling & dressing & finishing the top smooth	sqm	₹ 596.60	61.32	₹ 36,583.51		61.64	₹ 36,774.42
4	NS	Lime plaster 1:2 (1 slaked lime: 2 coarse sand) 20mm thick in two courses. First coat will be in 12 mm and second coat will be in 8 mm.	sqm	₹ 295.46	650.00	₹ 192,049.00		50	14,773.00
5	NS	Repointing of raked out joints of Random rubble masonry by using lime mortar 1:1:1 (1Lime:1coarse sand:1Brick jeera)	sqm	₹ 191.05	895.11	₹ 171,010.77	15	₹ 2,865.75	611.67 ₹ 116,859.55
6	NS	Repointing of raked out joints in brick masonry by using lime mortar 1:1:1 (1Lime:1coarse sand:1Brick jeera)	sqm	₹ 257.05			74	₹ 19,021.70	
7	NS	Pointing of raked out joints of random rubble masonry by using lime mortar 1:1:1	sqm	₹ 566.31					
8	NS	30-40mm lime plaster in two coats with 20 mm base coat in lime mortar 1:1:1 (1 lime: 1 Surkhi: 1 Coarse Sand) and top coat in lime mortar 1:1:1 (1 lime: 1 Surkhi: 1 Fine	sqm	₹ 1,269.20			85	₹ 107,882.00	
9	NS	Providing & applying lime kara 1:2 (lime cream : 2 zikki powder) grinding mortar with grinding mill/manually on lime base, on all flat surface in two coats. First coat applying 3 mm to 4 mm thick and curing properly at least 7 days, second finishing coat done after 7 days of previous coat as per traditional practice. (150% of domical surface/ spherical/ domical ceiling)	sqm	₹ 937.33			85	₹ 79,673.05	42.5 ₹ 39,836.53
10	NS	Lime Mortar 1:1:1 (1 Slaked lime: 1 surkhi: 1 fine sand)	cum	₹ 8,172.56			5.11	₹ 41,761.78	15.33 ₹ 125,285.34
		SUBTOTAL				₹ 515,018.25		₹ 251,204.28	₹ 333,528.85
D									
ROOF WORKS									
	DSR II 2021 15.3	Dismantling jack arch roofing and floors including stacking of serviceable material and disposal of unserviceable material within 50 metres lead.15.30 Dismantling jack arch roofing and floors including stacking of serviceable material and disposal of unserviceable material within 50 metres lead.	sqm	₹ 209.40	39.25	₹ 8,217.90			
	NS	Construction of Jack arched roof using Rolled steel joists, fired clay bricks with composite lime mortar mix 1 cement: 3 Slaked lime: 4 Coarse sand: 8 Coarse aggregate, using bricks salvaged from the site and using 50% new bricks	sqm	₹ 5,325.32	78.49	₹ 417,984.05			

	NS	Providing and laying lime concrete in horizontal bands or coping, bed blocks, etc. up to 15 mts height, excluding the cost of centering, shuttering and finishing 1:1 1/2:3 (1 lime : 1 1/2 coarse sand : 3 grades aggregate 20 mm nominal size)	cum	₹ 10,000.00			8	80,000.00		
		SUBTOTAL						₹ 426,201.96		80,000.00
E DOORS-WINDOWS										
1	DSR II 2021 15.14	Dismantling wood work in frames, trusses, purlins and rafters up to 10 metres span and 5 metres height including stacking the material within 50 metres lead : 15.14.1 Of sectional area 40 square centimetres and above	cum	₹ 364.50	LS	₹ 5,000.00				₹ 5,000.00
2	NS	Old/Heritage Doors from salvaged materials	nos	₹ 5,500.00	6.00	₹ 33,000.00				₹ 80,000.00
3	NS	Old/Heritage Windows from salvaged materials	nos	₹ 5,000.00	4.00	₹ 20,000.00				
4	DSR I 2021 9.55	Providing and fixing ISI marked M.S. pressed butt hinges bright finished with necessary screws etc. complete 125x65x2.12 mm	each	₹ 48.00	13.00	₹ 624.00			20	₹ 960.00
5	DSR I 2021 9.66	Providing and fixing ISI marked oxidised M.S. handles conforming to IS:4992 with necessary screws etc. complete: 125 mm	each	₹ 35.20	10.00	₹ 352.00			6	₹ 211.20
6	DSR I 2021 9.65	Providing and fixing ISI marked oxidised M.S. door latches conforming to IS:5930 with screws etc. complete 300x20x6 mm	each	₹ 82.40	10.00	₹ 824.00			6	₹ 494.40
7	DSR I 2021 9.68	Providing and fixing oxidised M.S. casement stays (straight peg type) with necessary screws etc. complete. 200 mm weighing not less than 120 grams	each	₹ 45.20	4.00	₹ 180.80				
8	NS	Providing and fixing red sandstone jali 40 mm thick throughout in lime mortar	LS							₹ 31,570.00
		SUBTOTAL						₹ 59,980.80		₹ 118,235.60
F WATERPROOFING										
1	DSR II 2021 14.86	Providing and laying in situ seven course water proofing treatment with APP (Atactic poly-propylene) modified Polymeric membrane over roof consisting of first coat of bitumen primer @ 0.40 litre per sqm, 2nd, 4th & 6th courses of bonding material @ 1.20 Kg/sqm, which shall consist of blown type bitumen of grade 85/25 conforming to IS : 702, 3rd and 5th layers of roofing membrane APP modified Polymeric membrane 1.5 mm thick of 2.25 Kg/sqm weight consisting of five layers prefabricated with centre core as 20 micron HMHDPE film sandwiched on both sides with polymeric mix and the polymeric mix is protected on both side with 20 micron HMHDPE film. 7th, the top most layer shall be finished with brick tiles of class designation 10 grouted with cement mortar 1:3 (1cement : 3 fine sand) mixed with 2% integral water proofing compound by weight of cement over a 12 mm layer of cement mortar 1:3 (1 cement : 3 fine sand) and finished neat (item of	sqm	₹ 615.00	102.20	₹ 62,853.00				

	NS	Providing & applying a coat of organosilane water proofing treatment over lime concrete layer. The chemical must be diluted with potable water in ration of 1:45 to obtain a clear transparent solution. The coating is to be applied by saturating the lime concrete surface by flooding method and leaving it for 48 hr to be executed under the Engineer-In-Charge.	sqm	932.46			82	₹ 76,461.72		₹ 76,461.72
	NS	Providing and applying on horizontal & vertical surface, two coats of highly flexible elastomeric joint-less coating based on elastomer technology (compatible with organo silane WP treatment. To be applied on expose condition.	sqm	2348.59			82	₹ 192,584.38		
		SUBTOTAL						₹ 269,046.10		₹ 76,461.72
G		SITE DEVELOPMENT								
1	DSR 2020 (Horticulture & Landscaping) 2.3	Supplying and stacking of good earth at site including royalty and carriage upto 5 km lead complete (earth measured in stacks will be reduced by 20% for payment	cum	₹ 78.10	385.91	₹ 30,139.41			192.954	30,139.41
2	2.7	Fine dressing of the ground.	sqm	₹ 3.70	385.91	₹ 1,427.86				1,427.86
3	DSR 2020 (Horticulture & Landscaping) 2.10	Grassing with selection No. 1 Doob grass including watering and maintenance of the lawn for 30 days or more till the grass forms a thick lawn, free from weeds and fit for mowing including supplying good earth, if needed (the grass and good earth shall be paid for separately) 2.10.1 In rows 5 cm apart in both directions	Sqm	₹ 17.70	321.59	₹ 5,692.14				
4	DSR 2020 (Horticulture & Landscaping) 2.35	Supplying & Stacking of Selection No.1 doob grass turf at site fresh & free from weeds having proper roots in green including loading, unloading, carriage and all taxes paid etc.and as per direction of officer in charge.	Sqm	₹ 45.00	321.59	₹ 14,471.55				
5	DSR 2020 (Horticulture & Landscaping) 2.13	Preparation of beds for hedging and shrubbery by excavating 60 cm deep and trenching the excavated base to a further depth of 30 cm, refilling the excavated earth after breaking clods and mixing with sludge or manure in the ratio of 8:1 (8 parts of stacked volume of earth after reduction by 20%: one part of stacked volume of sludge or manure after reduction by 8%), flooding with water, filling with earth if necessary, watering and finally fine dressing, leveling etc. including stacking and disposal of materials declared unserviceable and surplus earth by spreading and leveling as directed, within a lead of 50 m, lift up to 1.5 m complete (cost of sludge, manure or extra earth to be paid for separately)	cum	₹ 222.85	128.64	₹ 28,666.53			128.64	28,666.53
6	DSR 2020 (Horticulture & Landscaping) 2.57	Plantation of Trees, Shrubs, and Hedge at site i/c watering and removal of unserviceable material's as per direction of officer in charge (excluding cast of plant & water)								
		2.57.1 Trees Plant	Each	₹ 7.30	5.00	₹ 36.50				
		2.57.2 Shrubs Plant	Each	₹ 3.65	30.00	₹ 109.50				
		2.57.3 Hedge Plant /Ground cover	Each	₹ 2.45	10.00	₹ 24.50				
7	NS	Supplying and stacking of plants, shrubs and hedges	LS			₹ 5,000.00				₹ 12,000.00
8	NS	Providing and fixing cast iron gate of size 1400 mm X 2100 mm at the opening made for the entrance gate	kg	₹ 100.00	63.30					₹ 6,330.00
9	NS	Providing and fixing round shape cast iron cage of 2.5 metre dia, with the provision of a trap door	kg	₹ 100.00	113.80					₹ 11,380.00

10	NS	Providing and fixing red sandstone signage plaque with letters carved out in the stone itself.	LS						₹ 10,000.00
11	NS	Providing and fixing 0.45 mm X 1450 mm ACP panel with name signage printed in 2D, with back lighting							₹ 10,000.00
12	NS	Providing and drawing the following sizes of FRLS PVC insulated copper conductor single core cable as earth wire in existing surface/ recessed steel PVC conduit as required.							
		1.17.3 3 X 1.5 sq mm	metre	₹ 95.00					₹ 21,737.00
13	NS	Supplying and fixing of following sizes of steel conduit along with accessories in surface/recess including painting in case of surface conduit, or cutting the wall and making good the same in case of recessed conduit as required.							
		1.21.2 25 mm	metre	₹ 145.00					₹ 12,288.00
		SUBTOTAL					₹ 85,568.00		₹ 143,968.81
TOTAL WORKS							₹ 1,326,798.82	₹ 694,116.27	₹ 857,663.27
INTACH FEES						10%	₹ 175,137.44	₹ 69,411.63	₹ 85,766.33
GST						18%	₹ 31,524.74	₹ 12,494.09	₹ 15,437.94
GRAND TOTAL IN RS.							₹ 1,958,036.62	₹ 776,021.99	₹ 958,867.54
<i>In words - Rupees Nine Lakhs Fifty Eight Thousand Eight Hundred and Sixty Seven</i>									
First Installment of Funds Received							₹ 585,200.00		
Second Installment of Funds Received							₹ 585,200.00		
Final Installment of Funds to be received							₹ 292,600.00		
Total							₹ 1,463,000.00		



DEDICATED TO CONSERVATION

INDIAN NATIONAL TRUST FOR ART & CULTURAL HERITAGE

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