

BALLARD BUNDER GATEHOUSE

CONSERVATION REPORT

DOCUMENTATION, ANALYSIS & PROCESS



FOR NAVAL DOCKYARD, MUMBAI.

K.UNWALLA ARCHITECTS, MAY 2005

OWNERS :

NAVAL DOCKYARD, MUMBAI

FUNDING:

NAVAL DOCKYARD & MMRDA

PROJECT DURATION:

DOCUMENTATION:

JUNE 2004 to SEPTEMBER 2004

PROJECT PREPARATION:

OCTOBER 2004 to DECEMBER 2004

PROJECT EXECUTION:

FEBRUARY 2005 to MAY 2005

DATE OF COMPLETION:

MAY 28, 2005

PROJECT COST:

40 LAKHS

PROJECT CONSULTANTS:

K. UNWALLA ARCHITECTS, MUMBAI



AT THE HELM
VADM MADANJIT SINGH PVSM, AVSM, ADC,
FLAG OFFICER COMMANDING IN CHIEF,
WESTERN NAVAL COMMAND

RESTORATION TEAM

RADM B.K. Kaul, AVSM - ASD, ND (MB)
CMDE R. Balasubramaniam - GM (T), ND (MB)
CMDE A.V.Subhedar - AGM (RP), ND (MB)
CDR N. Ramesh - MDP, ND (MB)
SHRI. A. Shukla - CWE (NW)

SPECIAL MENTION
Project Association in
Inception Stage

RADM S.K. KRISHNAN, AVSM - ASD, ND (MB)
CMDE RANDIP SINGH - VSM, ND (MB)
CDR MANOJ BHATT - MDP, ND (MB)

TECHNICAL TEAM

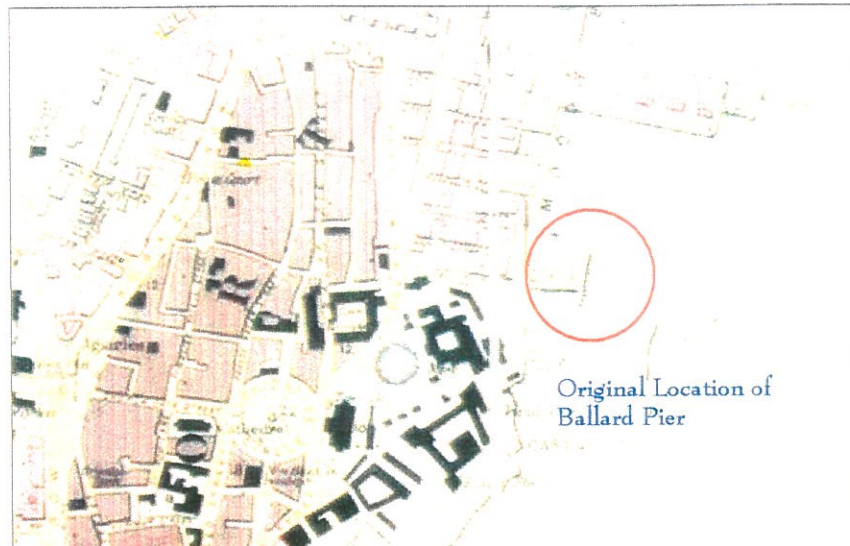
Project Consultants -	K. Unwalla Architects
	Ar. Kirtida Unwalla (Conservation)
	Ar. Suneeta Samant (Planning)
	Ar. Abhijeet Surve
Structural Consultants -	Epicons Consultants Pvt. Ltd.
Stained Glass -	Swati Chandgadkar
Conservation Contractors -	Savani Construction Co.
Electrical Contractors -	Harshad & Co.
Landscape Contractors -	Green Grower



CONSERVATION REPORT



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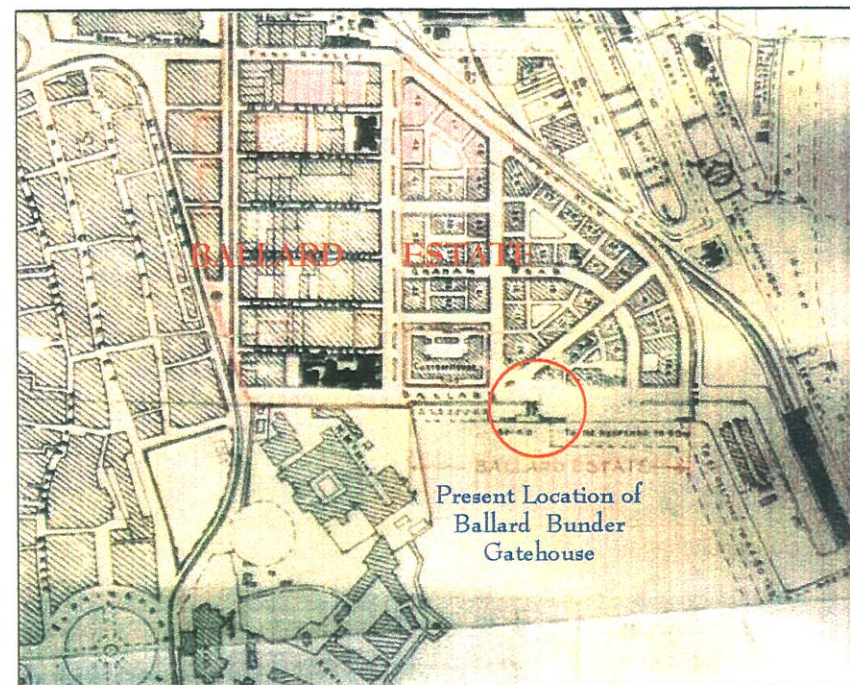


Ref: Map of Bombay Island by Colonel Laughton, 1871 (part)
Source: Dept. of Archives, Govt. of Maharashtra.



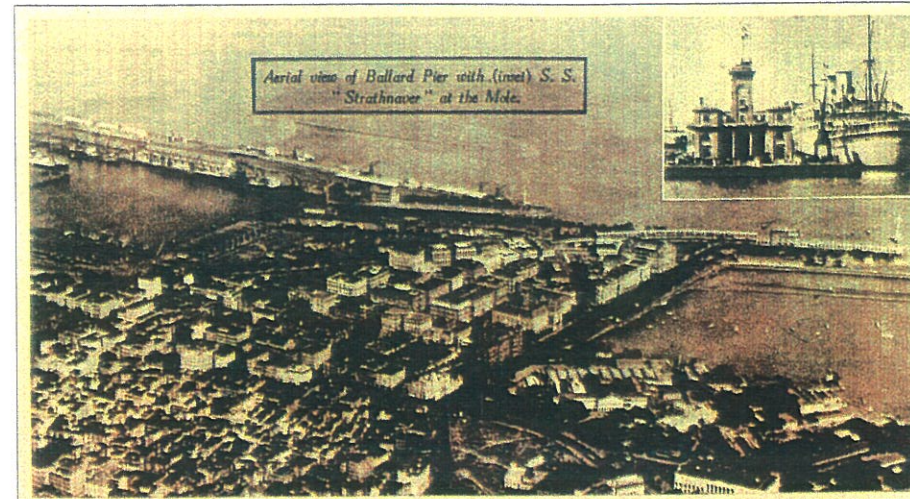
BPT
ADMINISTRATION
REPORT (1919-1920),
TRADE & TRAFFIC
STATISTICS, -
QUOTE:

*Ballard Bunder new
Gatehouse:
The construction of
the new gatehouse on
the south of Ballard
road was taken in
hand and half
completed at
the end of the year.*

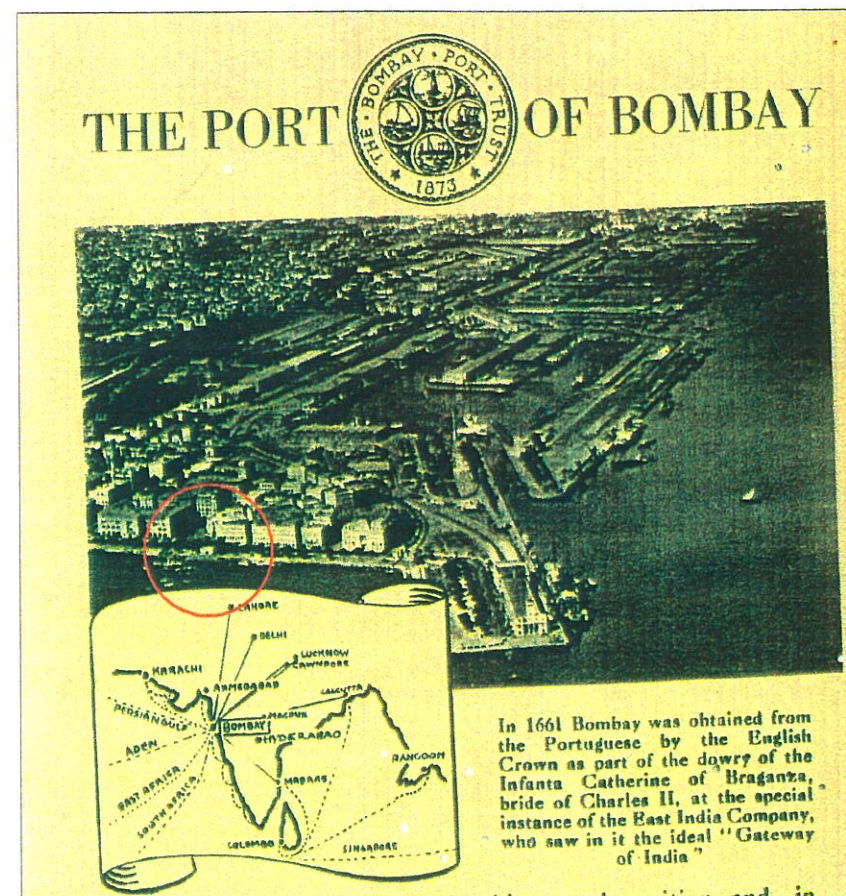


Ref: Map of Harbour of Bombay (part) By Bombay Port Trust, (1926)
Source: Dept. of Archives, Govt. of Maharashtra.

CULTURAL SIGNIFICANCE



Source: Bombay - The Gateway to India, Issued by Rotary Club of India, 1936



Source: The Handbook of India, Issued by Publicity Bureau, Govt. of India Railway Department (probable Date Bet 1920 to 1930)

HISTORICAL BACKGROUND

The Ballard Bunder Gatehouse was built in 1920, as a commemorative portal to the altered alignment of the harbor at the location of the erstwhile Ballard Pier, as envisaged in the planned development of Ballard Estate. George Wittet, Chief architect of the Bombay Port Trust conceived the Ballard Estate (1908 - 1914) in the Neo-Classical style, comparable with contemporary Business Districts in a European setting.

The planned development with its street layout, public nodes and street furniture are a fitting tribute to the Neo-Classical style. The location of the Ballard Bunder Gatehouse along the Shoorji Vallabhdas Road (Ballard Road) is in a contextual response to the prominent nodal setting, complementing the elegant Bombay Port Trust Memorial.

The Gatehouse having a strategic association with the landmark location along the harbor befits the Architectural style of the Estate and shares its design and detail with the contemporary triple gatehouse of the Green Gate - the gatehouses establishing an access to the eastern waterfront promenade upto the Mole Station and the Alexandra Docks. The bold and rich appearance of the rusticated yellow stone masonry profiled with deep cuts indicative of joints, relates closely to the contemporary structures of Ballard Estate. The smaller scale as demanded by its function, none-the-less aptly complements the European Renaissance character of the setting.

HERITAGE STATUS

The Heritage Regulations for Greater Mumbai - 1995, designate the "Fort Precinct" as a Listed Heritage Precinct. The Ballard Pier area and a part of the Naval Dockyard area are designated as Sub-Precincts of the overall Fort Precinct under the same Heritage Regulations. The Naval Dockyard Authority's appeal to designate the Ballard Bunder Gatehouse as a listed heritage structure of the Naval Dockyard Precinct has been accepted by the Heritage Conservation Committee of Municipal Corporation of Greater Mumbai.

NEED FOR RESTORATION

The Ballard Bunder Gatehouse having served its original function till 1950's, fell into disuse and lay virtually obscured behind high security wall subsequent to its inclusion into the Naval Dockyard. The Gatehouse was adapted as an internal department office in the year 2002, after carrying out certain structural repairs and alterations for the new use. Some of the interventions carried out were of obtrusive nature and non-conducive to the historic structure.

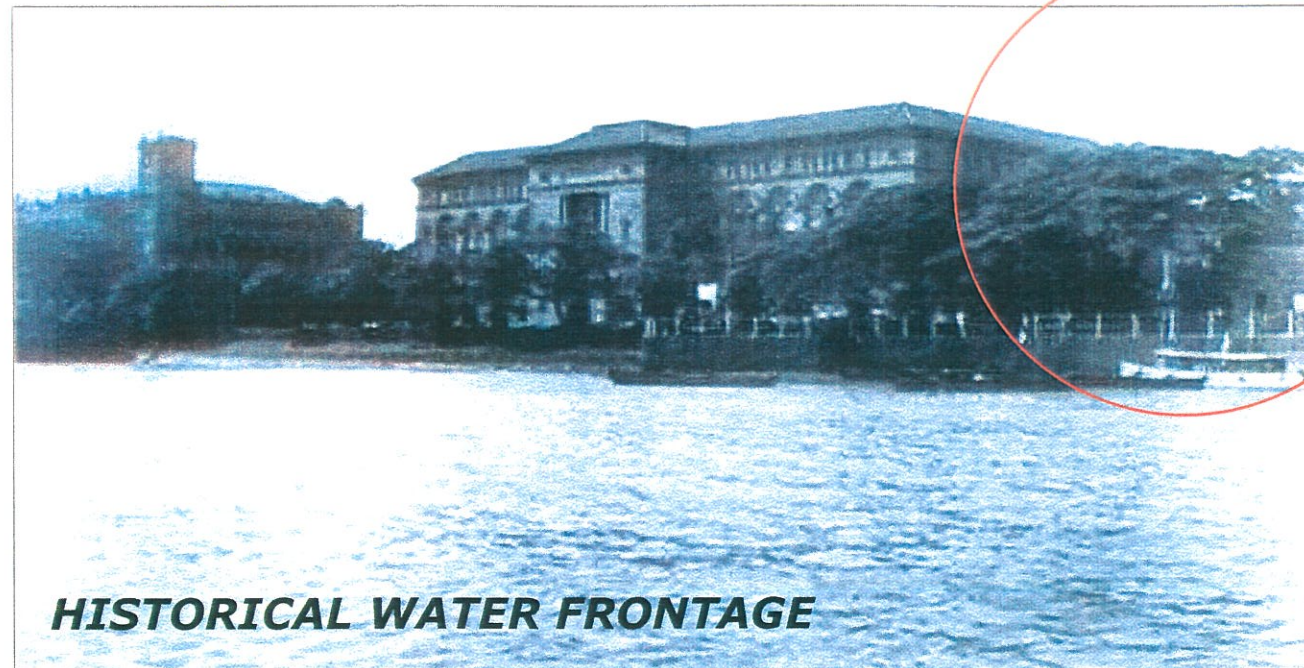
Appreciating the importance of this structure in the Ballard Estate Precinct, the Naval Dockyard Authority initiated necessary efforts in mid 2004 for its restoration and bringing it into public view.

FUNDING

The project has been undertaken at a total cost of Rs. 36 Lakhs by the Naval Dockyard Authority with partial funding assistance from the Mumbai Metropolitan Region heritage Conservation Society.



PRESENTATION AND SETTING



HISTORICAL WATER FRONTAGE



PRESENT SETTING

PROPOSAL

The Ballard Bunder Gatehouse restoration project attempts to restore the building and its image, ensuring a secure future and to strengthen the visibility of the node through an appropriate landscape setting.

The monument is being adapted as a Museum exhibiting growth of the harbour and affording an opportunity for the public at large for viewing the exhibits.

CONSERVATION

The project envisaged acquiring a thorough understanding of the historic structure by carrying out architectural investigation, documentary research, recording, interpretation and assessment in the wider historic context. A methodology for repairs was designed to keep interventions to the minimum and to stabilize the building while retaining its sound original fabric. The conservation strategy aimed at achieving a sound structural condition that ensures long term survival, while meeting the requirement of use as a museum.

The landscape scheme involved demolition of the high security wall and its replacement with metal grill fence on the pattern of the grill gates at the Green Gate House of Indira Docks (Alexandra Docks). The scheme creates an enhanced setting for the monument while it encapsulates the existing Rain Tree within its folds.

The conservation processes began with restoring the failing R.C.C roof of structure and unearthing the original ground with stone cobbled floor that lay buried under a substantial layer of added murrum and concrete. Cleaning of the stone to remove general soiling, tar, paint and cement accretions using proven conservation techniques has been undertaken substantially. The obtrusive use of cement plaster in the inner rooms has been replaced by lime plaster. A few random cracks in the stone masonry have been stitched with steel pins.

Additions of timber doors and windows to secure the new use of the building have been undertaken with careful design and detail. An added feature of stained glass in the main doors and windows that borrows the motif design on the frieze bands marks the front facade. General and focused interior lighting and exterior illumination of the monument are executed optimally with minimum disturbance to the historic fabric. Disposal of surface water is efficiently achieved using a 'French Drain' system which is carefully amalgamated into the holistic landscape design.

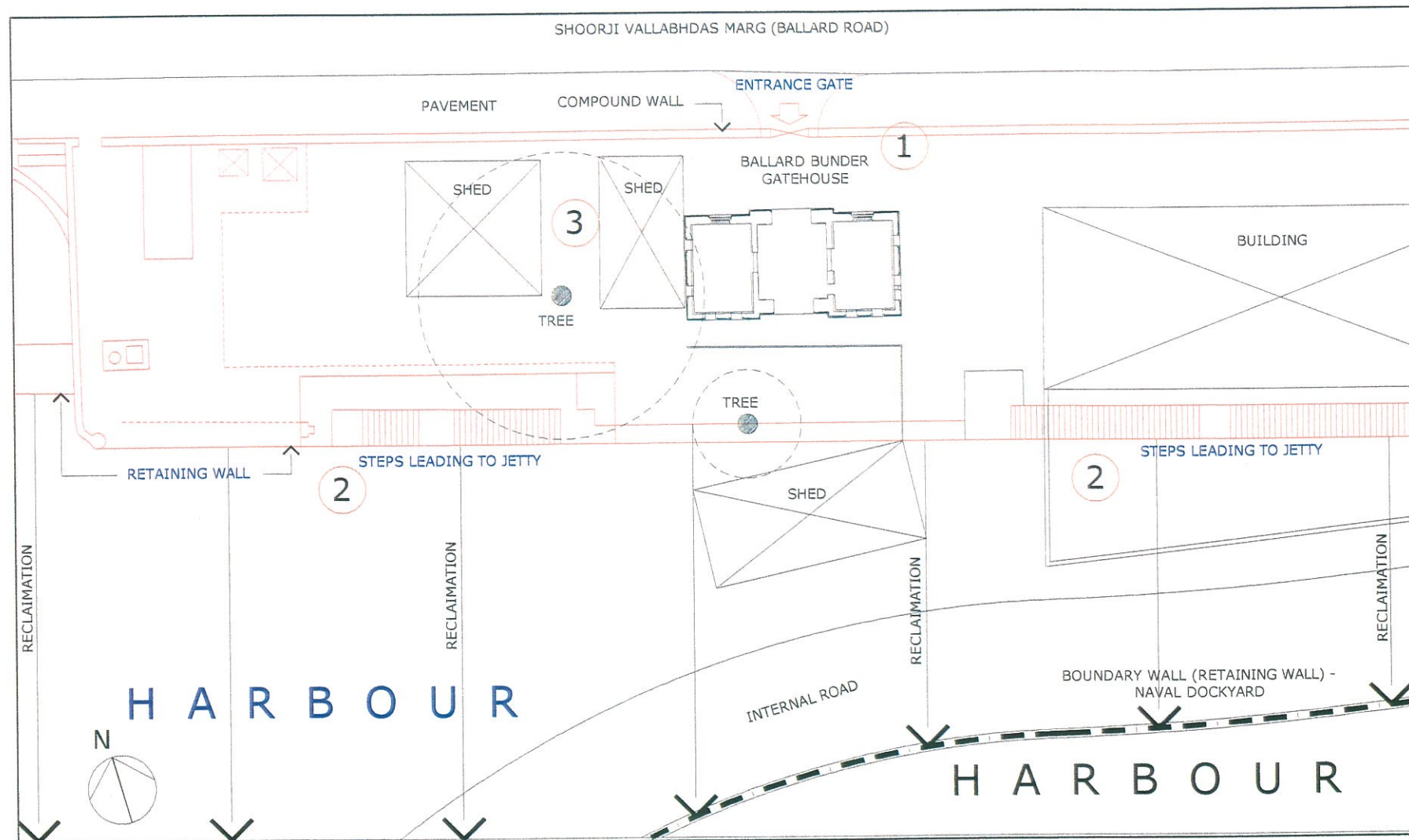
THE BALLARD BUNDER MUSEUM

The Gatehouse Museum, dedicated to the city, depicts tales of its people and their contributions to the evolution of Mumbai. A story of how the city grew around its harbor is presented in the display of rare archival pictures and complementary narrative. The role of the Indian Navy is aptly manifest in the display design within the Gatehouse.

The Naval Authorities in a grand gesture have dedicated this restored Gatehouse to the city of Mumbai.



COMPARATIVE ANALYSIS HISTORIC & AS SURVEYED



Reference: City Survey Sheet No. 53

COMPARATIVE ANALYSIS: HISTORIC & AS SURVEYED

1. SECURITY WALL:

THE EXISTING SECURITY WALL CUTS OFF THE VISIBILITY OF THE MONUMENT AND AS SUCH OBSCURES THIS LANDMARK LOCATION AND SETTING IN THE ORIGINAL SCHEME OF THE BALLARD PIER PRECINCT.

ACTION: IT IS PROPOSED TO BRING DOWN THE WALL AND REPLACE IT WITH GRILLS AND FENCING OF A DESIGN APPROPRIATE WITHIN THE NEO-CLASSICAL SETTING. THE SECURITY ASPECT OF THE NAVAL DOCKYARD i.e. IT IS DIMINISHED IN THE ABOVE ACTION IS PROPOSED TO BE RESTRICTED BY TURNING AROUND THE WALL AT THE REAR OF THE STRUCTURE. THE PROCESS AFFORDS A PROPER SETTING TO THE GATEHOUSE BY CREATION OF A PROPER PLOT AREA WITH OPEN SPACES.

2. HISTORIC ACCESS TO SEA:

HISTORIC RETAINING WALL & STEPS LEADING INTO THE SEA, TODAY LIES BURIED UNDER LAND RECLAMATION.

ACTION: STEPS MAY BE TAKEN TO UNEARTH THE ELEMENTS AT A LATER DATE SUBSEQUENT TO THE CURRENT RESTORATION PROCESS.

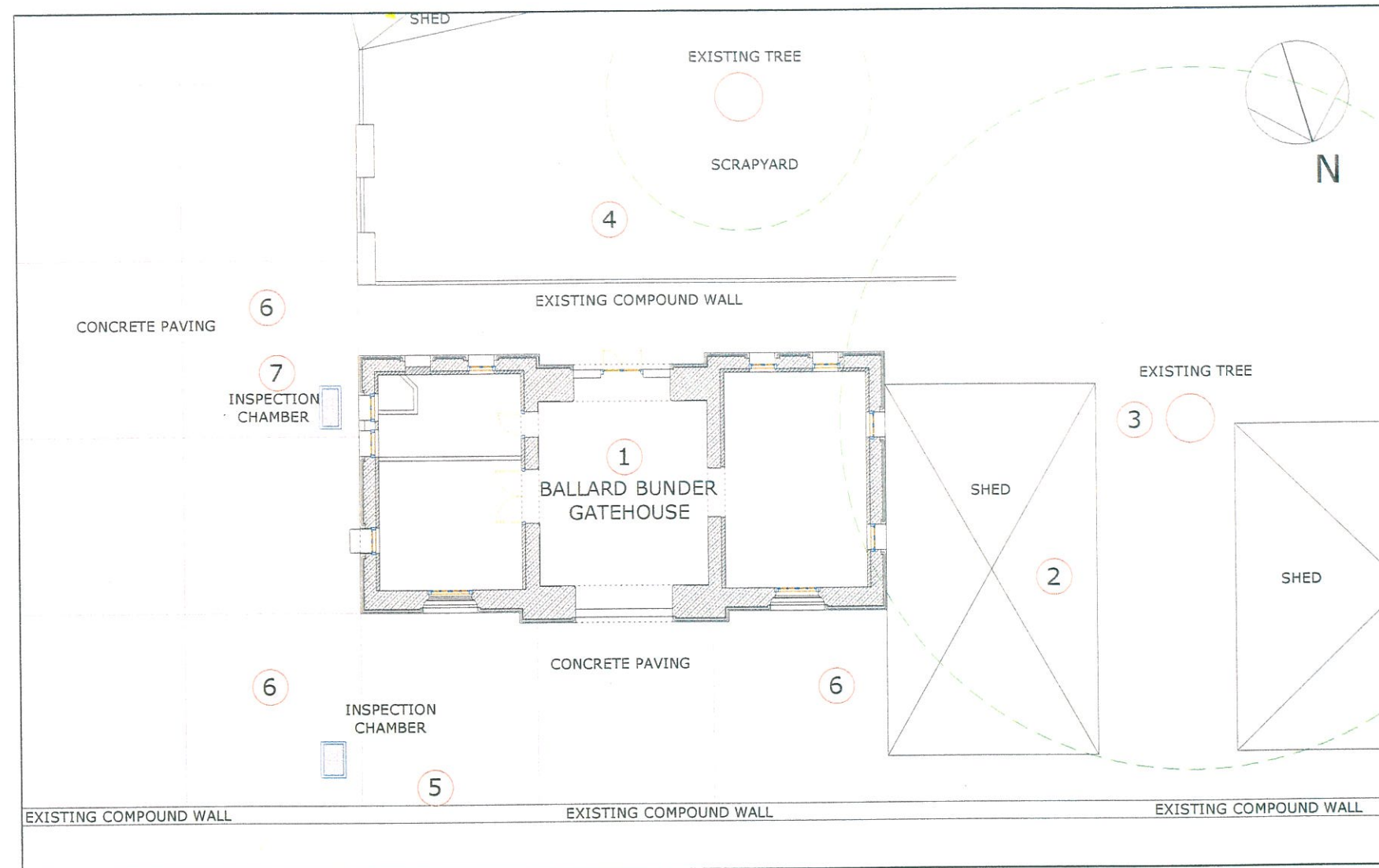
3. SHED:

EXISTING SHED WITH LEAN-TO-ROOF SITS ABUTTING THE HISTORIC GATEHOUSE SOILING THE STONE WALLS & ENCROACHING UPON THE SIDE OPEN SPACES.

ACTION: IT IS PROPOSED TO DEMOLISH THE SHED TO CREATE THE ESSENTIAL SIDE OPEN SPACES.



SETTING & PRESENTATION



1. BUILDING:

1. THE BUILDING HAVING BEING ABANDONED WAS PUT TO USE AS "R.S.O." DEPARTMENT AT NAVAL DOCKYARD, MUMBAI IN THE LAST DECADE AFTER MODERATE REPAIRS AND MODIFICATIONS.

ACTION: IT IS PROPOSED TO RESTORE THE AUTHENTICITY OF THE STRUCTURE AND ARCHITECTURE USING CORRECT CONSERVATION TECHNIQUES. THE RESTORATION IS ALSO AIMED AT ADAPTING THE STRUCTURE TO A CONDUSUE NEW USE - AS A MUSEUM OF THE CITY AND THE NAVY.

2. SHED (DEMOLISHED):

EXISTING SHED WITH LEAN-TO-ROOF SITS ABUTTING THE HISTORIC GATEHOUSE SOILING THE STONE WALLS & ENCROACHING UPON THE SIDE OPEN SPACES.

ACTION: IT IS PROPOSED TO DEMOLISH THE SHED TO CREATE THE ESSENTIAL SIDE OPEN SPACES.

3. EXISTING TREE (RAIN TREE):

PROBABLY PART OF THE ORIGINAL SETTING.

ACTION: RETAIN THE TREE AS FORMING A PART OF THE SIDE OPEN SPACES SO AS TO PROVIDE OPPORTUNITY TO ENHANCE THE MICRO - LANDSCAPE SETTING.

4. SCRAPYARD:

THIS AREA WOULD HAVE ORIGINALLY FORMED THE FRONTAGE OF THE GATEHOUSE ADJOINING THE HARBOUR.

ACTION: THE PROPOSED WALL IS ENVISAGED TO BLOCK THE OBSTRUSIVE VISUAL CONTACT WITH THE AREA.

5. SECURITY WALL:

THE EXISTING SECURITY WALL CUTS OFF THE VISIBILITY OF THE MONUMENT AND AS SUCH OBSCURES THIS LANDMARK LOCATION AND SETTING IN THE ORIGINAL SCHEME OF THE BALLARD PIER PRECINCT. THE WALL ALSO CARRIES ELECTRICAL CABLES (HTL & LTL) SUPPORTED ON BRACKETS AND ANCHORED TO THE WALL.

ACTION: IT IS PROPOSED TO BRING DOWN THE WALL AND REPLACE IT WITH GRILLS AND FENCING OF A DESIGN APPROPRIATE WITHIN THE NEO-CLASSICAL SETTING. THE SECURITY ASPECT OF THE NAVAL DOCKYARD WHICH IS DIMINISHED IN THE ABOVE ACTION IS PROPOSED TO BE RESTRICTED BY TURNING AROUND THE WALL AT THE AT THE REAR OF THE STRUCTURE. THE PROCESS AFFORDS A PROPER SETTING TO THE GATEHOUSE BY CREATION OF A PROPER PLOT AREA WITH OPEN SPACES. ALSO IT IS PROPOSED TO LOWER AND DIRECT THE CABLES INTO THE SUBSOIL ALONG THE LENGTH OF THE WALL.

6. CONCRETE PAVING:

THE ORIGINAL GROUND LEVEL OF THE GENERAL SURROUNDING AREA HAS BEEN LARGELY ALTERED BY SOIL FILLING & CONCRETE PAVING.

ACTION: REMOVE THE ENTIRE CONCRETE PAVING AND GENERAL SOIL FILLING IN THE AREA ALLOCATED AS THE NEW PLOT AREA OF THE GATEHOUSE.

7. DRAINAGE SYSTEM:

EXISTING SYSTEM CARRIES THE DRAINAGE FROM THE SURROUNDING BUILDINGS AND SHEDS IN THE AREA.

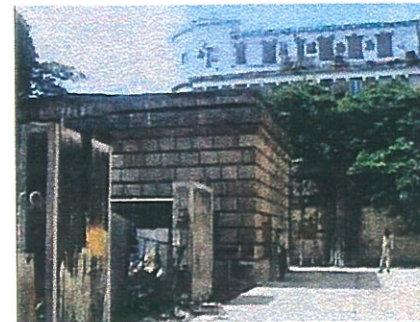
ACTION: WHILE MAINTAINING THE SERVICES, IT IS PROPOSED TO ENHANCE ANY REDUNDANT SECTIONS.



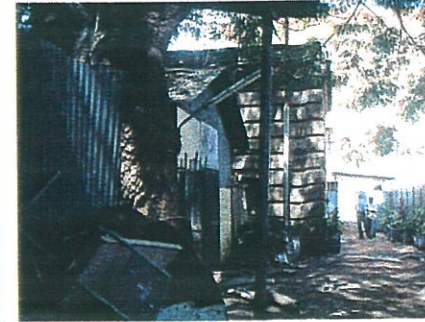
Chaotic setting of the gatehouse before restoration



Security wall demolished to offer visibility to the structure and to re-establish the image of the node



Ballard Bunder Gatehouse amidst the clutter behind the high security wall



Storage shed between the Gatehouse and the tree was demolished to create setting



SITE CLEARING



BALLARD BUNDER GATEHOUSE AMIDST CHAOS : BEFORE RESTORATION



ORGANISED LANDSCAPE SETTING AFTER RESTORATION



Removal of debris between the structure and the tree after demolition of the shed



Layer of P.C.C. and murram around the structure was much deeper than estimated.



Cobbles laid in continuation with the main floor of the Gatehouse were unearthed from the rear open space.



Dead tree trunk completely buried under the filling was restored and integrated in landscaped setting.

SITE CLEARING, DEMOLITION & DISMANTLING

The task of clearing the site began with removal of clutter around the monument. The store shed that lay abutting the west façade, having led to a severe soiling of the façade, was demolished, while the existing rain tree was woven into the micro setting of the proposed landscape scheme.

The prevailing usage as a scrap yard of the rear open space (original harbour frontage space) was substantially cleared to make way for the proposed setting and the complementing definition of the new security walls.

An imploring rise in the surrounding ground level, alien to the origin of the monument, was built up with murram filling and top concrete during the last decade, as an obtrusive intrusion into its life cycle. This was painstakingly removed, while seeking the original historic floor of the monument and the area of micro setting.

The much speculated cobbled floor unearthed itself in an almost pristine state, buried at a depth of 70 cms. below the top concrete paving in the central hall. The cobbled historic floor with minimal restoration has been retained as the floor finish in the central hall.

The original historic floor of the surrounding area was found intact only as a strip along the edges of the scrap yard (original harbour frontage) as 'setts' in blue basalt laid level with the floor of the hall. The setts were carefully removed and stacked for an adapted use in the project scheme.

Interestingly, a large tree trunk was unearthed along the eastern open space of the monument suggesting the existence of an old tree almost identical in size and position as the rain tree on the west. It was decided to retain the dead tree trunk and accordingly align the new security wall to accommodate the natural artifact within the landscaped setting.



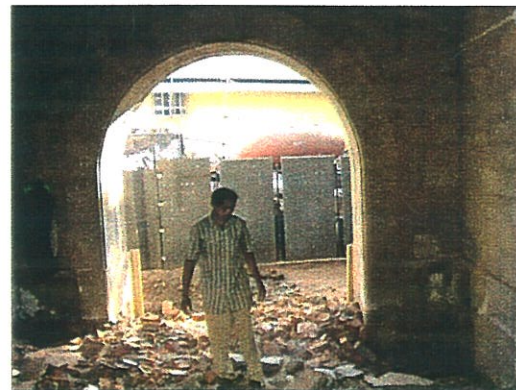
DEMOLITION & DISMANTLING



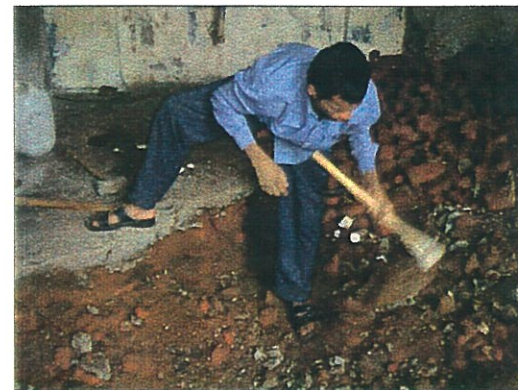
SECURITY WALL BEFORE DEMOLITION



DEMILITION OF SECURITY WALL IN PROGRESS



Rear archway opened up after demolition of infill brick masonry.



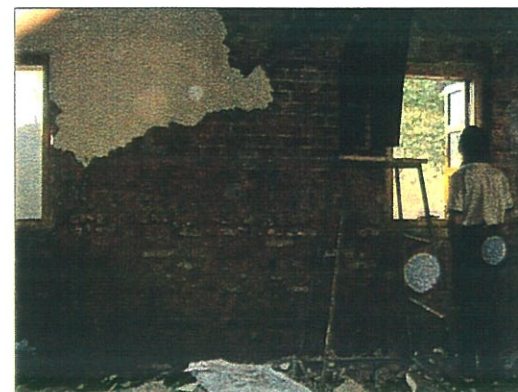
P.C.C. floor and filling within the structure being removed



Window frames and shutters dismantled – the dressed stone surrounds exposed.



Layers of concrete (with wire mesh reinforcement) removed from roof slab



Removal of plaster exposes the composite masonry (Stone masonry with brick leaf wall)



Enhanced setting of the Gatehouse with the old rain tree forming its highlight

DEMOLITION & DISMANTLING

The overall excavation also unearthed several high and low tension electric cables, especially along the external wall (along the road), which became a scheduled item for removal of the redundant and realignment of the rest. Other services like drainage & water supply pipes, inspection chambers etc. to the monument and otherwise were provided a similar treatment after documentation.

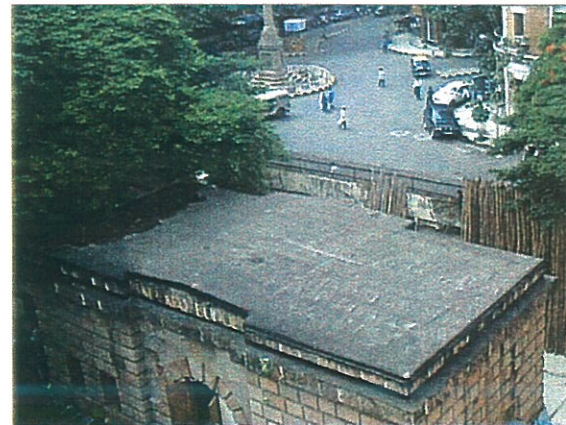
The alignment of the security wall around the structure for creating a specific plot area with open landscaped spaces was formulated to include the tree stub. The arrangement enhances the presentation of the monument. the high wall abutting the road was demolished and the structure was thrown open to public view and restricted access from Ballard Estate.

LIST OF ITEMS: DEMOLITION / DISMANTLING

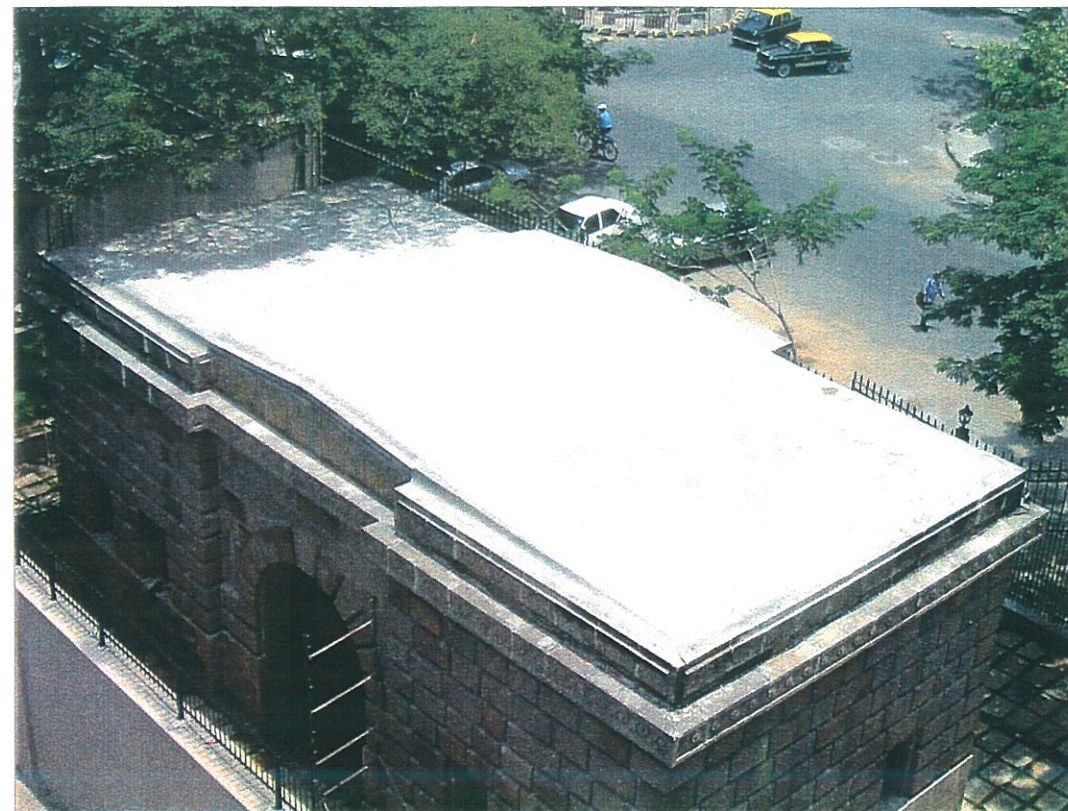
- Demolition of PCC floor and murram fill within the structure and general surrounding.
- Demolition of brick infill masonry in arched door openings
- Removal of service pipes / fittings / fixtures from interior wall surfaces
- Removal of all electrical wiring / fittings / fixtures
- Dismantling of false ceiling and partitions from rooms
- Removal of Plaster from walls and ceilings
- Dismantling / removal of existing door & window frames
- Demolition of Security wall



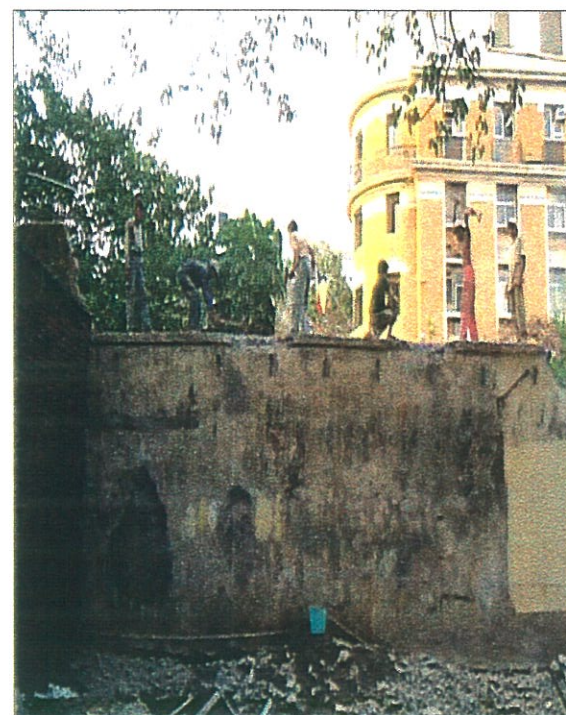
ROOF



ROOF OF THE GATEHOUSE BEFORE RESTORATION



ROOF AFTER RESTORATION



Layers of loose filling material revealed after removal of tar felt.



Inspection of roof slab before removal of the layer of tar felt.



Roof slab prepared for polymer grouting



Application of polymer modified cement layer over prepared roof surface



Leveled roof surface before application of IPS layer.

ROOF SLAB: AN ASSESSMENT

The R.C.C. slab over the structure is original and designed during the inception of the structure in 1920, when the concept of steel reinforcement of cement concrete was in a yet infant stage.

Constructed so as to rest onto the chamfered jambs of the stone masonry walls at the soffit levels, the slab individually (as discontinued) spans across the central hall and the two rooms, the arrangement coordinated between the peripheral external and internal partition walls. Designed essentially as a flat form of a uniform thickness, the slab slopes down, beginning as a central ridge over the hall, and tapering to the external walls. The form thus inducing rain water discharge as a sheet flow over the frieze bands.

The original design of the central hall slab is more sound, with the overall span broken up to rest on a grid of R.C.C beams forming a coffered soffit. The spans over the rooms are simply supported type. The design of reinforcement of the hall slab / beams was found to be sufficiently sound while that of the rooms was inadequate.

Interventions to the slab, in the past decade to afford a water proofing layer had been carried out. The interventions are of a superficial nature by an addition of a top concrete layer reinforced with steel wire mesh, covered with tar felt AND repair of the soffit concrete (reinforcement cover) of the slab.

DECISION

A detailed assessment of the condition of the slab was identified to be in an **urgent need for structural strengthening.**

A decision to afford structural strengthening in-situ, using proven techniques for water proofing and grouting, using polymer modified cement mortar, additional reinforcement and introduction of additional supports in the rooms to reduce effective existing spans was finalized.

The decision was taken in view of the load bearing structural support system of original fabric, which would be subjected to immense instability on account of the impact involved in the processes of a complete demolition and reconstruction of a new slab.



SLAB SOFFIT (HALL)



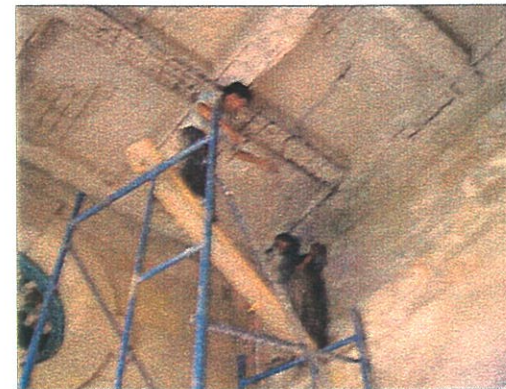
**COFFERED SLAB OF CENTRAL HALL
BEFORE RESTORATION**



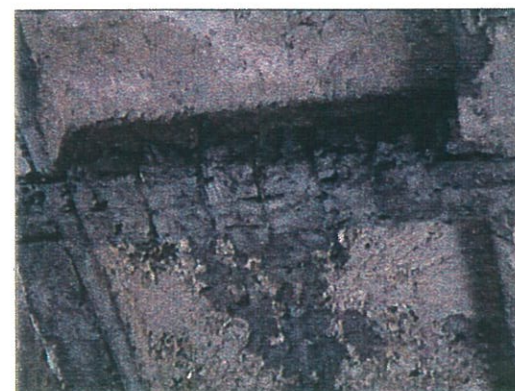
COFFERED CEILING AFTER RESTORATION



*Reinforcement of coffered slab exposed
after removal of Loose concrete cover.*



*Laying of electric cables prior to Polymer
treatment to coffered slab.*



*Application of Polymer modified plaster
after introduction of additional reinforce-
ment and new stirrups*



*Strengthened coffered slab before
application of Polymer modified mortar*

ROOF SLAB: SOFFIT OF CENTRAL HALL

Observations:

Bulging of cover / loose cover at some locations inducing cracking of the cover, leakage stains indicating ingress of water, rusting / scaling of reinforcement. The reinforcement of an adequate design.

Processes undertaken:

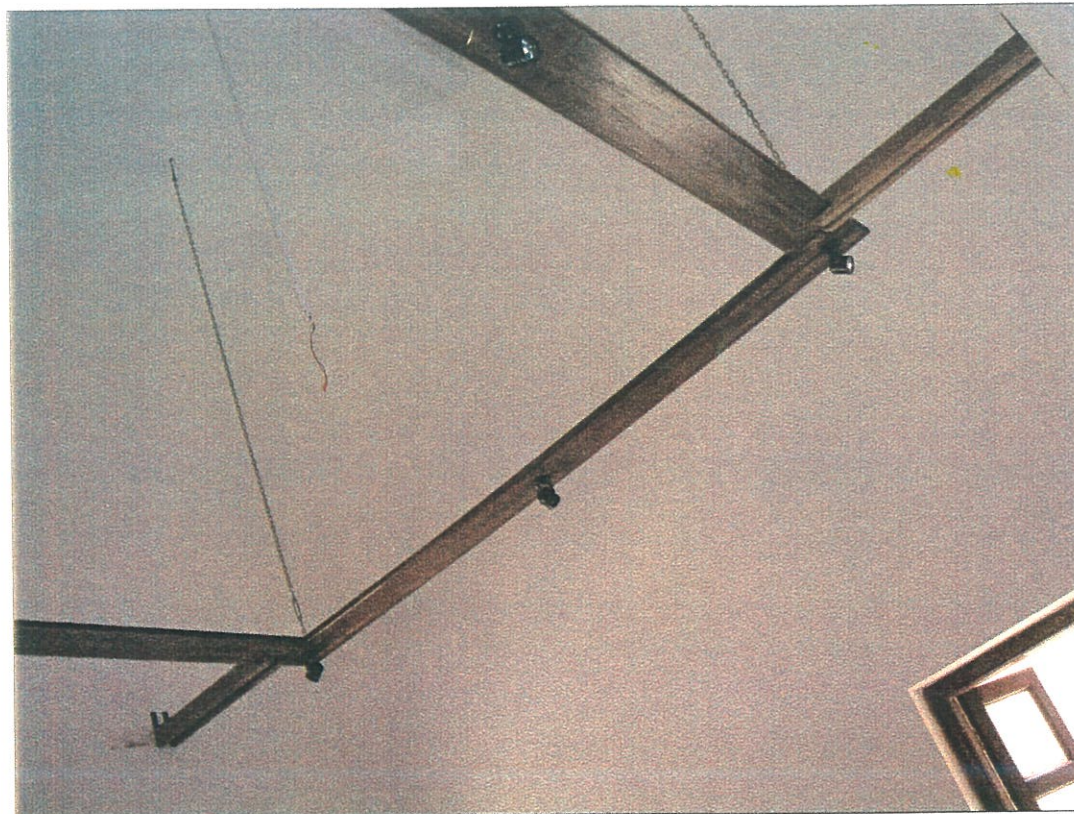
- Loose, disintegrated and cracked concrete broken and removed using chipping hammer and / or light chisel upto sound core concrete.
- Loose rust from reinforcement removed by light tapping, chipping, hammering and scrubbing
- Brush application of Rusticide to rusted steel
- Additional reinforcement placed at the bottom and secured to the new stirrups
- New stirrups provided by drilling holes and anchoring the same into the rib of existing RC beam with epoxy putty.
- Application of 2 coats of Polyalk Fixoprime and cement slurry
- Application of Polyalk EP + cement slurry as Bonding coat after 46 hours to entire broken surface
- Hand application of Polymer Modified Mortar using Polyalk EP + cement + sand + water within 20 minutes after application of bonding coat (15 mm thick wet on wet application)
- Finishing the surface with steel trowel
- Air curing + sprinkling water for 3-4 days
- Plaster with cement + Sunplex
- Curing



SLAB SOFFIT (ROOMS)



SLAB SOFFIT IN ROOMS BEFORE RESTORATION



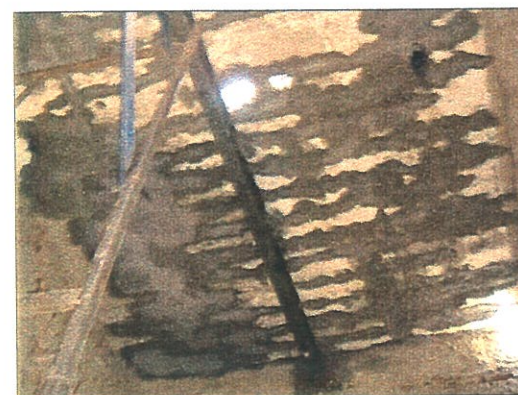
CEILING IN ROOM AFTER RESTORATION



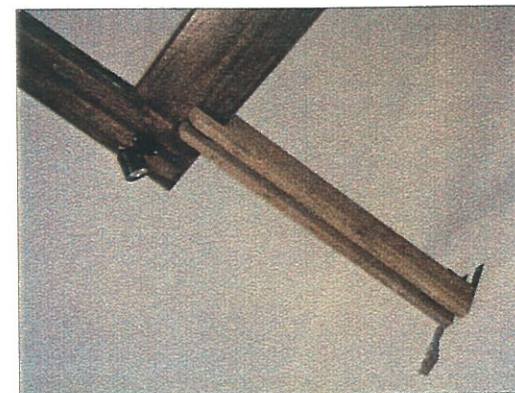
Reinforcement of slab exposed after removal of loose concrete cover



ISMB 250 introduced to strengthen the existing slab and prevent further sagging.



Application of Polymer modified mortar after the application of rusticide treatment



Wooden frame suspended from slab with GI link chains to install light fixtures

ROOF SLAB: SOFFIT OF ANTE ROOMS

Observations:

Bulging of cover / loose cover at some locations inducing cracking of the cover, leakage stains indicating ingress of water, rusting / scaling of reinforcement. The reinforcement of an inadequate design.

Processes undertaken:

- Loose, disintegrated and cracked concrete broken and removed using chipping hammer and / or light chisel upto sound core concrete.
- Loose rust from reinforcement removed by light tapping, chipping, hammering and scrubbing
- Brush application of Rusticide to rusted steel
- ISMB 250 introduced spanning across the length of the room to reduce the effective span of existing RC slab. Secured to the stone walls by special ('Hilti' make) bolts. Insertion of steel wedges between the steel beam and the slab.
- Application of 2 coats of Polyalk Fixoprime and cement slurry
- Application of Polyalk EP + cement slurry as Bonding coat after 46 hours to entire broken surface
- Hand application of Polymer Modified Mortar using Polyalk EP + cement + sand + water within 20 minutes after application of bonding coat (15 mm thick wet on wet application)
- finishing the surface with steel trowel
- air curing + sprinkling water for 3-4 days
- Plaster with cement + Sunplex
- Curing
- Wooden frame suspended on cranked hooks from slab soffit by G.I. link chains to install light fixtures.



FACADE



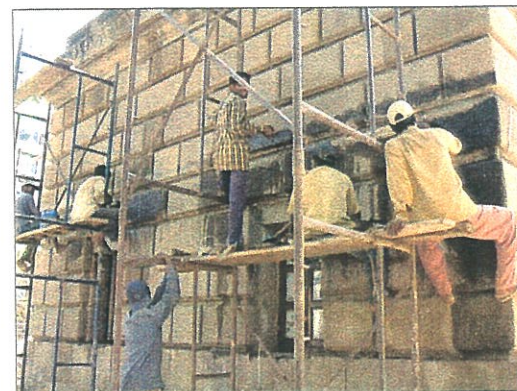
FACADE SOILED WITH STAINS (DUE TO WEATHERING AND TAR FROM THE TAR FELT ROOF PROTECTION) BEFORE RESTORATION



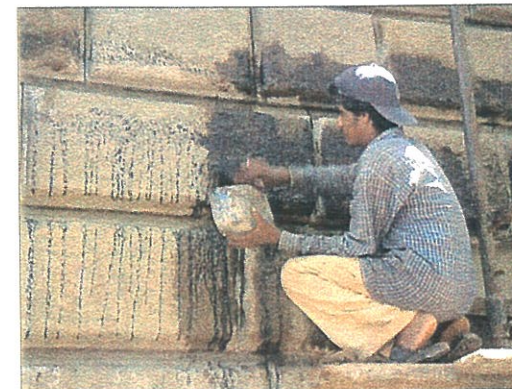
Ficus growth - a marginal problem, treated with a mixture of Hing, Jagri and unslaked lime.



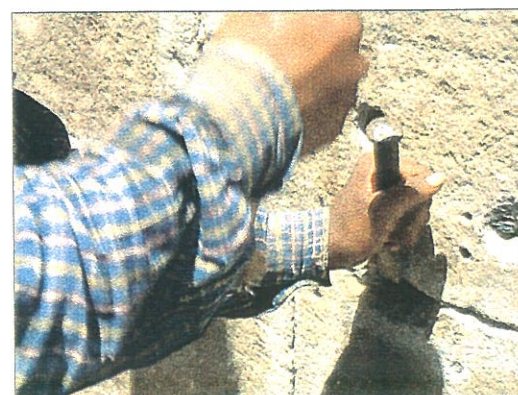
FACADE AFTER RESTORATION



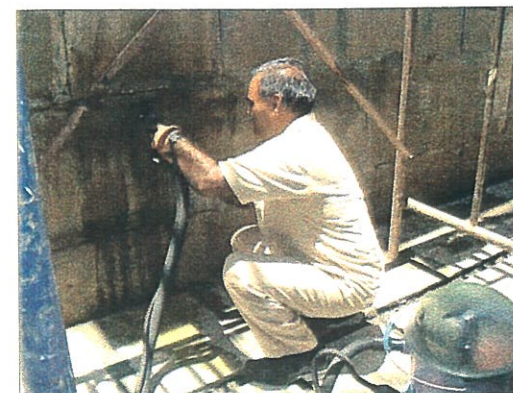
Façade cleaning in progress



Application of petrol for removal of tar stains



Careful removal of nails embedded in the stone surfaces.



An attempt at use of pressurized steam to remove stubborn tar stains from the stone surface did not prove effective.

EXTERNAL STONE WALLS RESTORATION AND CLEANING

Observations:

Robust load-bearing, coursed Ashlar masonry in yellow Basalt stone with rusticated dressing and profiled to create a depressed finely dressed border. The setting is in thin two mm flush lime-mortar joints.

Excellent craftsmanship and construction skill. The walls retain an excellent state of structural preservation while suffer from soiling/ staining/ tar and paint depositions.

Staining: Causes

- Staining of stone surface due to water ingress from the roof and rising damp from the foundations is evident.
- Staining of stone surface due to weathering.
- Stains of tar on western façade.
- Stains associated to adjoining filling / dump / P.C.C.
- Stains due to rusting of nails driven in the wall
- Paint stains due to surfaces used as a backing while painting other objects/materials - evident mainly in the plinth surfaces.

Staining: Treatment

- Removal of soiling by gentle mist spray and controlled pressure water jets.
- manual - light tapping / scrubbing / water application / Steam
- Tar stains removed by Steam / diluted Petrol
- Careful removal of Nails / wooden blocks etc and sealing the holes / depressions with lime mortar

Vegetation Growth: Causes

Ficus growth at random locations along the decorative top frieze and walls - a marginal problem facilitated by part open joints.

Vegetation Growth: Treatment

The plant growth after careful removal, a proportionate mixture of Asafoetida (Hing), raw sugar (Jagri) and unslaked lime (kali chuna) was applied to the roots with good results.



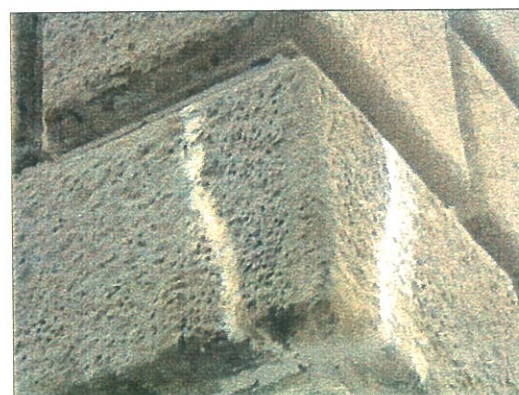
FACADE



JOINTS AND CRACKS IN ASHLAR MASONRY SEALED WITH CEMENT



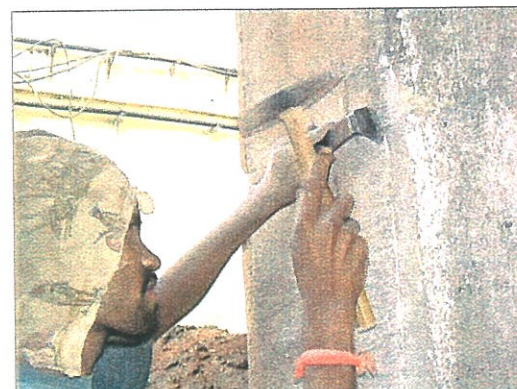
Plastic Repairs using lime mortar in locations where part stones had spalled



Damaged corner stone restored by stitching with SS pins and lime mortar jointing.



JOINTS AND CRACKS AFTER LIME POINTING



Removal of cement pointing / accretions by tapping.



Deep recessed joints in stone masonry filled with cement mortar (before restoration)



Removal of cement from recessed joints and dressed stone surfaces



Stone masonry after removal of cement accretions and cleaning.

EXTERNAL STONE WALLS **JOINTING, POINTING, PLASTIC** **REPAIRS**

Observations:

A widespread attempt to render the stone façade water proof had been attempted using hard cement mortar at:

- Randomly located fine superficial cracks in the body of the stones
- The wide, depressed border profiles of the stones having been mistaken as wide open joints had been completely sealed,
- A complete fill of open joint profiles in the masonry

Treatment:

- Cement Pointing of joints carefully removed manually by light tapping and use of fine chisels.

- Stubborn cement application removed optimally by tapping and light abrasive hammering. At a few locations the attempt was abandoned for reasons of causing undue damage to the body parent stone.

- Rejointing and pointing in lime mortar.

- Sealing Joints between Door / window frames and stone surface with Lime mortar

- Plastic Repairs using lime mortar in locations where part stones had spalled.



FAÇADE FEATURES



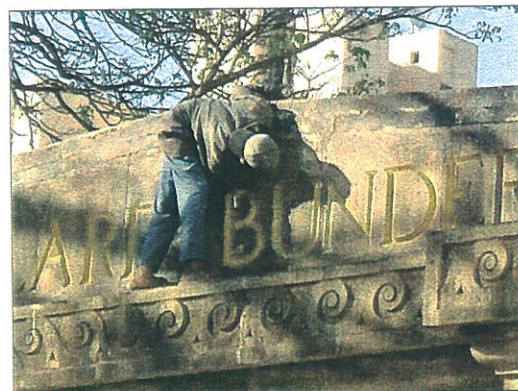
FRONT PEDIMENT BEFORE RESTORATION



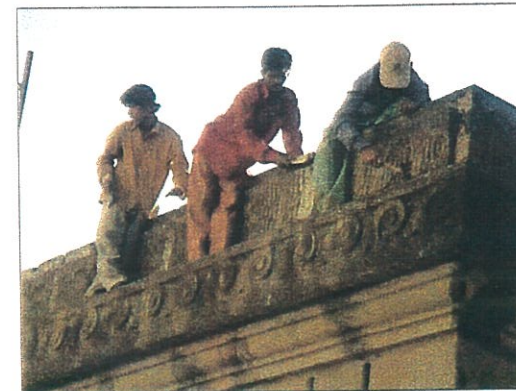
FRONT PEDIMENT WITH THE NAME TABLET AFTER RESTORATION



Decorative façade features damaged by soiling / tar stains and cement application (before restoration)



Rear pediment being cleaned.



Decorative frieze band being cleaned by scrubbing.



Beauty of façade features restored.



Cornice and frieze bands soiled by tar stains and weathering



Restoration of façade features brings out the delicacy of the motifs.

FAÇADE FEATURES

Observations:

- The monument shares its architectural character with that of the "Green Gate Houses" at the end of the road, which shares its inception date with the monument.
- Decorative Façade features in the Frieze and cornice bands, the design motif depicting water waves. Identical details also appear in buildings of the precinct – New Customs House / BPT office in the Ballard Estate Area
- Decorative Panel depicting lotus flower identical in design Alexandra Gatehouse design)
- Name Tablet on pediment on the front & rear as shallow recessed engraving in the stone

Stains:

- Weathering stains
- Stains due to water flow
- General atmospheric soiling
- Tar

Damage due to Cement Pointing:

- Attempt to fill cracks / repair damaged portions with cement mortar
- Recessed band, an integral component of façade design along the top of the pediment filled with cement mortar

Treatment:

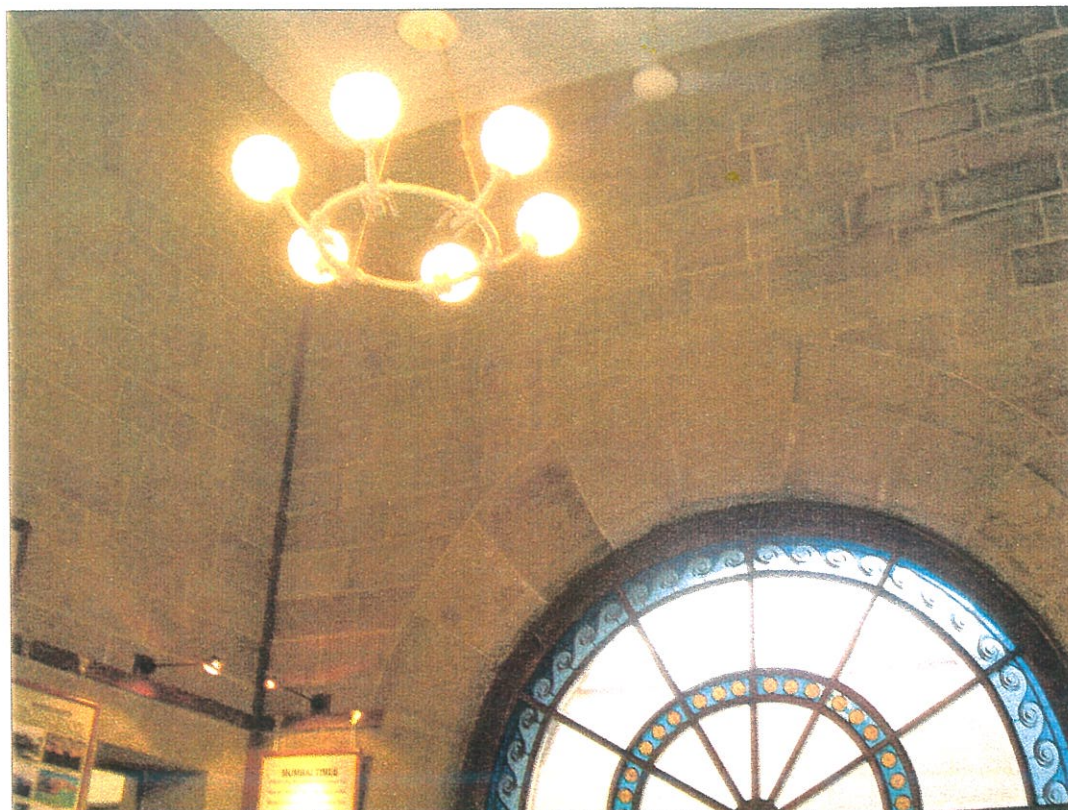
- Light tapping and scrubbing with nylon brushes
- Water jet (controlled) application
- Diluted Petrol applications
- Removal of cementitious layers / pointing / filling in recessed patterns
- Repointing with lime mortar



INT. WALLS (HALL)



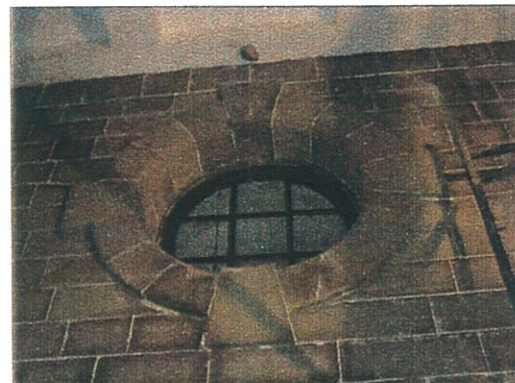
EXPOSED ASHLAR MASONRY IN THE CENTRAL HALL BEFORE RESTORATION



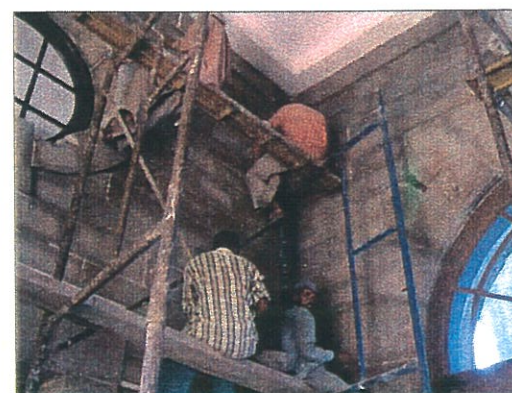
RESTORED ASHLAR MASONRY IN THE CENTRAL HALL



Masking of electrical wiring with polished wood capping casing.



Lime pointing of ashlar masonry



Jointing / pointing of ashlar masonry in progress.



Fans suspended on steel beams, taking support on the voussoir of the intrados of the Bulls eye



Structural crack in partition wall between the hall and the rooms caused due to insertion of steel beam. Note the disintegration of the stone voussoir at the beam.



INTERNAL WALLS CENTRAL HALL

Observations

- Central Hall has exposed ashlar stone masonry with fine flush lime-mortar joints.
- Lime joints filled with cement mortar in an attempt to seal them.
- The façade courses articulated to create raised & offsetted dado base which ascends around the arched openings an interesting.

Defects

Staining: Causes

- Staining of stone surface due to water ingress from the roof and rising damp from the foundations is evident.
- Stains associated to adjoining filling / dump / P.C.C.
- Stains of cement applications on stone surface
- Several punctures / holes
- Electrical wiring without respecting the features and configuration of joints

Staining: Treatment

- Cleaning of internal stone surfaces by appropriate method.
- Manual - light tapping / scrubbing / water application
- Careful removal of Nails / wooden blocks etc and sealing the holes / depressions with lime
- Jointing + flush pointing in lime mortar
- Sealing cracks with Lime mortar
- Minimum interventions and damage to stone walls while installing electric wiring / arranging display

Structural Crack

Cause: Ceiling fans hung on steel angles, "L" shaped & Jointed back to back, forming a beam spanning across the Hall, supported at the intrados base of the "Bulls Eye" opening in the partition wall. The off-centre support, induced pin pointed, rotational action in the masonry, and a resultant vertical through crack, traveling the full height of the walls - both partition walls.

Treatment: The crack along its run is stitched using SS pins, grouted correctly into the parent wall structure and covered in lime plaster in the rooms.



INTERNAL WALLS

Ante-rooms



EXPOSED STONE MASONRY OF NORTH WALLS OF THE ROOMS DURING RESTORATION



Composite stone walls with brick inner leaf along three sides of the ante-rooms. Note the north wall devoid of the brick leaf, constructed in massive stones, stacked up in a single pile



LIME PLASTERED WALLS AFTER RESTORATION



Stone lintels above square headed openings in the rooms.



SS pins placed across opened joints of voussoirs of the ox-eye window.



Vertical structural crack in the partition wall between the central hall and the rooms stitched with SS pins.



Consolidation / Leveling of masonry surface with brick bats in lime mortar.

INTERNAL WALLS ANTE-ROOMS

Observations:

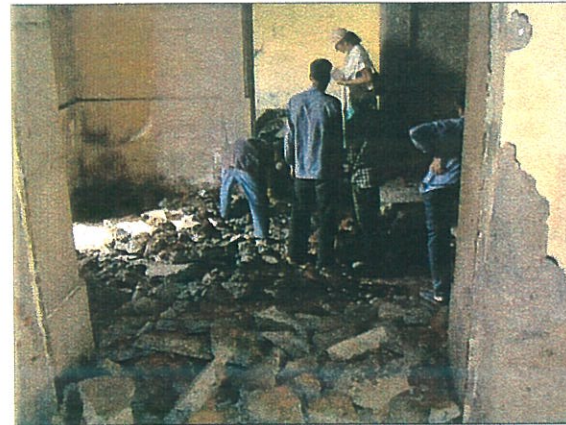
- Cement plastered (later intervention, last decade)/ painted walls
- Stains of Leakage
- Opening up of cement plaster revealed composite stone (massive stones arranged in single thickness, stacked up in horizontal courses) and Brick masonry (1/2 brick thick) wall, except the north wall, which is devoid of the brick layer.
- The structure inner brick leaf of the wall appeared to have been moderately disturbed (parts devoid of bricks) during the interventions carried out – the original lime plaster removal and re-plastering in cement plaster.
- Stone surfaces maintained undressed to provide a proper key with mortar for bricks and plaster.
- The wall constructed / set in lime mortar. The structural condition of the mortar and the overall structure in a state of good preservation.
- The wall structure is designed with massive horizontal 'through' stones in the general façade and pronounced at jambs and lintels of openings.
- The top course of stones are specifically of a more or less uniformly larger length, with a counter sunk rebate (inner top edge), to provide a support base for the R.C.C Slab.
- Vertical Cracks in walls induced by fan suspension system, as in the Hall.

Treatment

- Re-plaster brick leaf wall in lime mortar, subsequent to removal of all loose and disintegrated material, while consolidating the structure of the wall with brick bat packing.
- Stitching with Stainless Steel pins carefully designed and grouted into the parent stone wall along the line of fracture of the crack.
- Finish the surface in Lime wash (two shades).



FLOOR (HALL & ROOMS)



ORIGINAL COBBLED FLOOR EXPLORED DURING EXCAVATION



COBBLED FLOOR OF CENTRAL ROOM AFTER RESTORATION



Removal of filling material and debris revealed the original cobbled floor in excellent condition.



Cleaning the cementitious layers off the cobbled floor was a painstaking task.



Dressed stone steps between the central hall and the rooms found during excavation.



Shahbad stone flooring explored in the rooms was fairly damaged and uneven.



Laying of Kotah stone flooring in diagonal pattern (in the rooms).

FLOOR CENTRAL HALL AND ANTE-ROOMS

Observations:

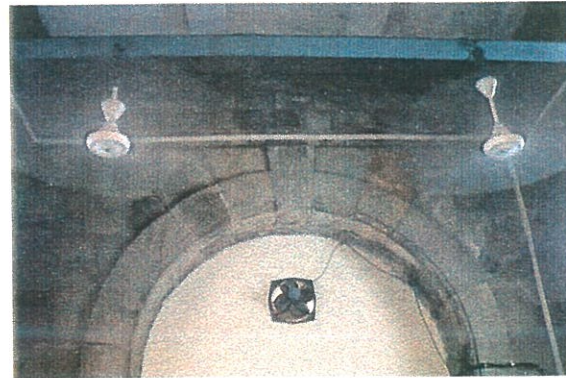
- The original floor of Central Hall comprising of cobble stones lay buried under substantial layers of brick bat, murrum and P.C.C. before it was exposed.
- Dressed Stone steps (two risers) leading to the ante-rooms were unearthed during excavation. This revealed a level difference of 20 cms between the floor levels of the hall and the rooms.
- On cleaning, the cobbled floor of the hall was found in excellent condition hence it was decided to maintain the same with marginal restoration and cleaning.
- The original flooring in rooms comprised of Shahbad stone slabs which were fairly damaged and had lost the level. The floor in the rooms was interrupted by later additions of partition walls and hence it was decided to replace it by new kotah stone flooring.

Treatment :

- Scrubbing / tapping to remove dirt, cement accretions from cobbles
- Replacement of damaged cobbles (by cobbles obtained elsewhere on site)
- Pointing in Lime
- Kotah stone slabs, size 33 cm x 33 cm laid in diagonal pattern
- Skirting of Kotah stone (half tile)



OPENINGS (MAIN & REAR DOORS)



ARCHED OPENING (FRONT) BLOCKED BY MASONRY WALL BEFORE RESTORATION



Gateway opened up during restoration.



ARCHED OPENING AFTER RESTORATION



Front door during the execution stage.



Front door design suited to the scale of the grand opening and based on fenestration design of heritage structures in the dockyard.



Stained glass panels being placed in position.



The Stained glass patterns are borrowed from the motifs on the façade. Use of blue colour reiterates its relation to the sea.

MAIN DOORS CENTRAL HALL

Observations:

•As per the original design of the structure, the doorways (Front and Rear) were open that allowed passage through the Gatehouse which was meant to be an entrance portal to the Landing Jetty at Ballard Bunder.

•The front opening probably had a Cast Iron Gate as a wicket gate hung on a pivot. This is evident from a protruding remnant of a CI rod in the stone jambs of the arched opening, at either ends, level with the springing points of the arches. The embedding lay deep into the stone walls as found on further investigation.

•Subsequent to the inclusion of the Gatehouse into the Naval Dockyard restricted zone, these openings were blocked by masonry walls to allow the use of the gatehouse as an office. The entry to the interior was provided through a doorway fixed in the rear opening (original frontage façade to the harbour).

•The openings have more or less equal widths, semicircular arched profile having varying crown heights. The pattern of dressed stone voussoirs of the arched openings are significant and different at both the openings.

The need for enclosure and security:

The new adapted use of the gatehouse dictated the need to provide secure doors that can be locked as per requirement.

Design:

- The infill masonry walls blocking the openings were demolished.
- To allow the use of the structure as a museum it was essential to enclose it by doors.
- The design of doors is derived from the fenestration design of other historic structures in the Naval Dockyard area.
- The arched doorways are divided into two sections, the upper semicircular portion comprising of fixed glazing while the lower portion has partly glazed / partly paneled folding shutters.

contd...



OPENINGS (MAIN & REAR DOORS)



REAR ARCHED OPENING BLOCKED
(BEFORE RESTORATION)



REAR OPENING AFTER RESTORATION



Rear arch opened up during restoration



Installation of timber frame



Sash bars in the semicircular portion of the
arched opening placed in position.



Stained glass adds colour and delicacy to
the otherwise robust design of doors.

MAIN DOORS CENTRAL HALL:

contd ...

Design Details:

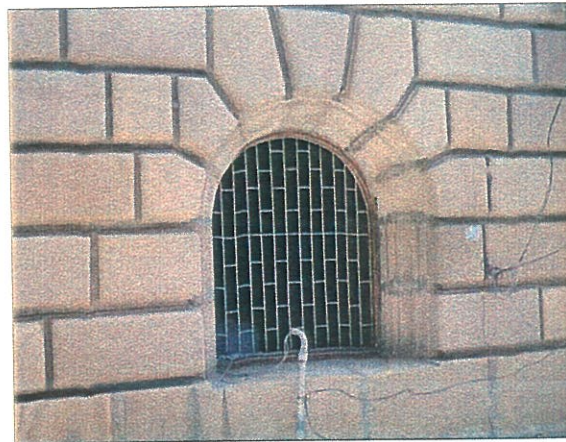
- Uniformity in design of doors except for the modified shutter design of the rear door to adjust to the lesser height.
- Use of Ist. Class BTC (best quality)
- Adequately sized sections for frames
- Decorative Bolection mouldings and beading
- Cover moulding between the frame and stone surface
- Use of clear 8 mm glass with bevelled border
- Melamine polish as protection from moisture (rain)

Introduction of stained glass:

- Controlled use of stained glass in a traditional form in the fixed semicircular portion of the doorway. The element introduces colour and an appropriate extent of delicacy to the otherwise robust design of the monument.
- The design of stained glass borrows patterns from motifs on the façade (floral motif) and frieze band (depicting sea waves). Use of blue colour depicting sea and water.



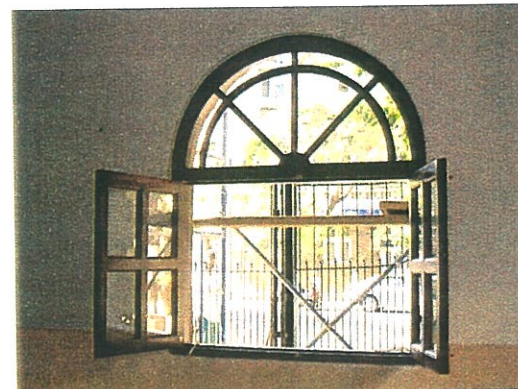
OPENINGS (EXTERNAL WINDOWS)



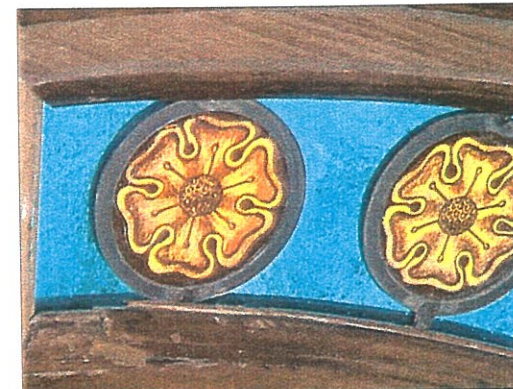
**SEMICIRCULAR ARCHED WINDOW
OPENING BEFORE RESTORATION**



WINDOW OPENING AFTER RESTORATION



*Window during execution stage. Pattern
of original direction of openings retained.*



*Stained glass panel in the semi-circular
fixed portion of the opening.*



*Rectangular openings in the rooms before
restoration.*



*Original window frames and shutters
replaced by new windows.*

WINDOWS

Observations:

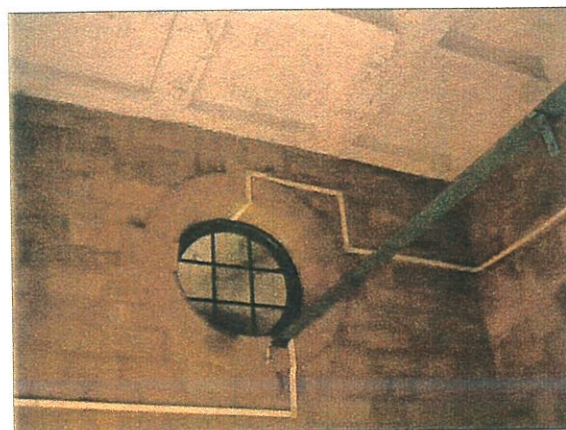
- The window openings are of two types:
 - 1) Semi- Circular arched head (2 Nos.) openings in the North (front facing the road) Elevation
 - 2) Square headed (8 nos.) openings, in the other side elevations.
- All windows are fixed in stone surrounds, with the circular headed types having deep receding moulded stone jambs. The semi-circular arches have a stepped extrados while the square headed arches are headed in stone (single) lintels.
- As found, the window openings had timber frames and glazed casement shutters in timber as an interventive replacement of the original in the last decade.
- The attempt to seal joints between the frames and stone jambs by cement pointing was an ailment common to all surrounds of the openings. Interventions to openings in form of M.S security grills and wire-mesh fixed panels.

Treatment / Design

- All windows are replaced by timber windows of new design retaining the original direction of shutter opening.
- The semi-circular arched opening relates in design to the arched doors including the use of stained glass.
- Simple mouldings
- 6 mm clear glass for shutters
- Finish in melamine polish
- Removal of cement pointing and repointing of stone joints in the jambs, cracks and window surrounds with Lime mortar.
- Introduction of internal Kotah stone sill.



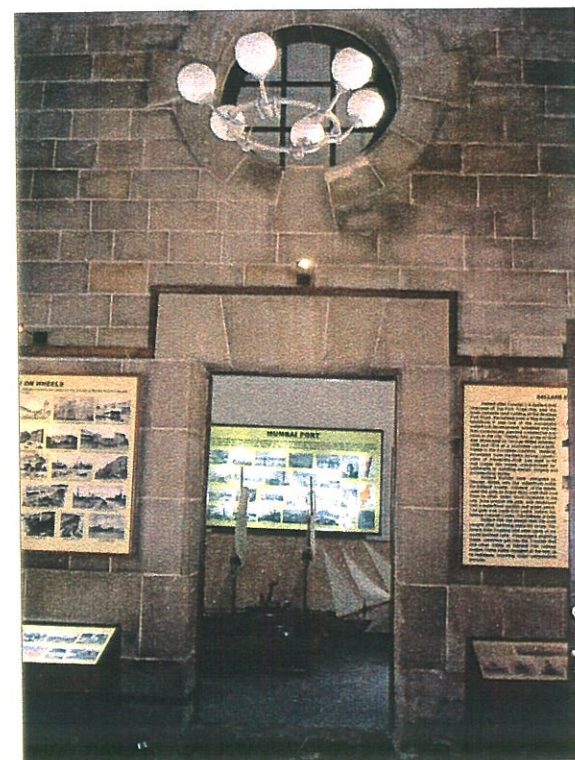
OPENINGS (INTERNAL)



OX EYE WINDOW BEFORE RESTORATION



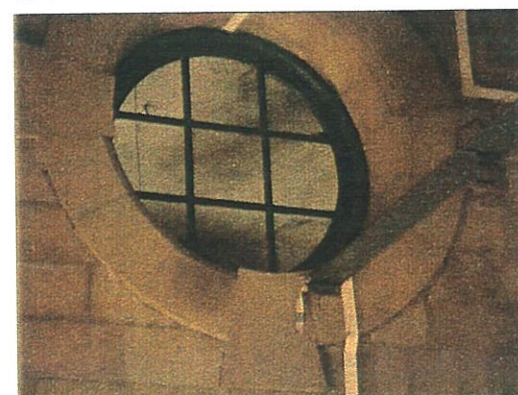
RESTORED OPENINGS IN THE CENTRAL HALL



opening with broad band of architrave - Care is taken to restore and enhance the masonry articulation while arranging the display.



Insertion of MS angle through the ox eye window caused damage to the voussoirs and lead to vertical structural cracks.



Ox eye window damaged by incompatible interventions.



Voussoirs of the ox eye window restored with lime mortar. The structural cracks were stitched with SS pins.



Opening restored after removal of elements causing the damage.

BULL'S EYE WINDOWS AND OTHER DOOR OPENINGS IN INTERNAL WALLS

Observations:

- The two internal partition stone walls, each have a 'Bulls Eye' circular arched opening located at a higher level exactly above the door openings. The voussoirs and keystone are pronounced by marginal offsetting from the flushed ashlar stone walls. -The openings have timber framed, glazed & fixed shutter.

- The lower soffit of the arch, the voussoirs and keystone of both openings have been structurally affected by the placement of a steel beam, serving the suspension of a ceiling fan.

- The door openings are square headed with a wide architrave like band around the opening in stone formed by masonry offsetted from the surrounding ashlar masonry.

- The voussoirs of the bulls eye are similarly treated.

Treatment:

- The steel beam that had affected the slight displacement of the stone arch (voussoir) and caused a vertical crack through the stone wall was removed.

- Plastic repairs for damaged portion of the Bull's eye window.

- Stitching of crack with SS pins, sealing the crack with lime mortar.

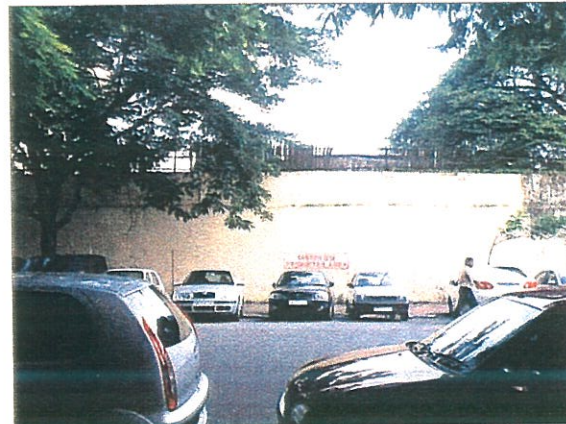
- Timber frame fixed to door opening as additional support to the flat stone arch formation of the door openings.

- Pointing of joints in the jamb masonry.

- Fixed Glazing (clear glass) for bull's eye window.



NEW SECURITY WALL



HIGH SECURITY WALL OBSTRUCTING VIEW OF THE GATEHOUSE – BEFORE RESTORATION



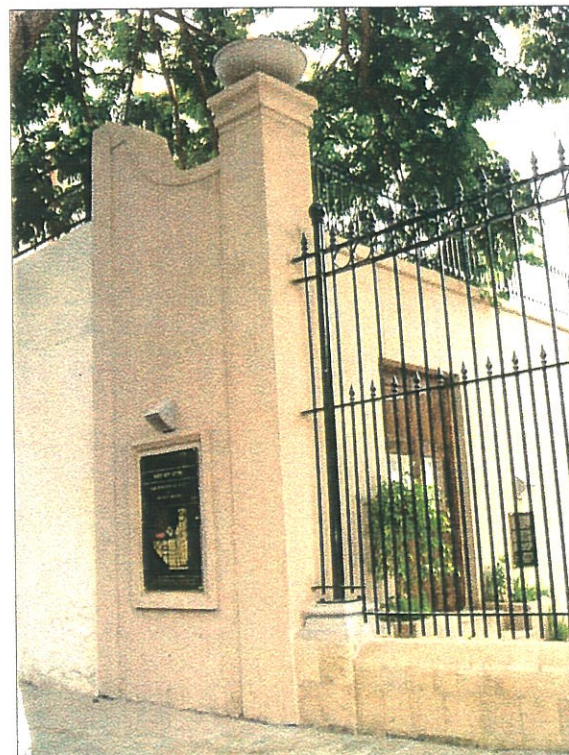
OLD SECURITY WALL REPLACED BY GRILL FENCE AND NEW SECURITY WALL



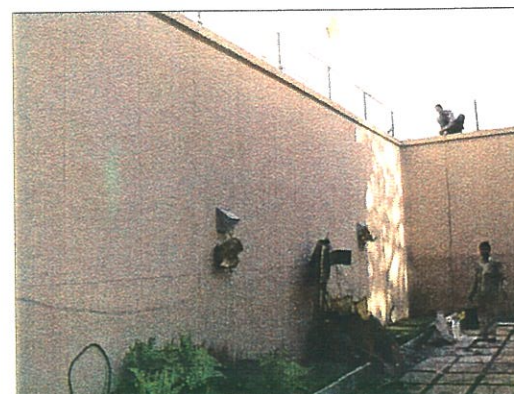
Construction of new security wall



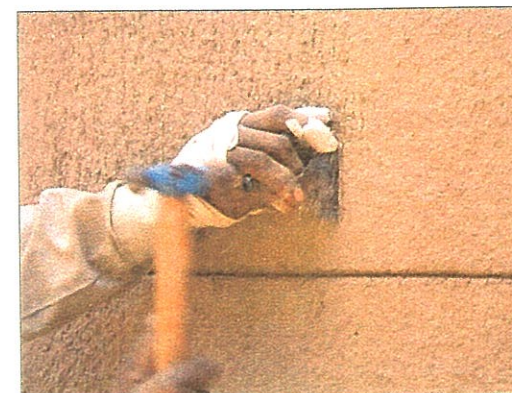
R.C. Beams laid across the massive tree roots to support the masonry above



Junction of old and new security walls sensitively treated to achieve a subtle transition. A Brass Plaque with a key map of Ballard Estate area is aptly placed here.



Malad crete plaster with textured finish for the security wall with the surface area broken into panels of uniform width.



Malad crete plaster being hacked manually to form serrations on the surface. Its color complements the yellow basalt stone façade of the Gatehouse.

NEW SECURITY WALL

Alignment / Height

- The alignment is dictated by constraints of structures in the immediate surrounds and land-uses.
- The height of the wall conform to security norms of the Naval Dockyard.

Design

- Dead wall without fenestrations, except an entry gate for the Naval Dockyard personnel along the west face.
- Loadbearing wall 350 mm thick brick masonry and 4 meters high for the full length, topped with M.S. grill – 0.80 meters.
- The length of the wall is interspersed with R.C.C Columns to afford structural rigidity to the overall structure.
- R.C.C Beams span across the exposed roots of the tree, to support superimposed loads of the top brickwork.
- Adequate provisions of expansion joint in the expansive length of the wall along the southern edge.
- Finished in Malad crete plaster of a colour and texture to match the yellow basalt stone of the Security Grill above the wall – M.S. protective grill of simple design
- Junction of old and new security walls treated sensitively to achieve a subtle transition.
- The panel formed at the junction of the old and new security walls provides an ideal location for information plaques with the Key map of Ballard Estate area.



GRILL FENCE



SECURITY WALL DEPRIVED THE VIEW OF THE GATEHOUSE FROM BALLARD ESTATE



New features like stone stub wall and stub pier sensitively relate to façade features of other structures in Ballard Estate area.



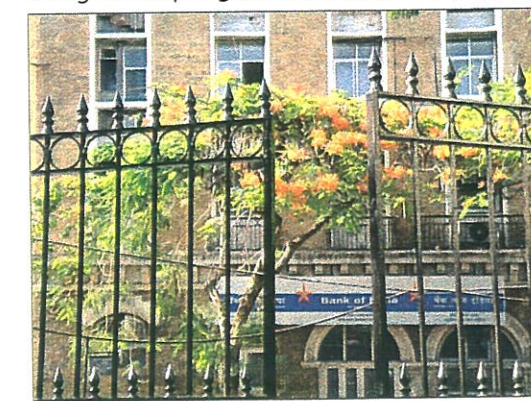
Use of yellow basalt stone for the stub wall and decorative design of the stub pier attempt to relate the new elements to the historic setting.



THE GRILL FENCE OPENS THE STRUCTURE TO PUBLIC VIEW RESTORING THE IMAGE OF THE NODAL SETTING – AFTER RESTORATION



Grill Fence being placed in position. The design of the grill fence is derived from the design of triple gates at Alexandra Docks



Grand Entrance gateway placed in central alignment with the structure offers entry to the site from Shoorji Vallabhdas Road.



Decorative pinnacles placed on the curved profile of the grill fence.



Impressive expanse, bold curvilinear profile and moderately decorative design elements are the highlights of the grill fence.

GRILL FENCE

Design

The grill fence design is derived from the design of triple gates at Alexandra Dock down the road.

The Form and Architecture of the Alexandra Gate and built date conform wholly to that Ballard Bunder Gate House – as a deduction, they follow common scheme of design.

By this virtue the design of the new grill fence here, complements the overall setting of Ballard Estate Historic Precinct.

Alignment and detail:

- The 30 m. long grill fence that serves the dual purpose of providing the essential security to the structure & the site while ensuring visibility from the road, is a highlight of the Landscape scheme.

- The expansive length is divided into smaller bays for structural system, by placing metal posts at regular intervals. An impressive openable gate, centrally aligned facing the structure provides entry to the gatehouse.

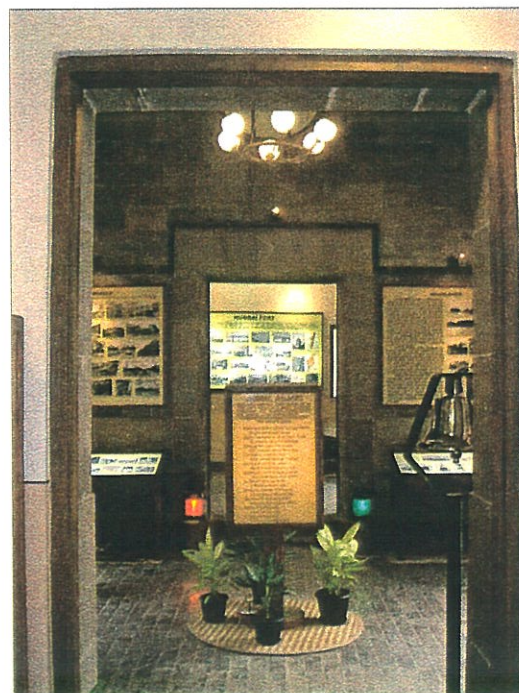
- The fixed lengths of the M.S. Grills are supported on system of stub piers and walls, in stone clad (Malad stone) brick masonry. The details of the elements conforms to similar components in the precinct.



CITY MUSEUM DISPLAY



THE GATEHOUSE HAS BEEN ADAPTED FOR REUSE AS A MUSEUM EXHIBITING THE GROWTH OF THE HARBOUR AND THE CITY.



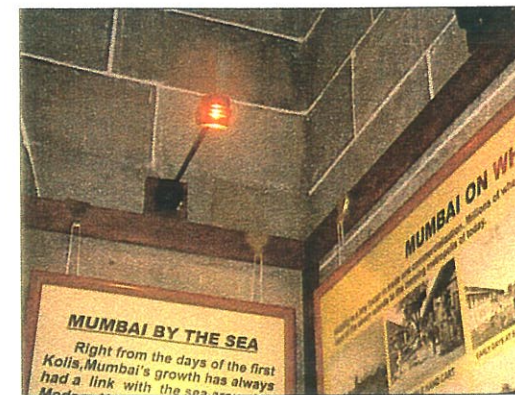
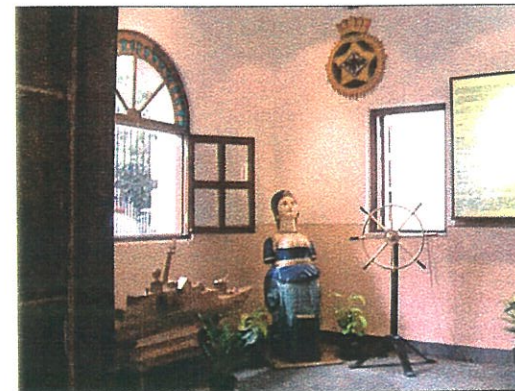
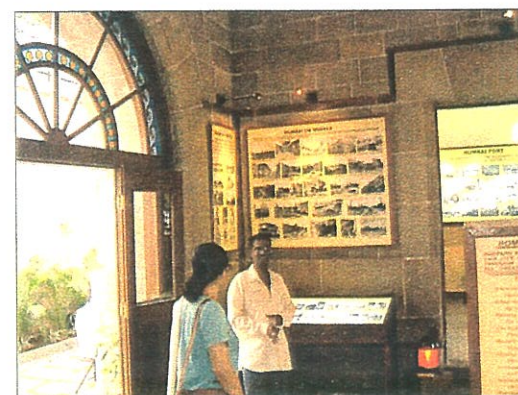
Display in the Hall respects the façade articulation. Care is taken to cause minimum damage to the historic structure. Materials and colours chosen for display boards were in complete harmony with the natural stone surfaces.



IMPRESSIVE EXHIBITS IN THE MUSEUM



Exhibits are arranged in the museum on freestanding bases and glass showcases so as to minimize interventions to the historic structure. A few backlit boards displaying vital information are hung (strictly) to brick masonry surfaces.



Capping casing in polished wood serves the dual purpose of supporting brass hooks for hanging display boards.

DISPLAY

The Gatehouse Museum, dedicated to the city, depicts tales of its people and their contributions to the evolution of Mumbai. A story of how the city grew around its harbor is presented in the display of rare archival pictures and complementary narrative. The role of the Indian Navy is aptly manifest in the display design within the Gatehouse.

The monument is being adapted as a Museum exhibiting

The monument is being adapted as a Museum exhibiting growth of the harbour and affording an opportunity for the public at large for viewing the exhibits.



LANDSCAPE



GATEHOUSE SURROUNDED BY HARD PAVING – BEFORE RESTORATION



ENHANCED LANDSCAPE SETTING - AFTER RESTORATION



Old tree trunk explored in the excavation preserved and developed as a landscape feature.



Flood lights highlighting the structure by night are carefully integrated in the landscape scheme.



Information plaques placed on the inclined pedestal – an important feature of the landscape design.



Grass jointed shahbad tile paving edged by the French drain topped with a layer of pebbles



The lawn bed provides green setting for the old rain tree. Informal planting and pebbles at the base of tree trunk add interest.

LANDSCAPE

- The objective of the landscape scheme is to provide an enhanced setting for the structure.
- The approach, thus is simple and direct.
- The levels of the finished floor of the monument with respect to the existing road ground stands modified. The issue of effective surface water drainage, to maintain dry foundations became a supreme consideration.
- The design details take into consideration an integrated approach at taking care of surface drainage around the structure by a "french drain" and alignments of various other underground services such as existing soil drainage lines and electrical cables (existing cables diverted and addition of new).
- The external flood lights and information plaques are also carefully accommodated in the landscape scheme.

Layout

- Grass jointed Shahbad tiles laid in grid iron pattern (shahbad tiles chosen for their colour and natural texture).
- Flower beds- Soil retained by shahbad tile edging
- Plant material – selected for their suitability / orientation / availability of shade or sunlight. Foliage colour, texture to add interest to the monotonous surface of compound wall. Flowering shrubs used in patches provide pleasant contrast.
- The raised lawn bed – creates pleasant foreground to the robust tree trunk. The rise being envisaged to provide an enhanced background to the information plaques in the front edge.



SERVICES



**NETWORK OF SERVICES AROUND THE
STRUCTURE LACKED ORGANISATION
- BEFORE RESTORATION**



**SERVICE CHAMBERS INTEGRATED INTO LANDSCAPE SCHEME
- AFTER REATORATION**



*Drainage alignments explored while
excavation*



*Junction at LT cable after it was realigned
with an extension.*



*Organisation of the HT and LT cable
network of was a challenging task*



*Inspection chambers and service chambers
integrated with paving pattern.*

SERVICES

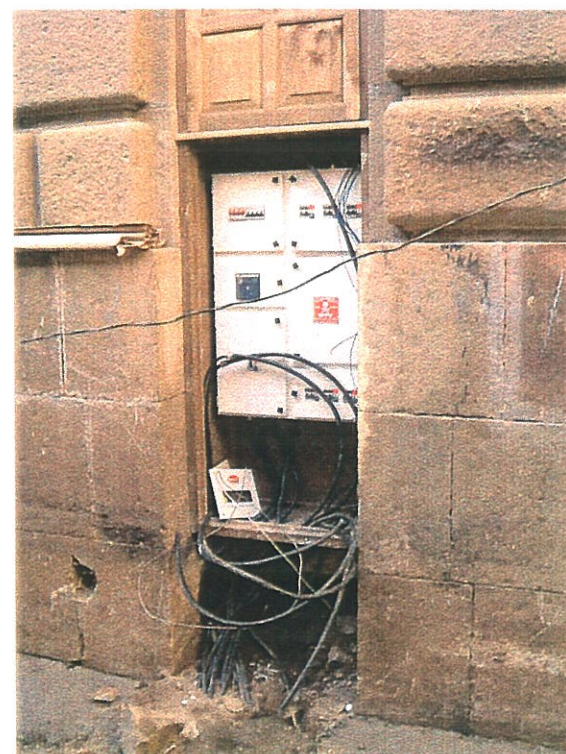
Integration of landscape and services



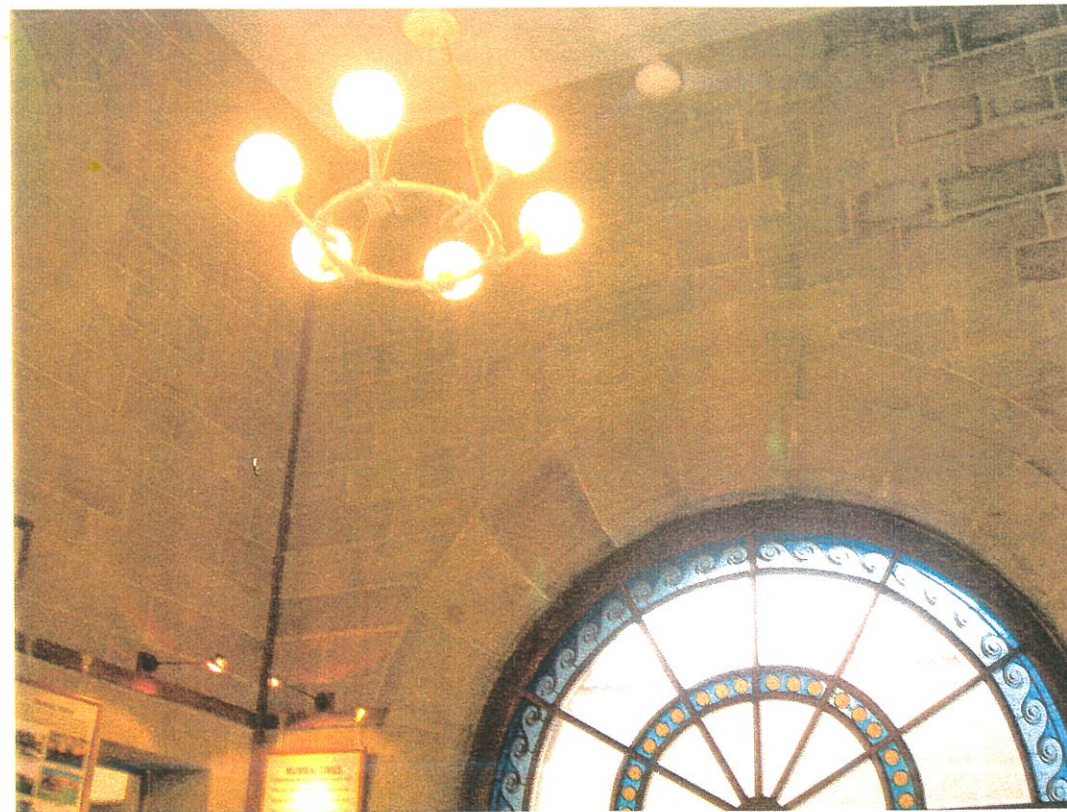
ELECTRICAL DESIGN & ILLUMINATION



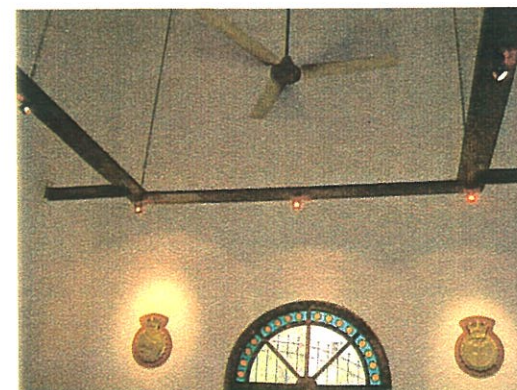
INSENSITIVE DESIGN AND LAYOUT OF ELECTRICAL WIRING AND FITTINGS – BEFORE RESTORATION



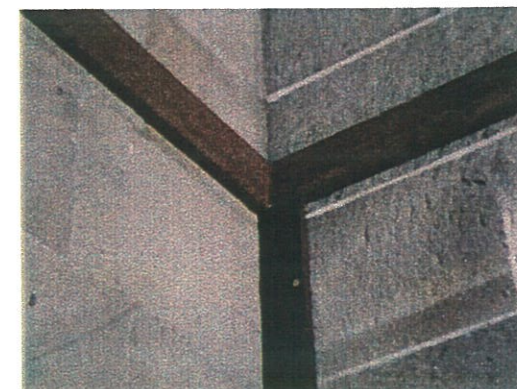
LT Kiosk placed in the niche formed by an old doorway.



NEW ELECTRICAL WIRING AND FIXTURES IN HARMONY WITH THE HISTORIC STRUCTURE – AFTER RESTORATION.



Wooden frame hung from ceiling to fix track lights for highlighting the display.



Capping casing in polished wood specially designed to mask the electrical wiring.



Front lighting comprising of combination of yellow and white lights creates dramatic effect



Decorative gate light adds to the beauty of grill fence.

ELECTRICAL DESIGN AND ILLUMINATION

Interior lighting

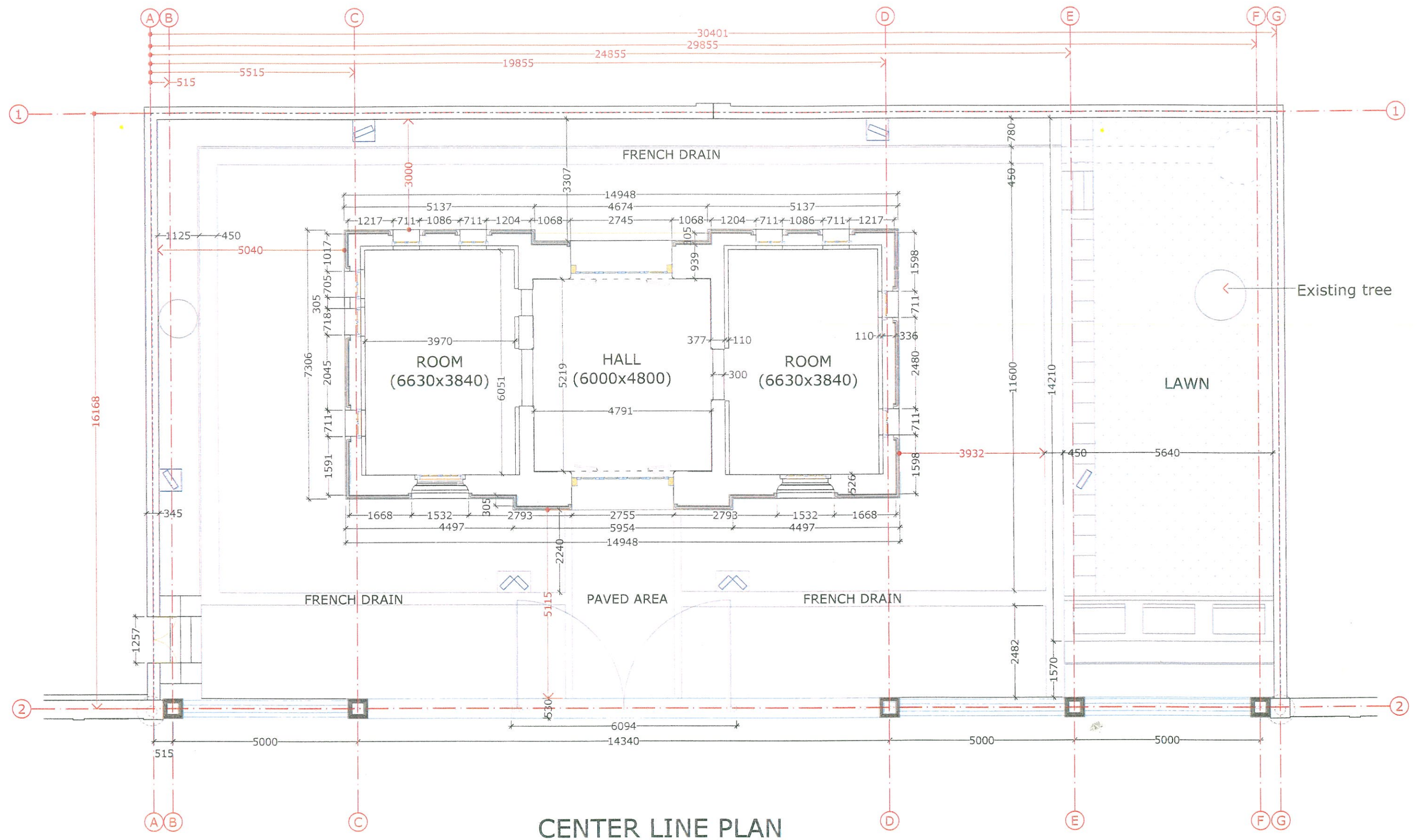
Exterior lighting



DRAWINGS (AS EXECUTED)

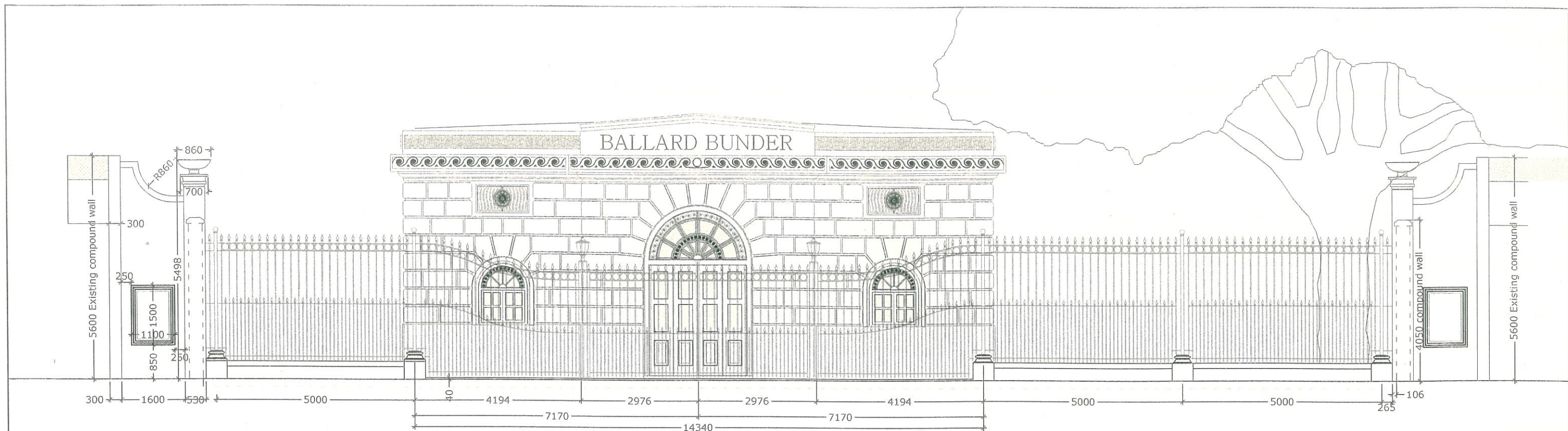


BALLARD BUNDER GATEHOUSE · CONSERVATION REPORT · MAY 2005



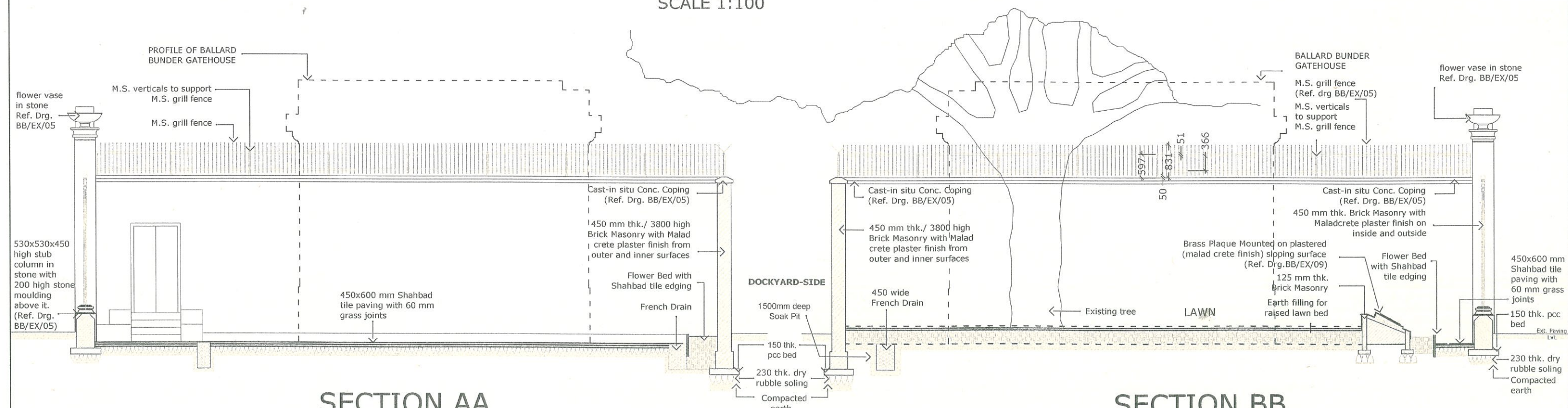
CONSERVATION: BALLARD BUNDER GATEHOUSE **DRAWINGS AS EXECUTED**

CENTER LINE PLAN		DWG.NO.	DATE
		BB/EX/01b	28 MAY 05
CLIENT : NAVAL DOCKYARD, MUMBAI		NOTE: DO NOT SCALE THE DRAWING. DIMENSIONS WRITTEN ON THE DRAWING SHALL BE FOLLOWED.	
PROJECT CONSULTANTS: K. UNWALLA ARCHITECTS 5/7, Kothari House, Oak Lane, Fort, Mumbai 400 023. Tel: 22670302, 56344857. Email: kunwalla@vsnl.com		SCALE 1:100	



FRONT ELEVATION

SCALE 1:100



SECTION AA

SCALE 1:100

SECTION BB

SCALE 1:100

CONSERVATION: BALLARD BUNDER GATEHOUSE

DRAWINGS AS EXECUTED

SITE ELEVATION / SECTIONS

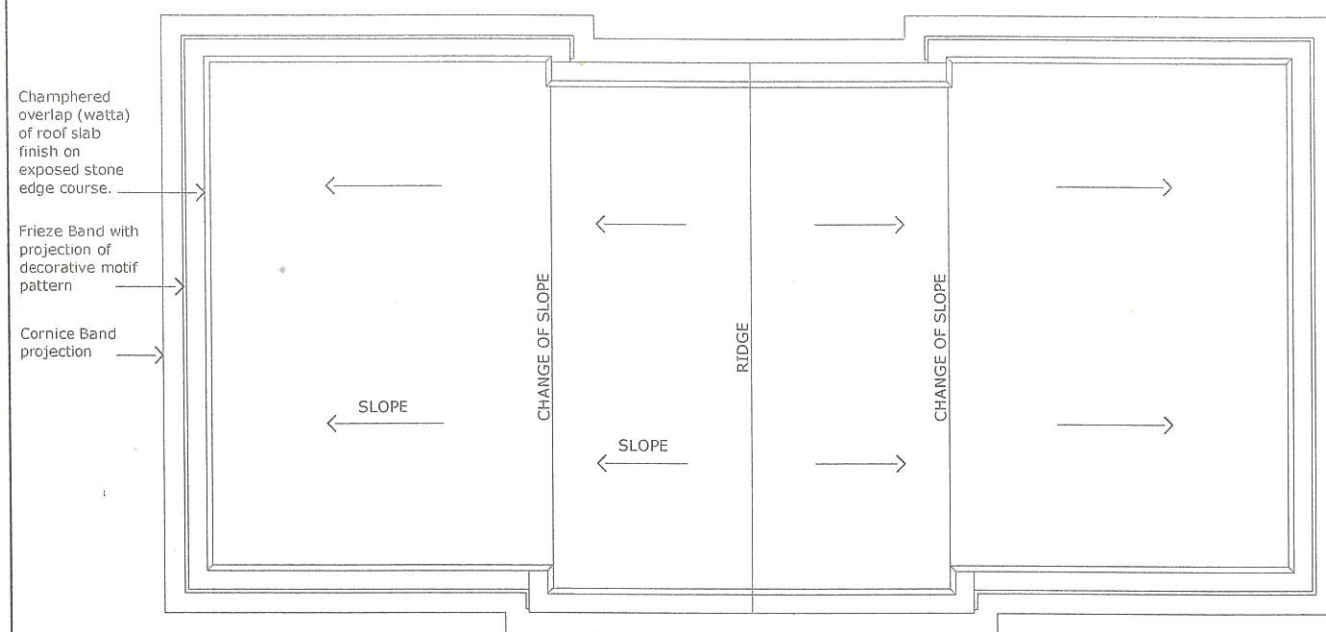
CLIENT : NAVAL DOCKYARD, MUMBAI

PROJECT CONSULTANTS:
K. UNWALLA ARCHITECTS
5/7, Kothari House, Oak Lane, Fort, Mumbai 400 023.
Tel: 22670302, 56344857. Email: kunwalla@vsnl.com

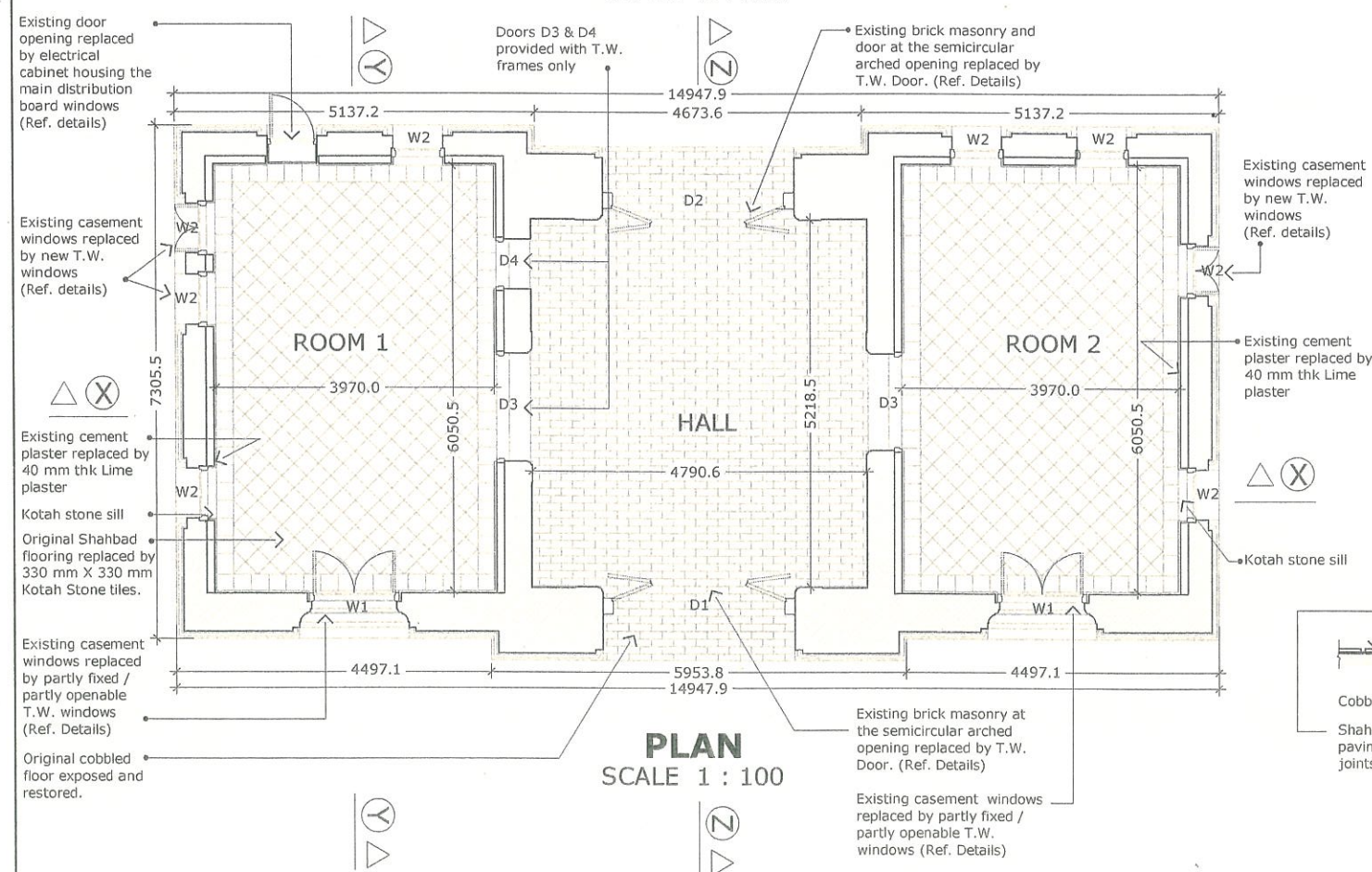
DWG.NO. BB/EX/02
DATE 28 MAY 05

NOTE: DO NOT SCALE THE DRAWING. DIMENSIONS WRITTEN ON THE DRAWING SHALL BE FOLLOWED.

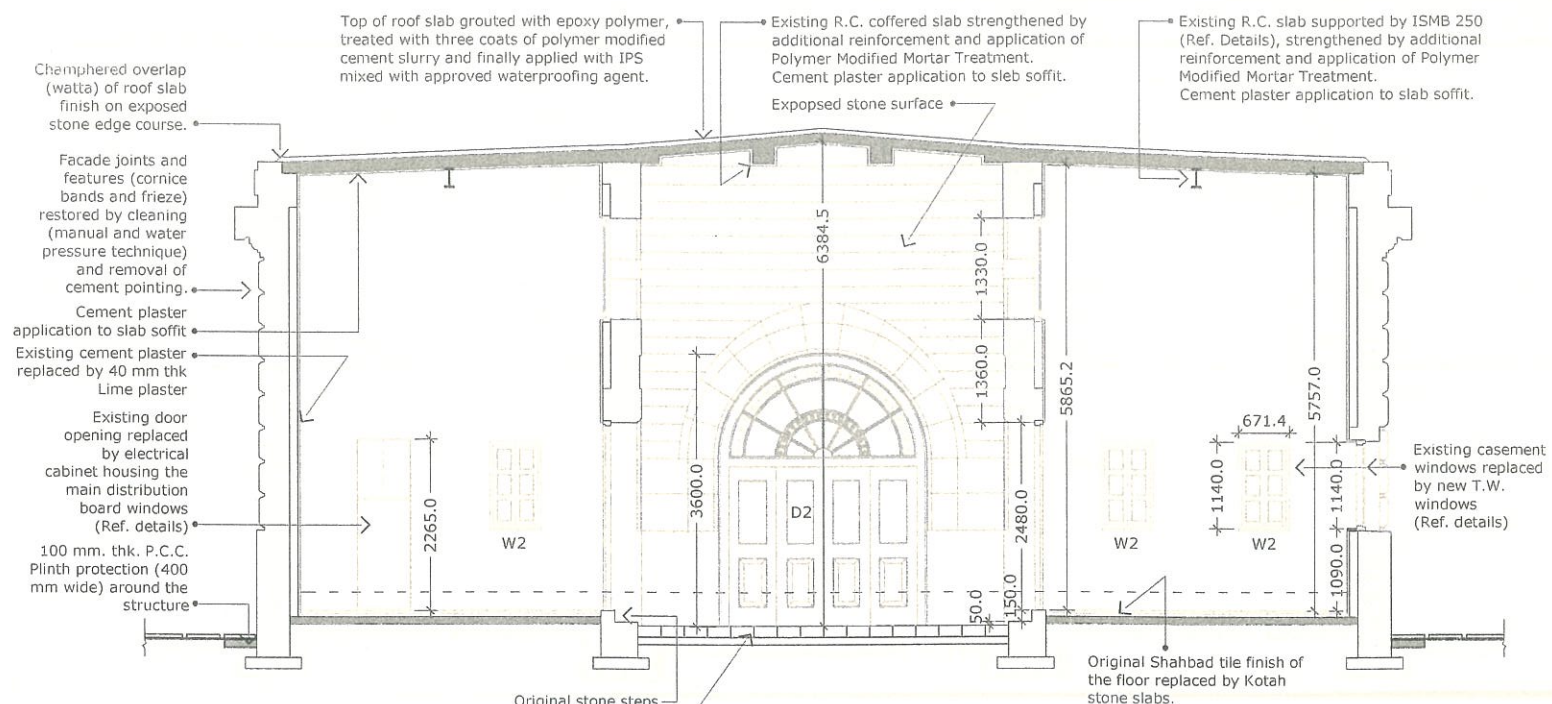
SCALE 1:100
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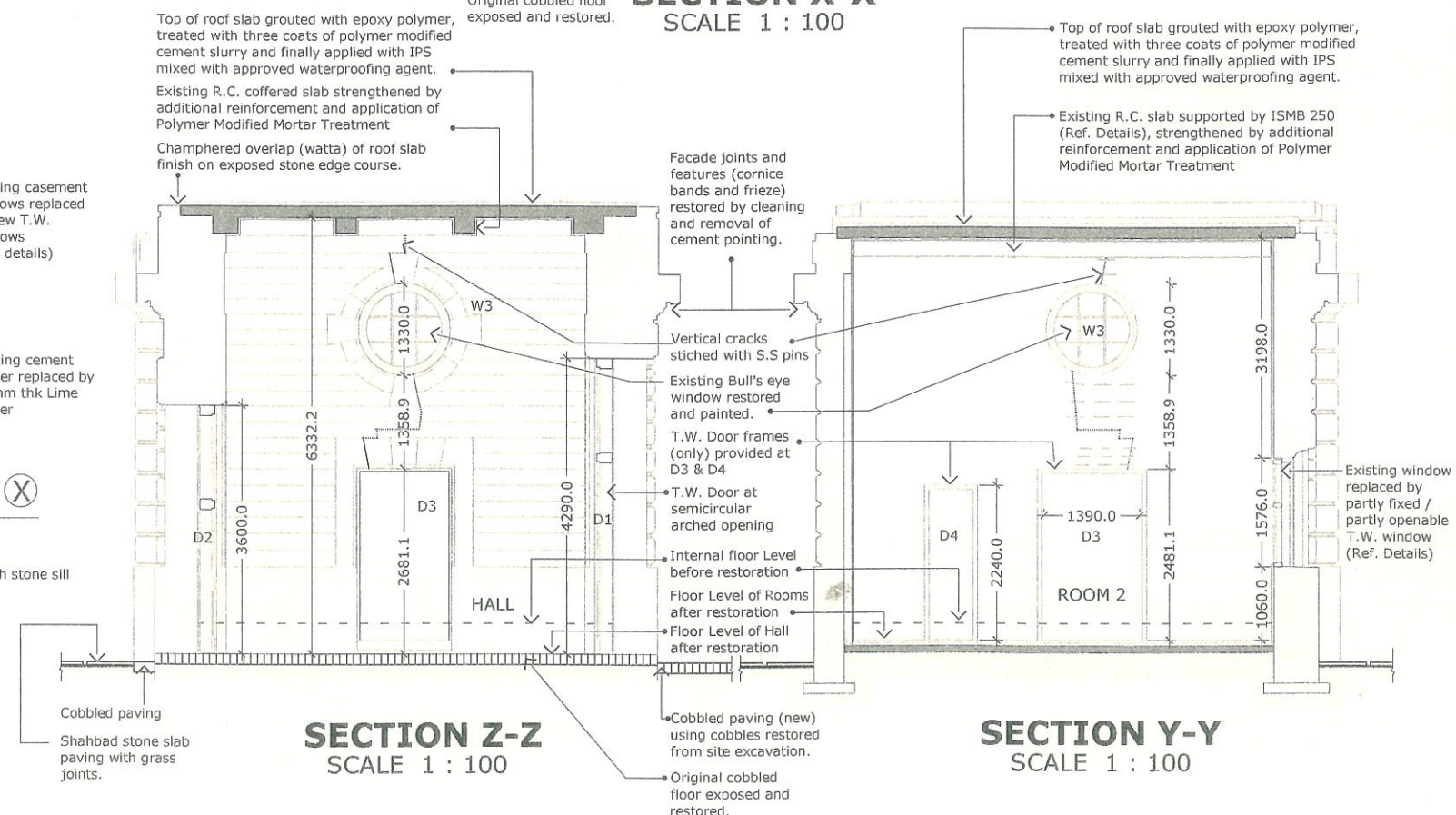
ROOF PLAN
SCALE 1 : 100



PLAN
SCALE 1 : 100



SECTION X-X
SCALE 1 : 100



SECTION Z-Z
SCALE 1 : 100

SECTION Y-Y
SCALE 1 : 100

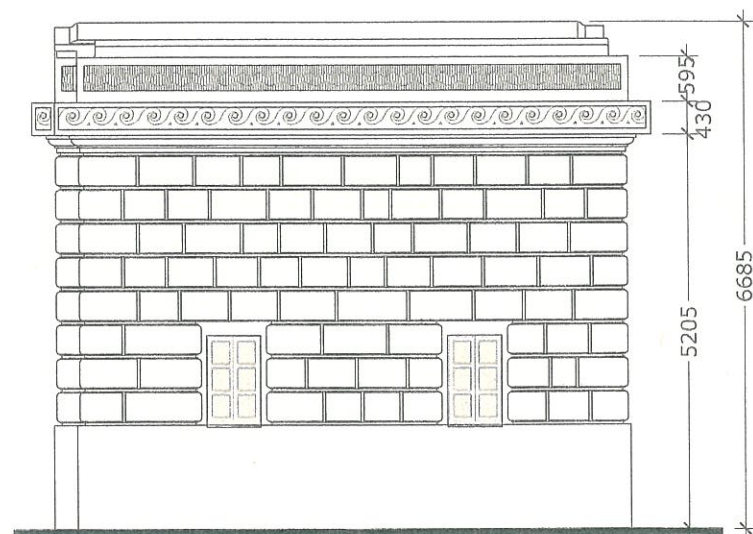
CONSERVATION: BALLARD BUNDER GATEHOUSE

DRAWINGS AS EXECUTED

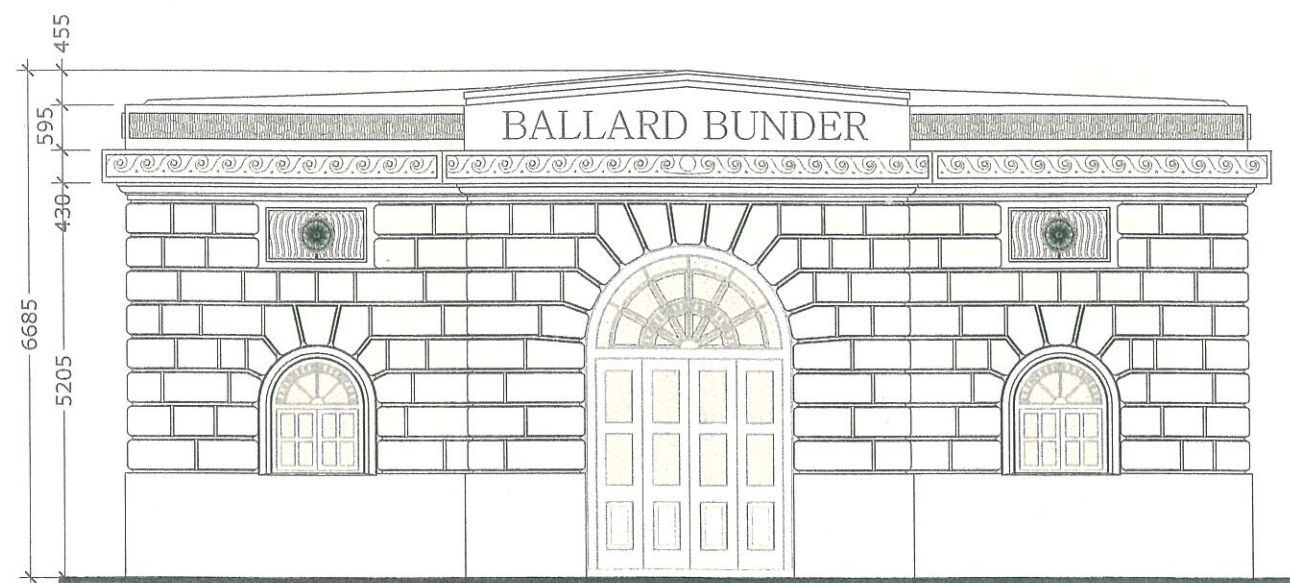
PLANS / SECTIONS

DWG.NO.	DATE
BB/EX/03	28 MAY 05
CLIENT : NAVAL DOCKYARD, MUMBAI	NOTE: DO NOT SCALE THE DRAWING. DIMENSIONS WRITTEN ON THE DRAWING SHALL BE FOLLOWED.
PROJECT CONSULTANTS: K. UNWALLA ARCHITECTS 5/7, Kothari House, Oak Lane, Fort, Mumbai 400 023. Tel: 22670302, 56344857. Email: kunwalla@vsnl.com	SCALE 1:100

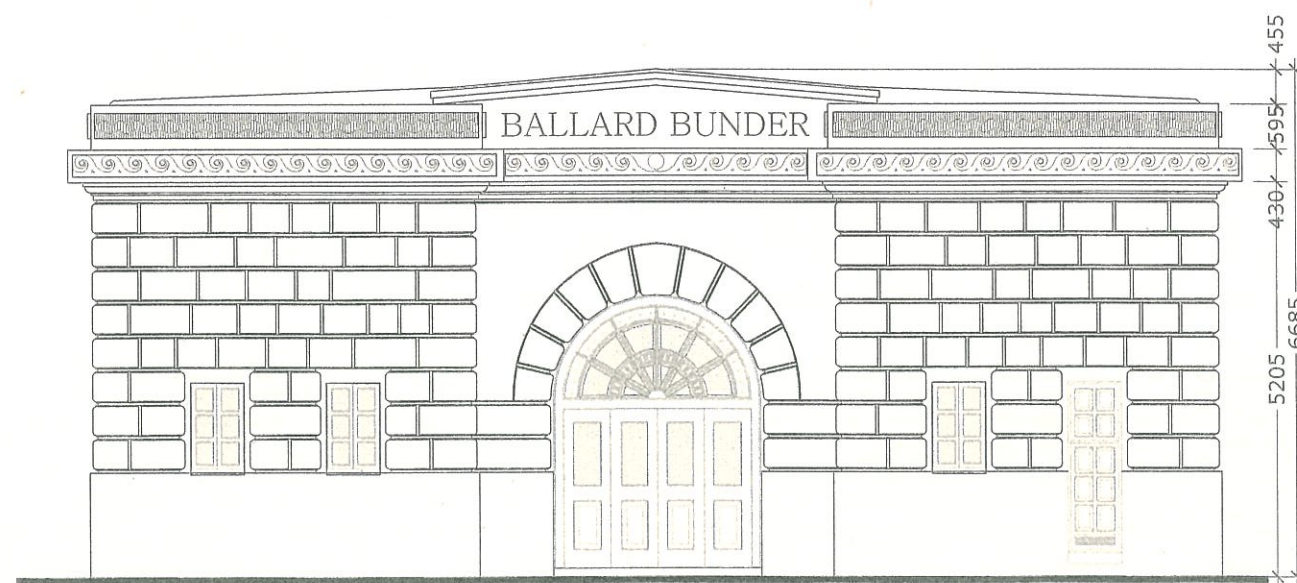




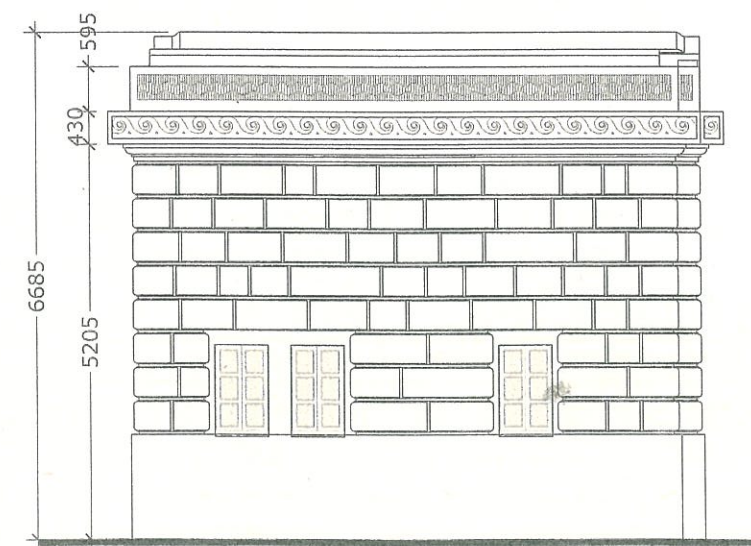
WEST SIDE ELEVATION
SCALE 1 : 100



NORTH SIDE ELEVATION (ROAD-SIDE)
SCALE 1 : 100




SOUTH SIDE ELEVATION
SCALE 1 : 100

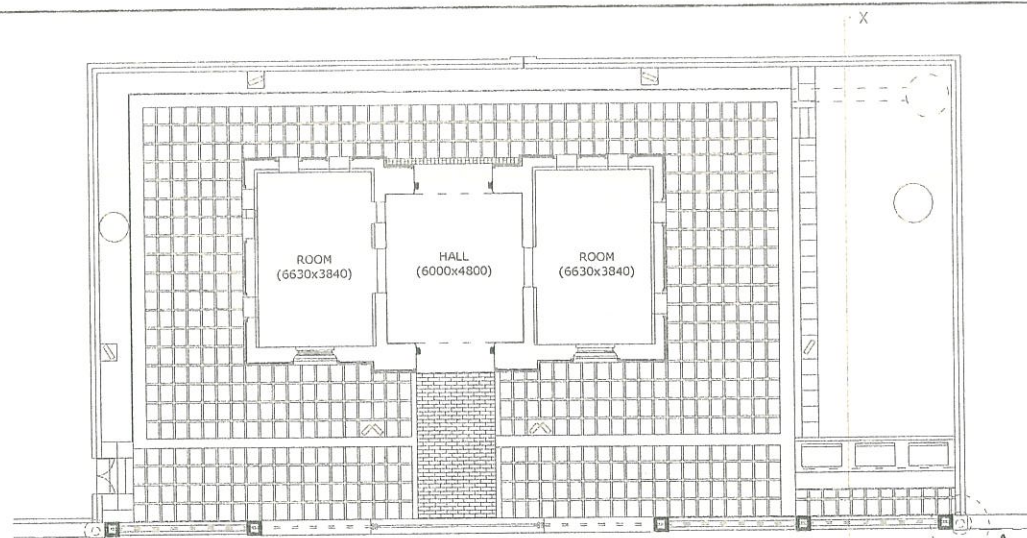


EAST ELEVATION
SCALE 1 : 100

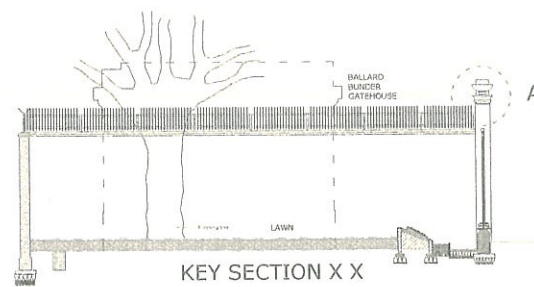
CONSERVATION: BALLARD BUNDER GATEHOUSE

DRAWINGS AS EXECUTED

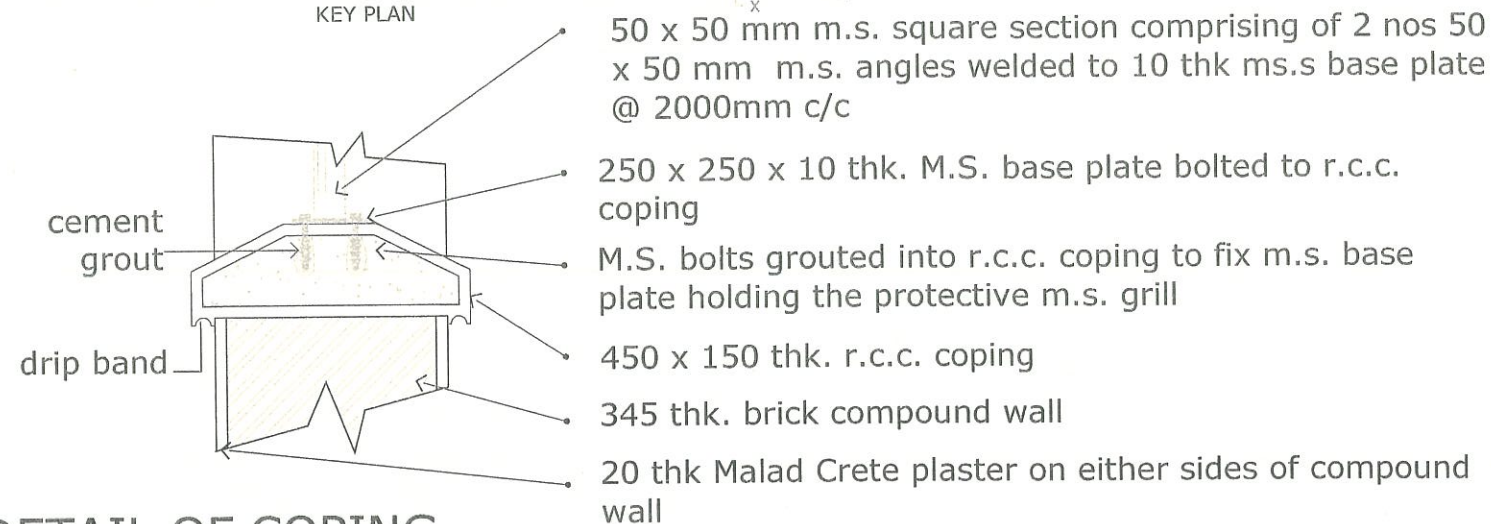
ELEVATIONS		DWG.NO. BB/EX/04	DATE 28 MAY 05
CLIENT : NAVAL DOCKYARD, MUMBAI		NOTE: DO NOT SCALE THE DRAWING. DIMENSIONS WRITTEN ON THE DRAWING SHALL BE FOLLOWED.	
PROJECT CONSULTANTS: K. UNWALLA ARCHITECTS 5/7, Kothari House, Oak Lane, Fort, Mumbai 400 023. Tel: 22670302, 56344857. Email: kunwalla@vsnl.com		SCALE 1:100	



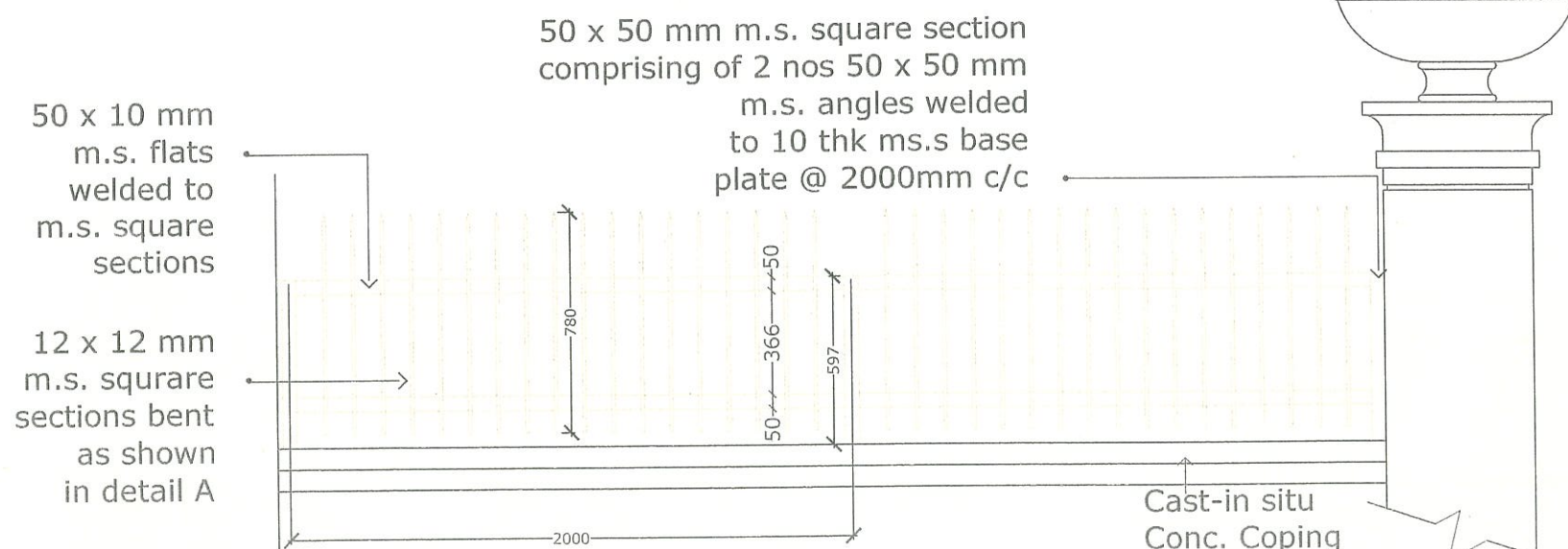
KEY PLAN



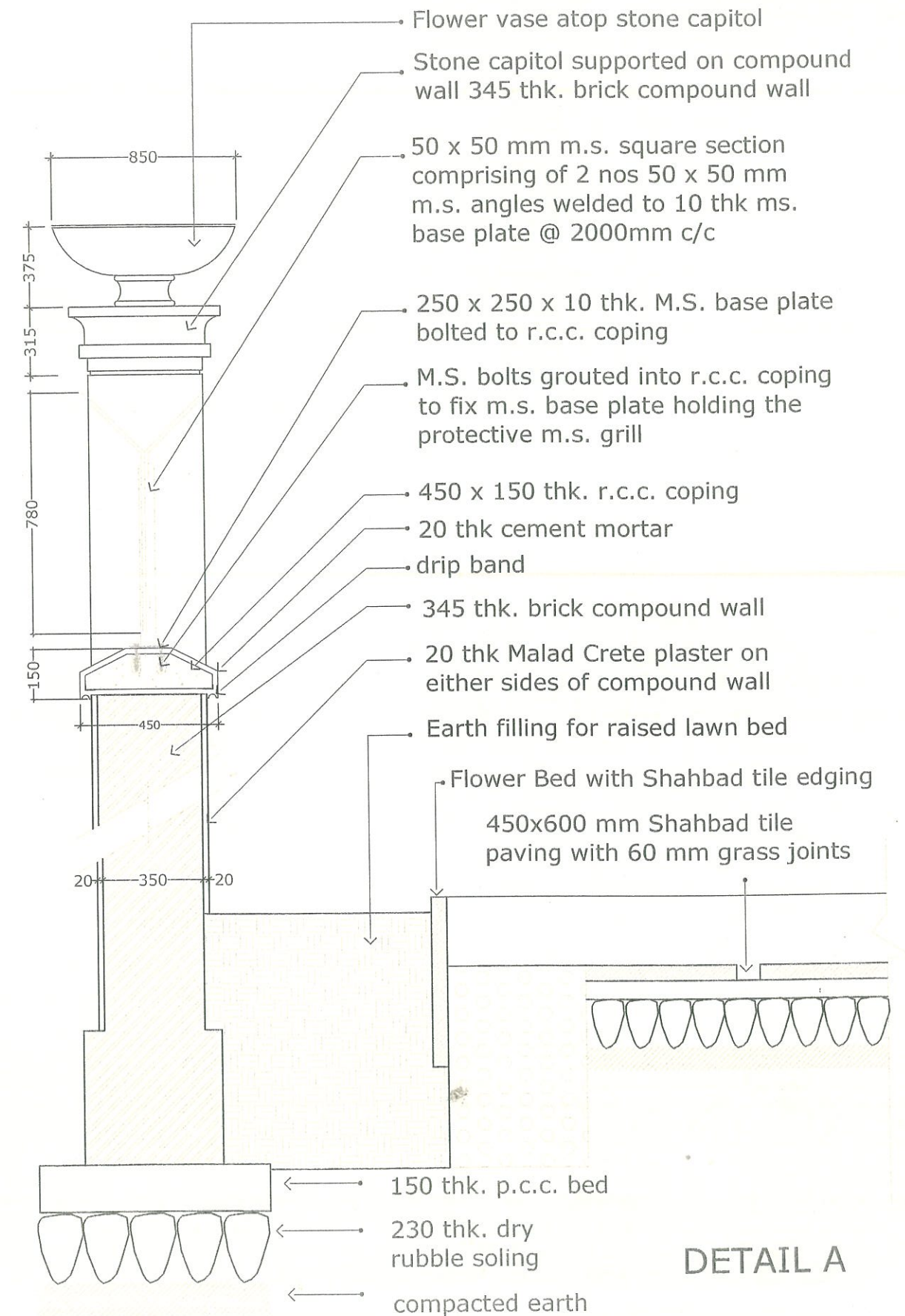
KEY SECTION X X



DETAIL OF COPING



SECTION THRO. STONE PILASTER



DETAIL A

CONSERVATION: BALLARD BUNDER GATEHOUSE

DRAWINGS AS EXECUTED

DETAIL: M.S. GRILL ATOP COMPOUND WALL

CLIENT : NAVAL DOCKYARD, MUMBAI

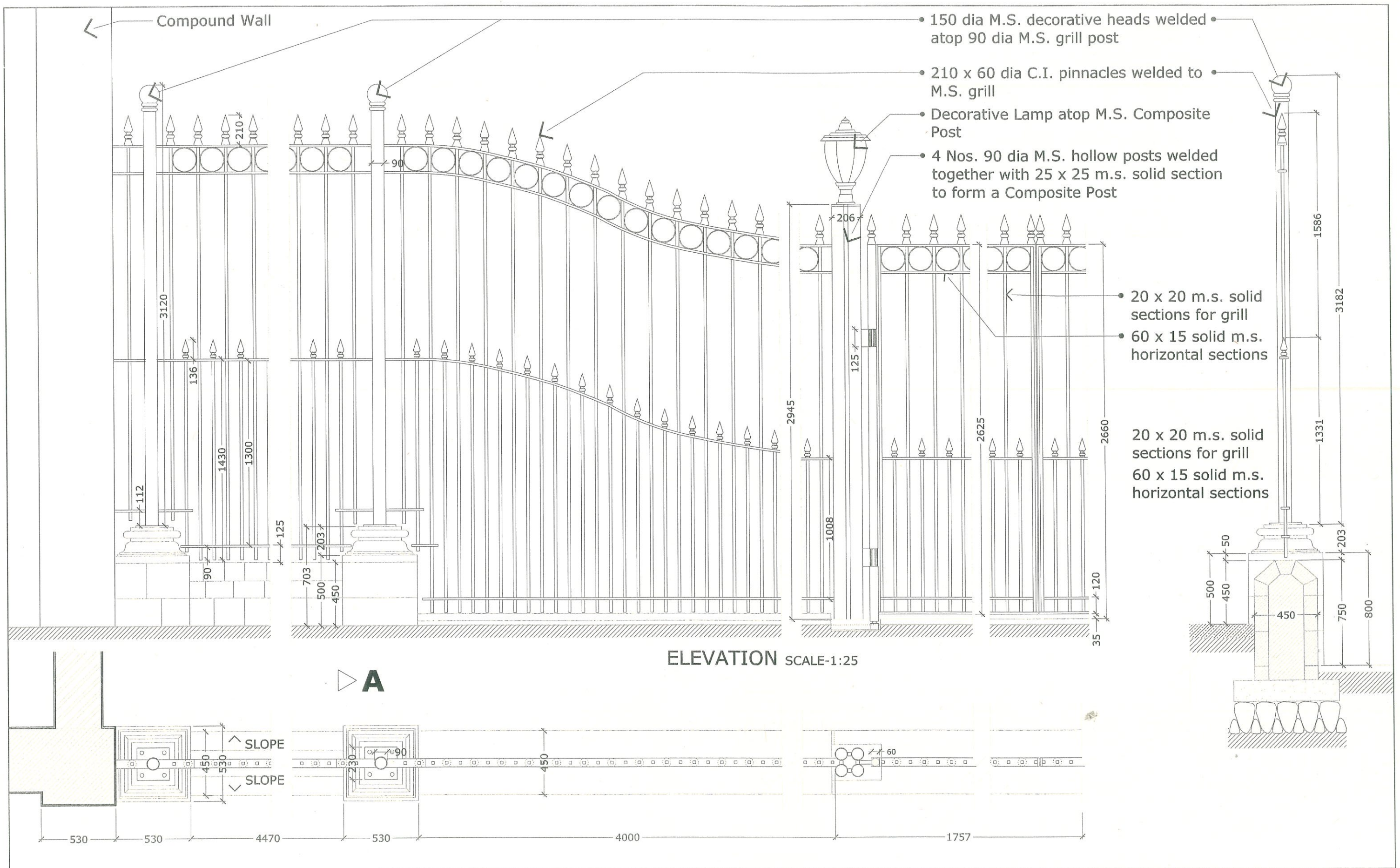
PROJECT CONSULTANTS:
K. UNWALLA ARCHITECTS
5/7, Kothari House, Oak Lane, Fort, Mumbai 400 023.
Tel: 22670302, 56344837. Email: kunwalla@vsnl.com

DWG.NO. BB/EX/05 DATE 28 MAY 05

NOTE: DO NOT SCALE THE DRAWING. DIMENSIONS WRITTEN ON THE DRAWING SHALL BE FOLLOWED.

SCALE AS MENTIONED





CONSERVATION: BALLARD BUNDER GATEHOUSE

DRAWINGS AS EXECUTED

DETAIL: C.I. COLUMNS & GRILL	DWG.NO. BB/EX/06	DATE 28 MAY 05
CLIENT : NAVAL DOCKYARD, MUMBAI	NOTE: DO NOT SCALE THE DRAWING. DIMENSIONS WRITTEN ON THE DRAWING SHALL BE FOLLOWED.	
PROJECT CONSULTANTS: K. UNWALLA ARCHITECTS 5/7, Kothari House, Oak Lane, Fort, Mumbai 400 023. Tel: 22670302, 56344857. Email: kunwalla@vsnl.com	SCALE 1:100	N

Section: Stone Stub Wall

External Paving Level

703
253
450

530

450

300

Internal Paving Level

150 thk P.C.C. bed

230 thk Dry rubble soling

Compacted earth

450 x 450 stone stub wall with Kurla stone cladding

20 x 20 m.s. solid sections for grill

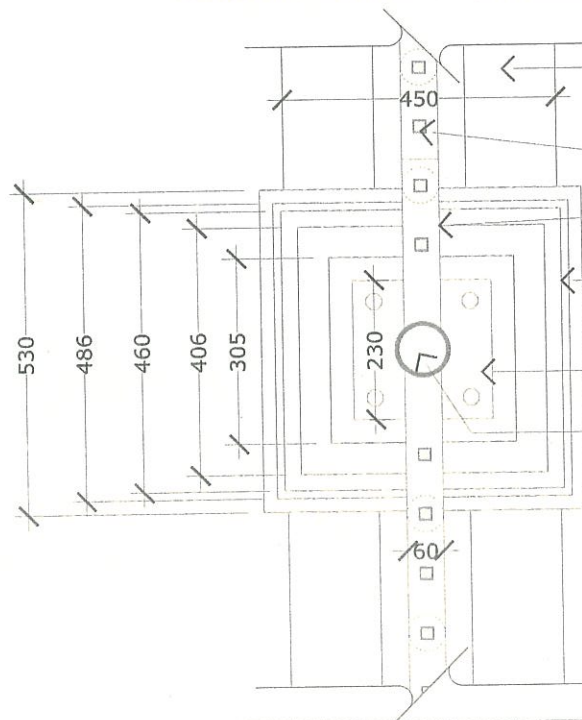
60 x 15 solid m.s. horizontal sections

530 x 530 x 253 decorative stone coping above 530 x 530 stub pier

10 the m.s. plate bolted to stone coping

90 dia M.S. pipe for grill-post welded to 20 thk m.s. plate

Plan: Stone Stub Pier and Wall



- 90 dia M.S. pipe as grill post welded to 20 thk m.s. plate
- 10 the m.s. plate bolted to stone coping
- Bolts
- 530 x 530 x 253 decorative stone coping
- 20 x 20 m.s. solid sections for grill
- 60 x 15 solid m.s. horizontal sections
- 530 x 530 stone pier
- 250 x 75 thk Kurla Stone cladding for stub pier and stub wall
- 450mm thk stone stub wall with Kurla stone cladding
- core masonry in brick
- Shahbad Paving with grass joints

90 dia M.S. pipe as grill post welded to 20 thk m.s. plate

Bolts drilled thro' the stone coping

core masonry in brick

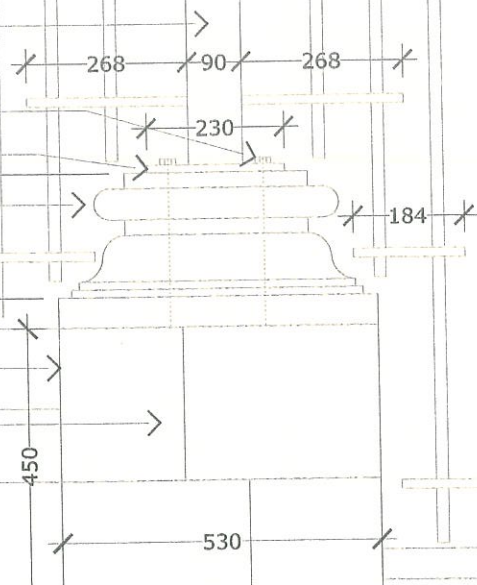
150 thk P.C.C. bed

230 thk Dry rubble soling

Compacted earth

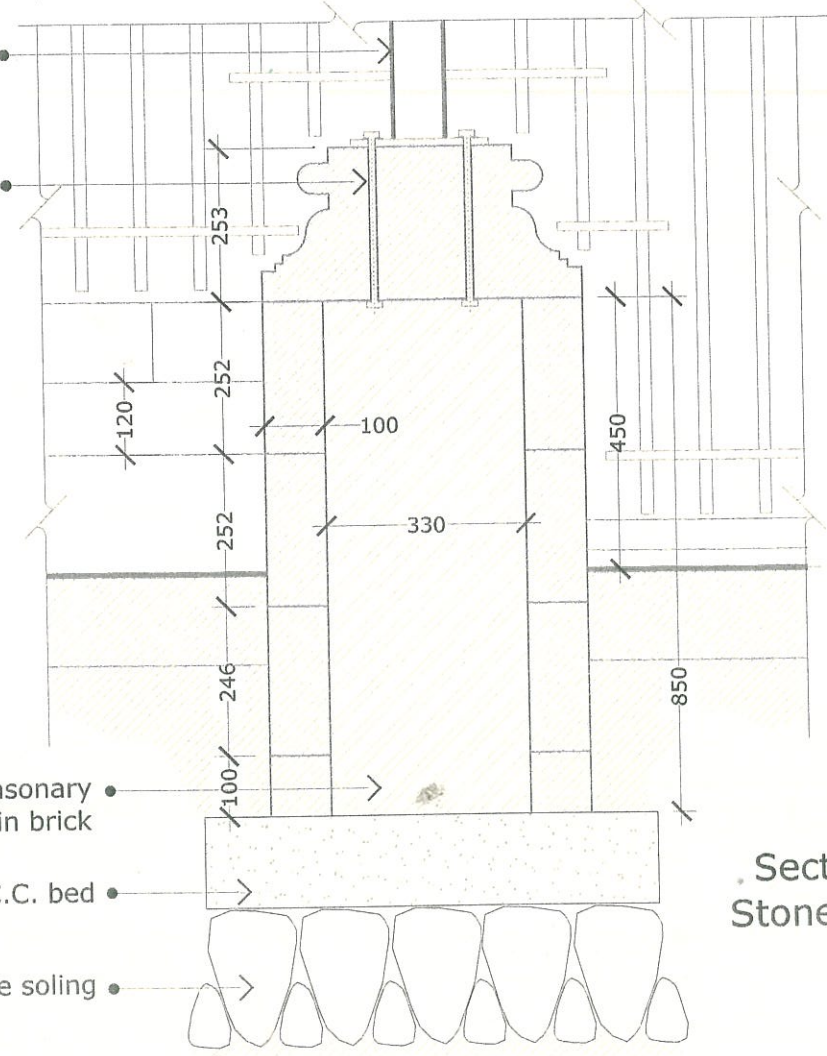
Elevation: Stone Stub Pier

External Paving Level



Section Thro' Stone Stub Pier

External Paving Level



CONSERVATION: BALLARD BUNDER GATEHOUSE

DRAWINGS AS EXECUTED

DETAIL: STONE STUB PIER & WALL

DWG.NO. BB/EX/07
DATE 28 MAY 05

CLIENT : NAVAL DOCKYARD, MUMBAI

PROJECT CONSULTANTS:
K. UNWALLA ARCHITECTS
5/7, Kothari House, Oak Lane, Fort, Mumbai 400 023.
Tel: 22670302, 56344857. Email: kunwalla@vsnl.com

NOTE: DO NOT SCALE THE DRAWING DIMENSIONS WRITTEN ON THE DRAWING SHALL BE FOLLOWED.

SCALE 1:12.5
N

बलार्ड बंदर द्वारगृह : १९२० में निर्मित यह द्वारगृह वर्ष १९५० तक आने वाली नौकाओं के प्रवेशद्वार के रूप में सेवा करता रहा तथा सांयजनिक समुद्री तट के अभिगमन को भी सुसाध्य बनाया। नौसेना गोदोबाड़ा के विस्तार के दौरान यह द्वारगृह ऊंची सुरक्षा दीवार से घिर गया था। बलार्ड पियर क्षेत्र का नामकरण मुम्बई प लन न्यास के प्रथम अध्यक्ष जनरल जॉन एलेक्स बलार्ड के नाम पर किया गया है।

इस सम्मोय द्वारगृह को नव-पलिष्ठित शैली की यास्तुकला बलार्ड इंस्टीट व्यायसायिक क्षेत्र के संपूर्ण यूरोपीय वास्तुसंपदा को उद्घाटित करती है। द्वारगृह का निर्माण कुला पत्थर से किया गया है तथा इसकी बनावट सड़क की ओर निकलते हुए गोल गेट (इन्दिरा गेट) के द्विद्वार-गृह के समान है।

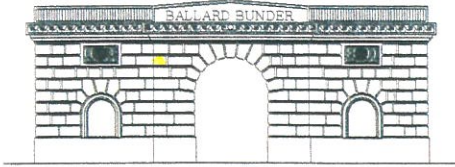
द्वारगृह का जीर्णोद्धार वर्ष २००५ केप्रारम्भ मेंछत्तीस लाख रूपए की लागत से ऐतिहासिक भवनो के संधारण हेतु प्रयुक्त पद्धति के प्रयोग से किया गया है।

इसका कार्य न्ययन भारतीय नौसेना द्वारा ब्रह्म एडमिरल मदनजीत सिंह राय विशिष्ट सेवा पदक, अति विशिष्ट सेवा पदक, एलेमी, कमान प्रमुख, विशेष सेवा कमान तथा वे सुरेश जी जोशी कमान अग्रज, मुम्बईकमान क्षेत्र विकास प्राधिकरण के संरक्षण में किया गया।

BUILT
1920

RESTORED
2005

बेलाई बंदर गेटहाउस



BALLARD BUNDER GATEHOUSE

BALLARD BUNDER GATEHOUSE : BUILT IN 1920, THIS GATEHOUSE SERVED AS THE GATEWAY TO THE BOAT LANDINGS AND ALSO FACILITATED PUBLIC ACCESS TO THE SEA FRONT TILL 1950. WHEN THE EXPANSION OF THE NAVAL DOCKYARD TOOK PLACE, THIS GATE HOUSE WAS ENCOMPASSED BY THE HIGH SECURITY WALL. THE BALLARD PIER AREA IS NAMED AFTER GENERAL JOHN ALEX BALLARD, WHO WAS THE FIRST CHAIRMAN OF THE BOMBAY PORT TRUST.

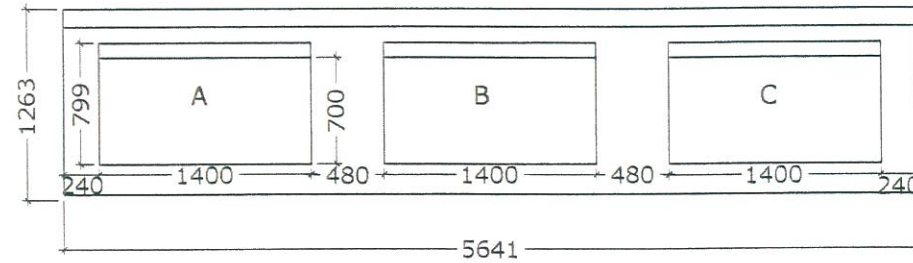
THE NEO-CLASSICAL STYLE OF ARCHITECTURE EMPLOYED FOR THE GATE HOUSE COMPLEMENTS THE WHOLLY EUROPEAN SETTING OF THE BALLARD ESTATE BUSINESS DISTRICT. THE HANDSOME GATEHOUSE BUILT IN MASSIVE KURLA STONE RUSTICATED MASONRY WITH DEEP CUT JOINTS, SHARES ITS DESIGN AND DETAIL WITH THE TRIPLE GATE HOUSES OF THE GREEN GATE (INDIRA GATE).

THE GATE HOUSE WAS COMPLETELY RESTORED IN EARLY 2005, USING CONSERVATION METHODS CONDUCTIVE TO HISTORIC BUILDINGS. AT A COST OF THIRTY SIX LAKHS RUPEES, THIS WAS IMPLEMENTED BY THE INDIAN NAVY WITH THE PATRONAGE OF VICE ADMIRAL MADANJIT SINGH PVRM, AVISM, ADD, FLAG OFFICER COMMANDING-IN-CHIEF, WESTERN NAVAL COMMAND AND SURESH V JOSHI METROPOLITAN COMMISSIONER, MUMBAI.

LAYOUT OF INTERNAL PLAQUE A

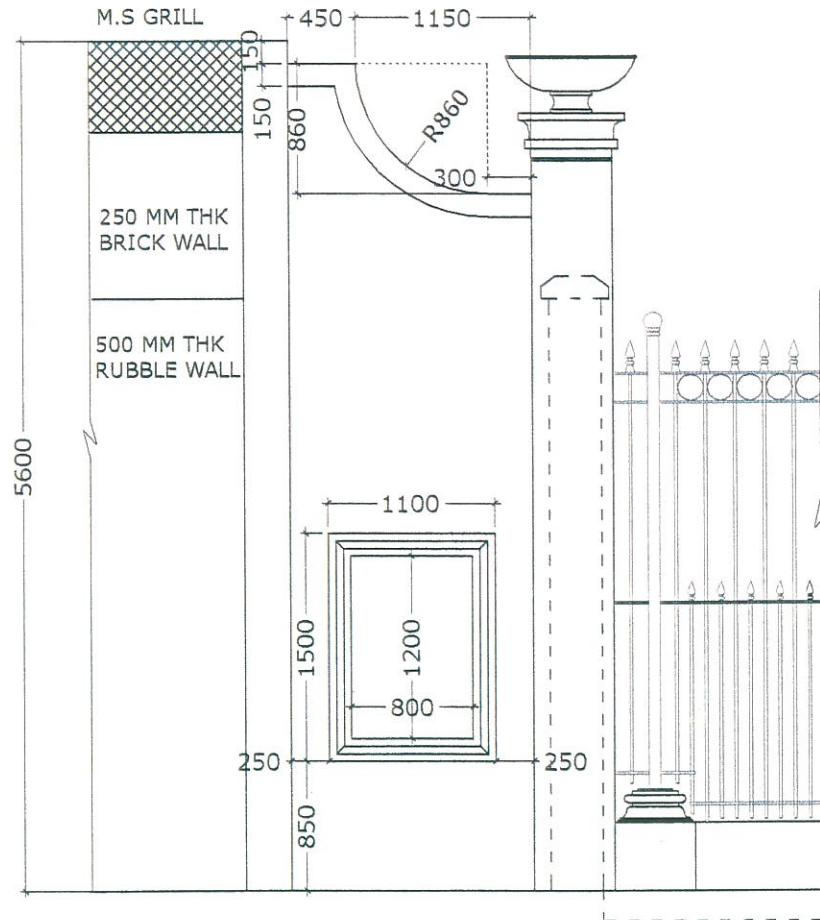
LAYOUT OF INTERNAL PLAQUE B

LAYOUT OF INTERNAL PLAQUE C



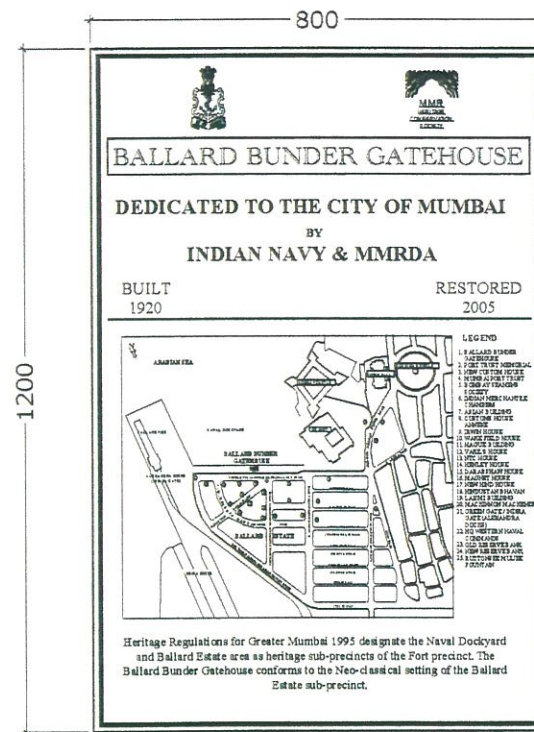
KEY PLAN OF INTERNAL PLAQUES

SCALE - 1:50

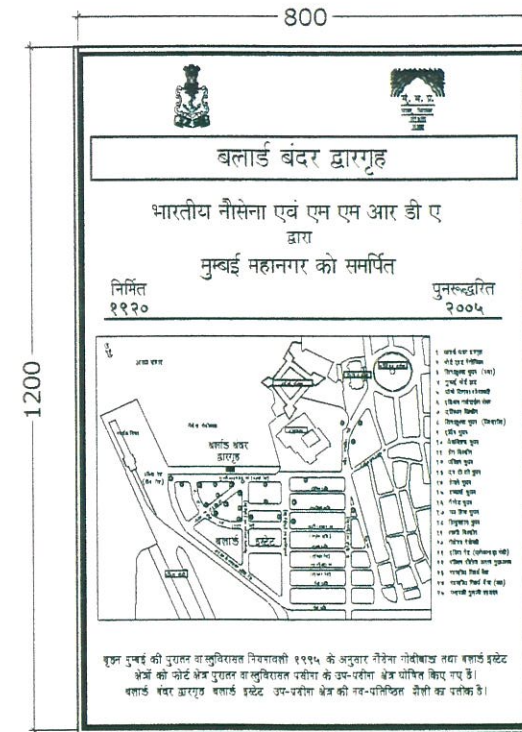


ELEVATION OF EXTERNAL PLAQUE

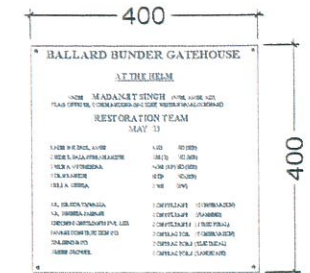
SCALE - 1:50



(ENGLISH)

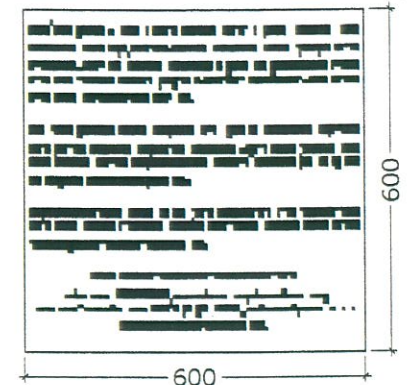


(HINDI)



(MARATHI)

RESTORATION TEAM (ENGLISH)



CONSERVATION: BALLARD BUNDER GATEHOUSE

DRAWINGS AS EXECUTED

PLAQUES

DWG.NO.
BB/EX/08

DATE
28 MAY 05

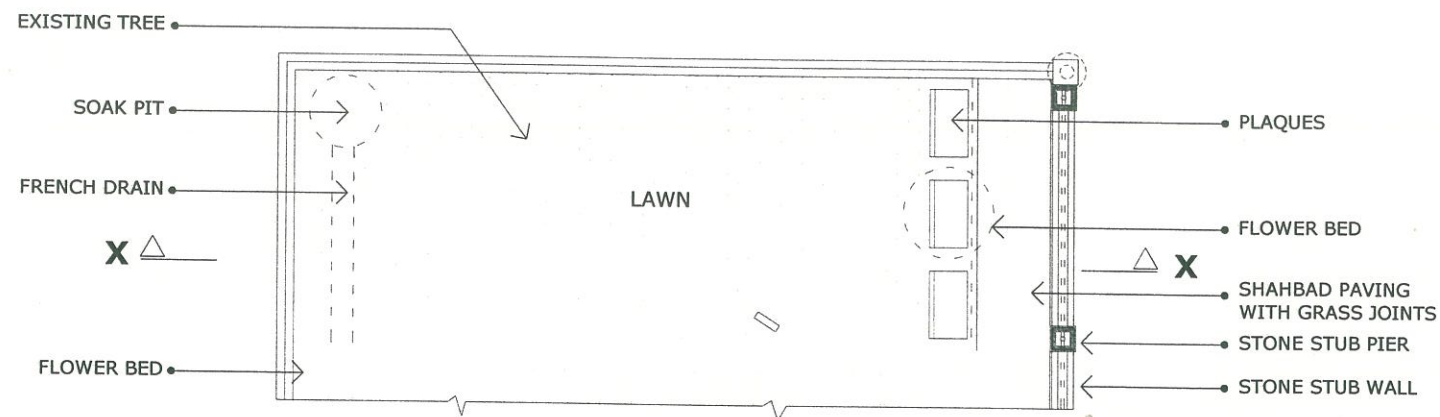
CLIENT : NAVAL DOCKYARD, MUMBAI

NOTE: DO NOT SCALE THE DRAWING. DIMENSIONS WRITTEN ON THE DRAWING SHALL BE FOLLOWED

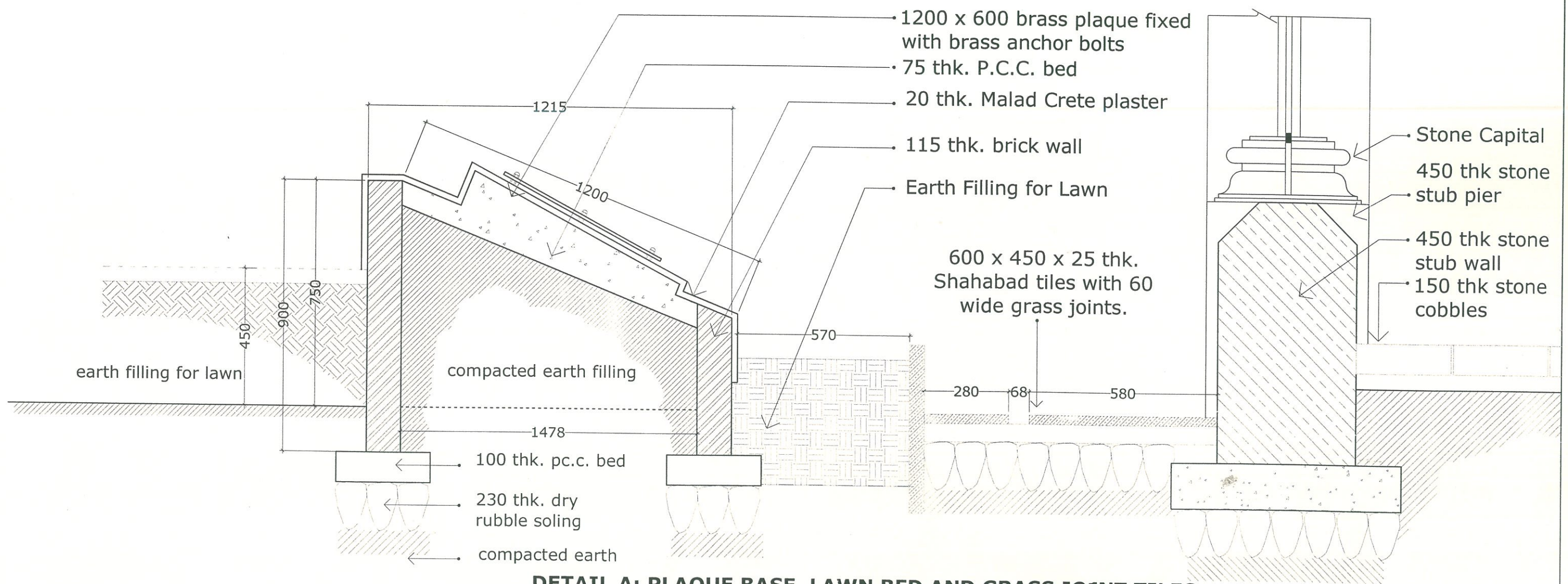
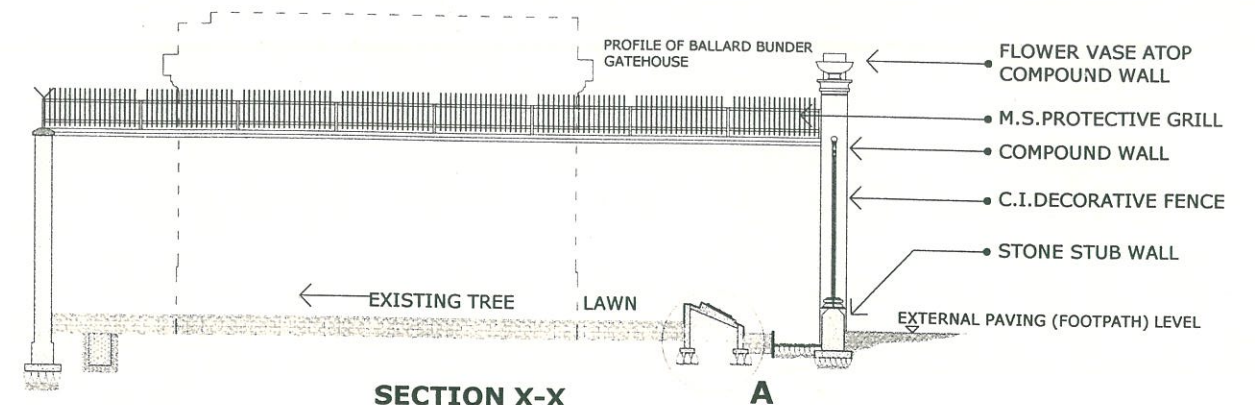
PROJECT CONSULTANTS:
K. UNWALLA ARCHITECTS
5/7, Kothari House, Oak Lane, Fort, Mumbai 400 023.
Tel: 22670302, 56344857. Email: kunwalla@vsnl.com

SCALE
AS
MENTIONED





**KEY
(PART) PLAN**

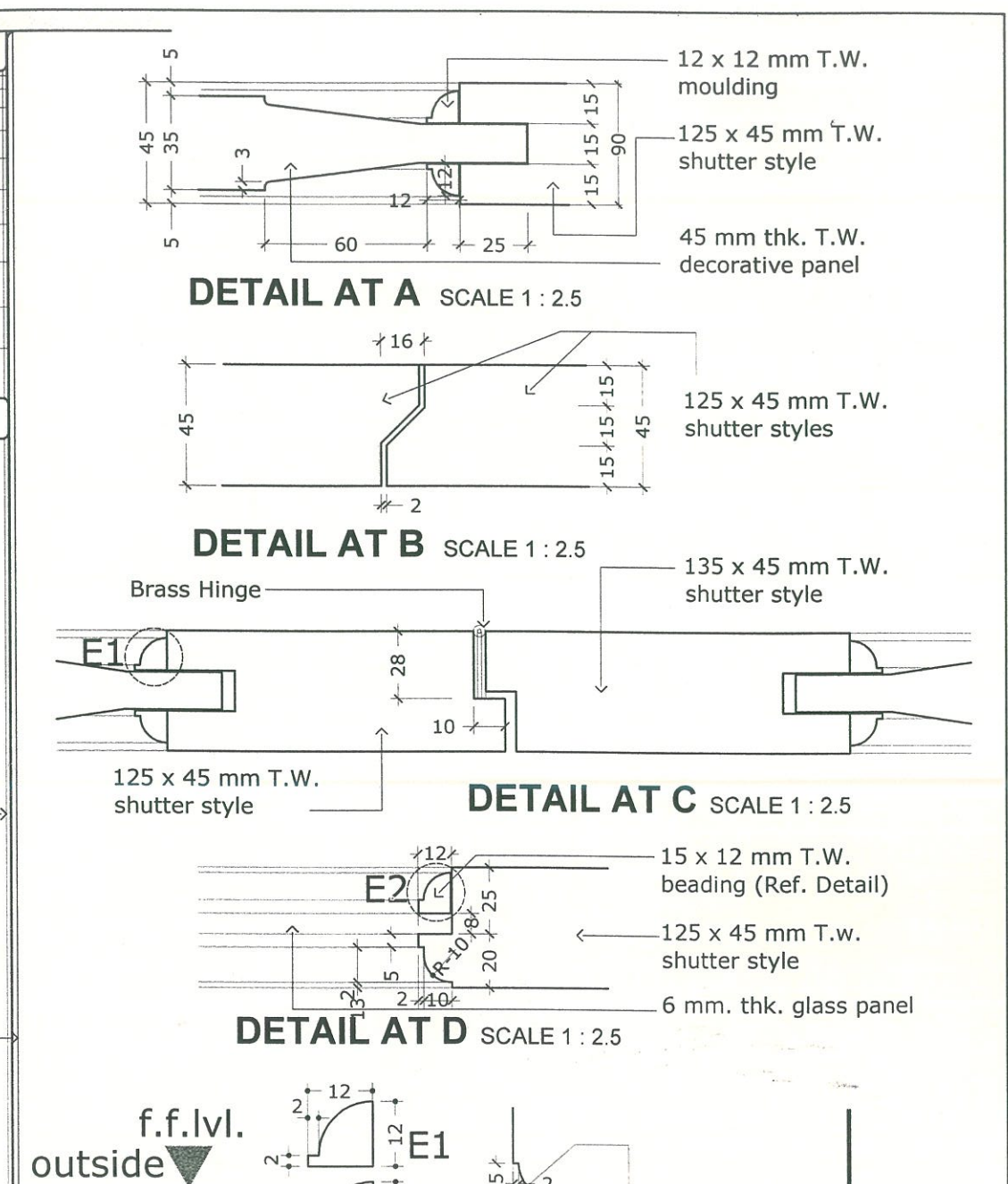
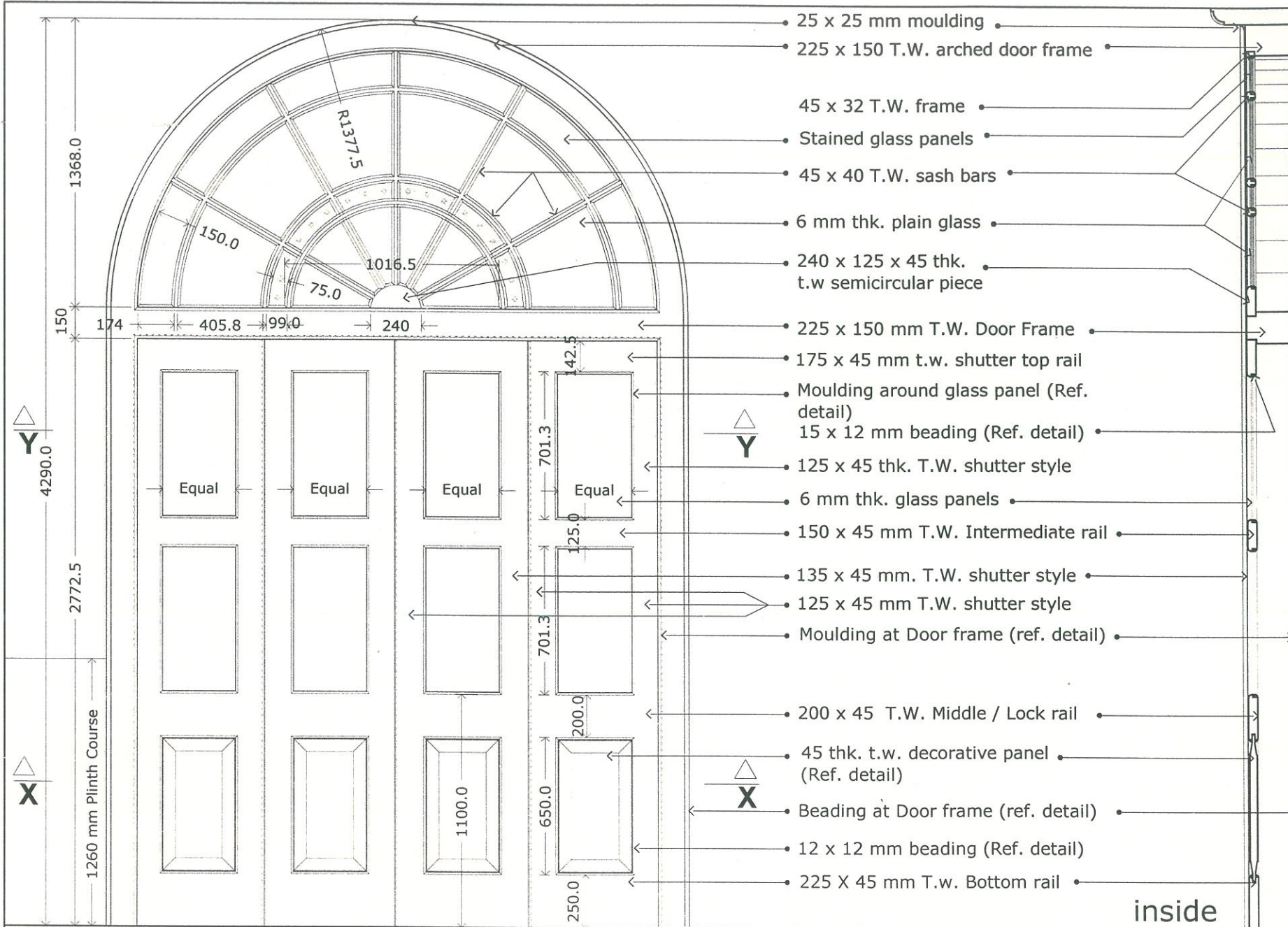


DETAIL A: PLAQUE BASE, LAWN BED AND GRASS JOINT TILES
SCALE 1:5

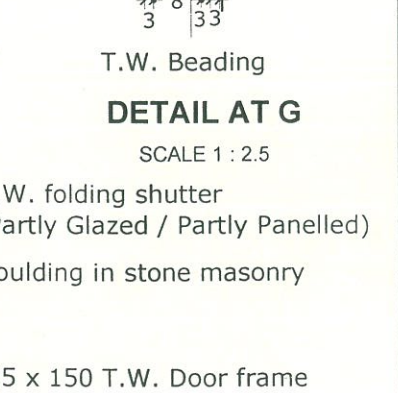
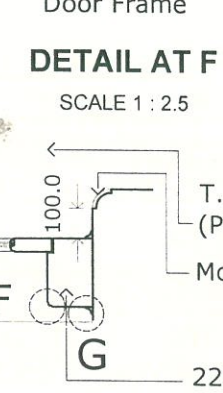
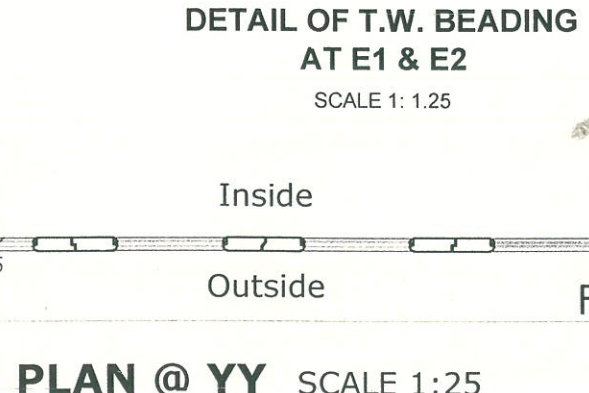
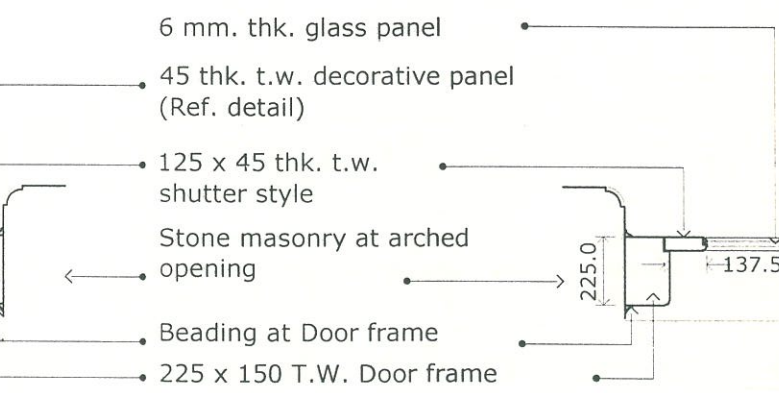
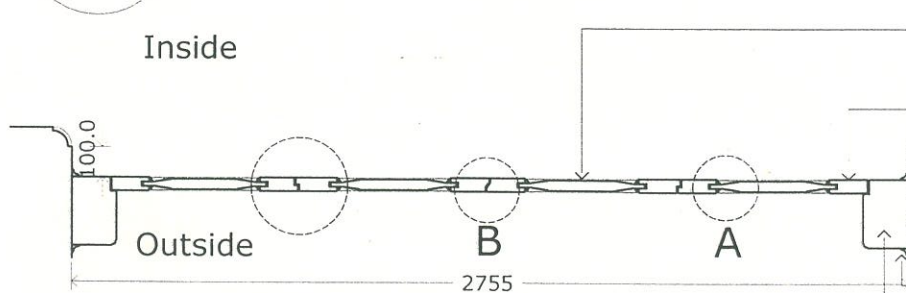
CONSERVATION: BALLARD BUNDER GATEHOUSE

DRAWINGS AS EXECUTED

PLAQUE DETAILS		DWG.NO.	DATE
		BB/EX/09	28 MAY 05
CLIENT : NAVAL DOCKYARD, MUMBAI		NOTE: DO NOT SCALE THE DRAWING. DIMENSIONS WRITTEN ON THE DRAWING SHALL BE FOLLOWED.	
PROJECT CONSULTANTS: K. UNWALLA ARCHITECTS 5/7, Kothari House, Oak Lane, Fort, Mumbai 400 023. Tel: 22670302, 56344857. Email: kunwalla@vsnl.com		SCALE AS MENTIONED	 N



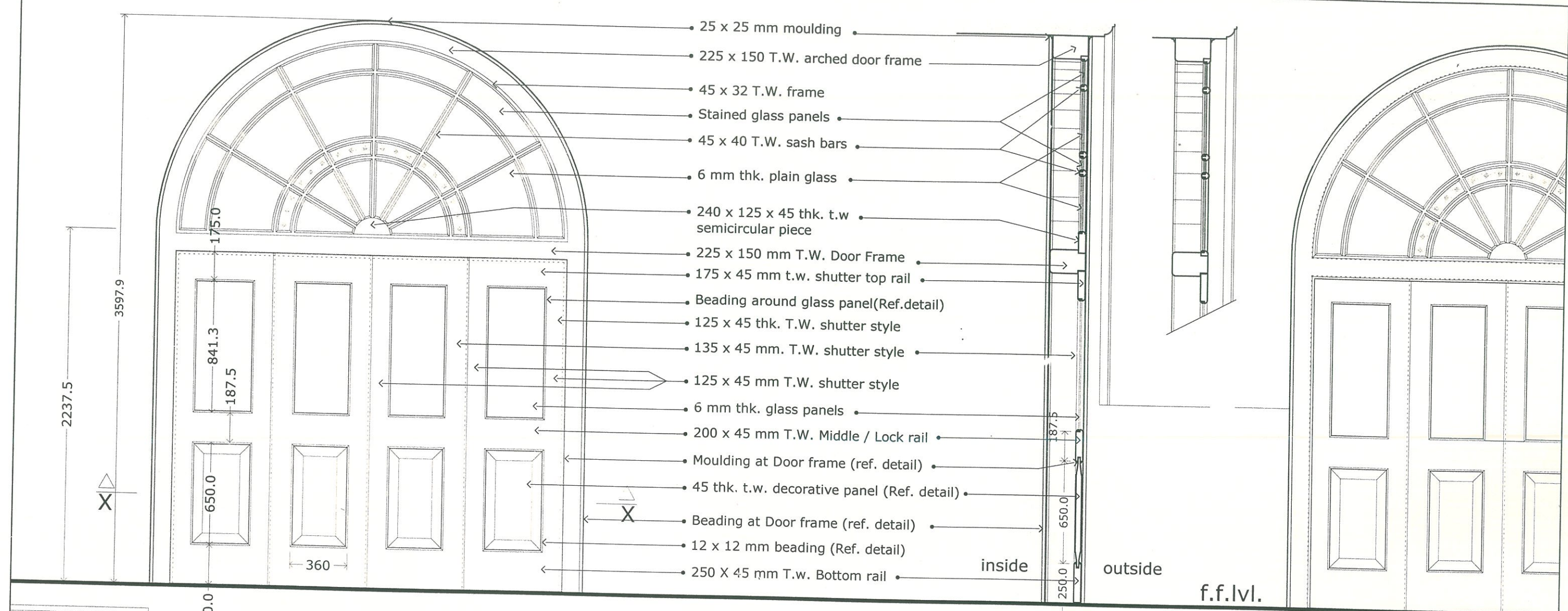
D1 ELEVATION (OUTSIDE)
 SCALE 1:25



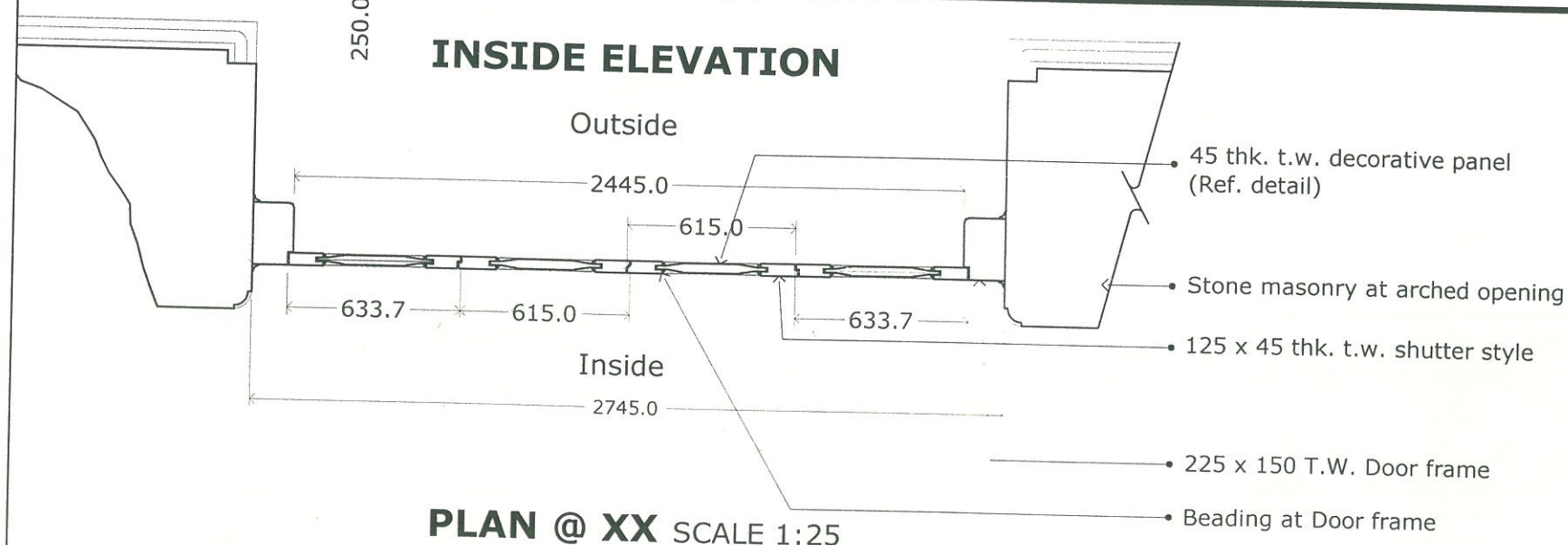
CONSERVATION: BALLARD BUNDER GATEHOUSE

DRAWINGS AS EXECUTED

DETAILS: MAIN ENTRANCE DOOR CLIENT : NAVAL DOCKYARD, MUMBAI PROJECT CONSULTANTS: K. UNWALLA ARCHITECTS 5/7, Kothari House, Oak Lane, Fort, Mumbai 400 023. Tel: 22670302, 56344857. Email: kunwalla@vsnl.com	DWG.NO.	DATE
	BB/EX/10a	28 MAY 05
	SCALE AS MENTIONED	N



INSIDE ELEVATION



SECTION A-A

SCALE 1:25

OUTSIDE ELEVATION

SCHEDULE OF DOORS			
TYPE	NO.	SIZE	DESCRIPTION
D1	1	2755 X 4290 (Max.) Semicircular Arched Opening	T.W. double leaf, openable door with partly glazed / partly panelled shutters. Fixed glazing and stained glass in semicircular portion of the opening as shown in the drawing.
D2	1	2745 X 3600 (Max.) Semicircular Arched Opening	T.W. double leaf, openable door with partly glazed / partly panelled shutters. Fixed glazing and stained glass in semicircular portion of the opening as shown in the drawing.
D3a	1	1537 X 2480	T.W. frame only.
D3b	1	1370 X 2480	T.W. frame only.
D4	1	711 X 2240	T.W. frame only.
D5	2	1257 X 2270	T.W. double leaf, openable door with partly panelled and partly glazed shutters.

NOTE: For details refer drawing of MAIN ENTRANCE DOOR No.10c

CONSERVATION: BALLARD BUNDER GATEHOUSE

DRAWINGS AS EXECUTED

DETAILS:- REAR DOORS

DWG.NO.
BB/EX/10b

DATE
28 MAY 05

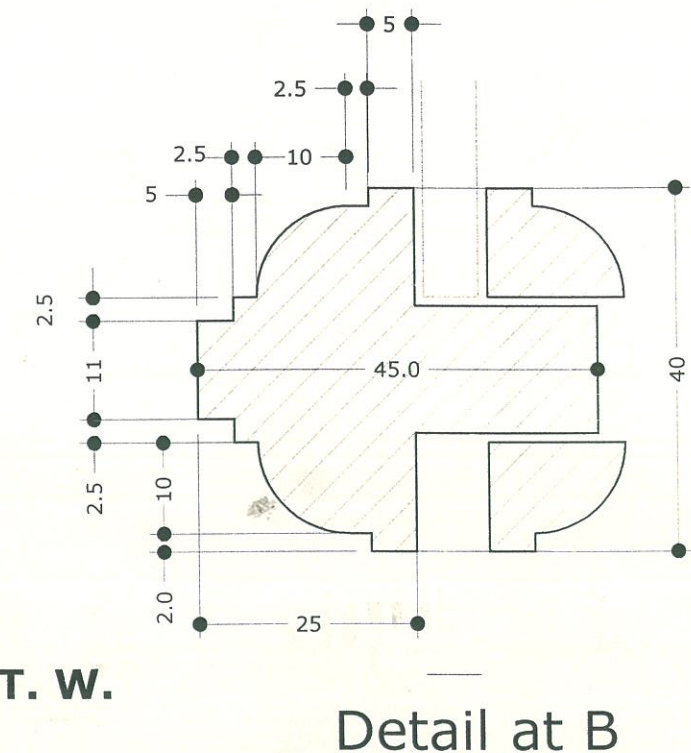
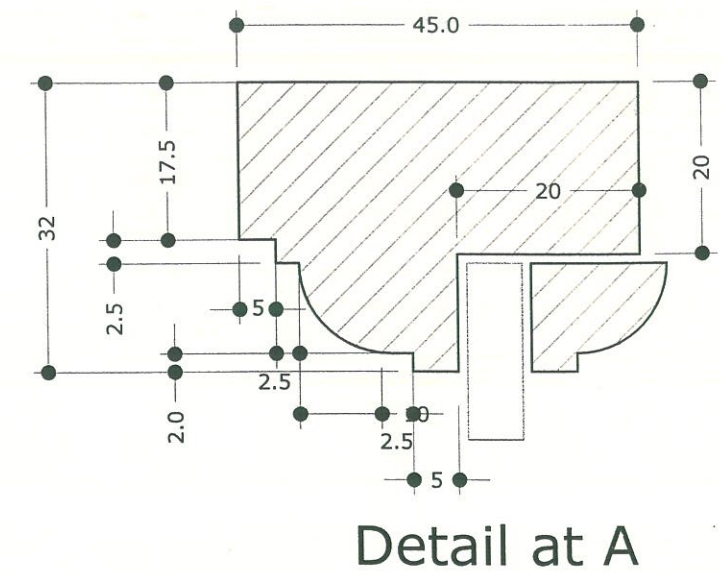
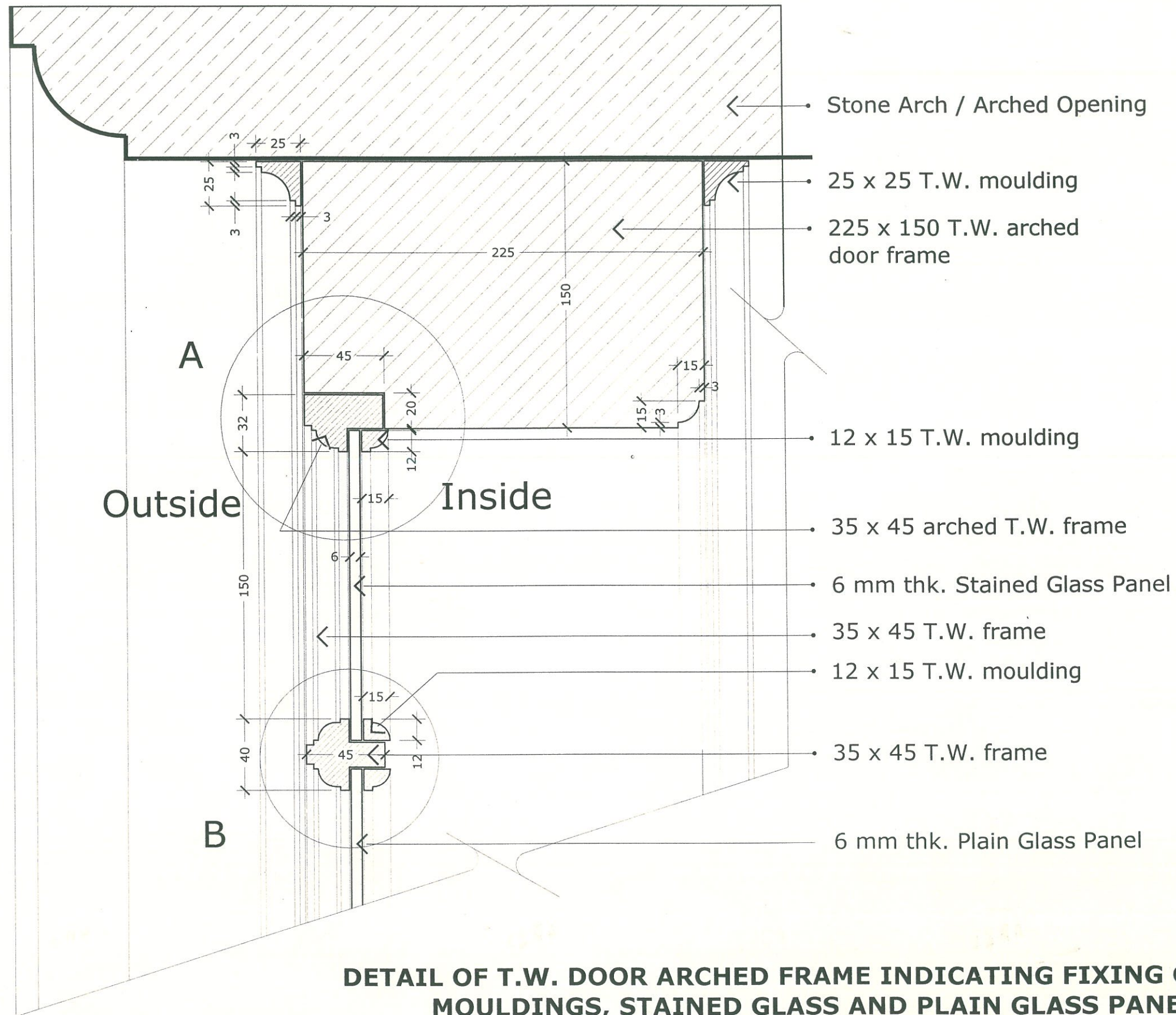
CLIENT : NAVAL DOCKYARD, MUMBAI

NOTE: DO NOT SCALE THE DRAWING.
DIMENSIONS WRITTEN ON THE
DRAWING SHALL BE FOLLOWED.

PROJECT CONSULTANTS:
K. UNWALLA ARCHITECTS
5/7, Kothari House, Oak Lane, Fort, Mumbai 400 023.
Tel: 22670302, 56344857. Email: kunwalla@vsnl.com


SCALE
AS
MENTIONED

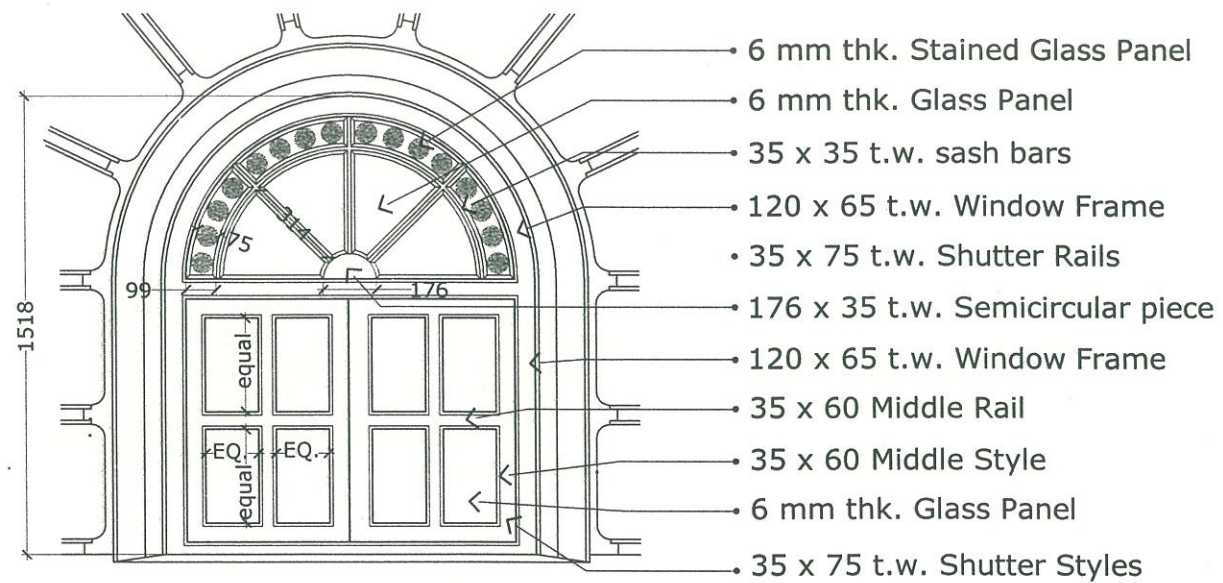
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CONSERVATION: BALLARD BUNDER GATEHOUSE

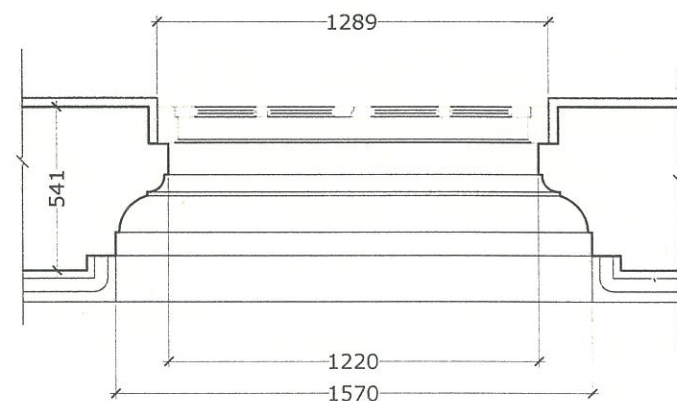
DRAWINGS AS EXECUTED

DETAILS:- DOORS		DWG.NO.	DATE
		BB/EX/10c	28 MAY 05
CLIENT : NAVAL DOCKYARD, MUMBAI		NOTE: DO NOT SCALE THE DRAWING DIMENSIONS WRITTEN ON THE DRAWING SHALL BE FOLLOWED	
PROJECT CONSULTANTS: K. UNWALLA ARCHITECTS 5/7, Kothari House, Oak Lane, Fort, Mumbai 400 023. Tel: 22670302, 56344857. Email: kunwalla@vsnl.com		SCALE AS MENTIONED	



EXTERNAL ELEVATION

SCALE 1:25

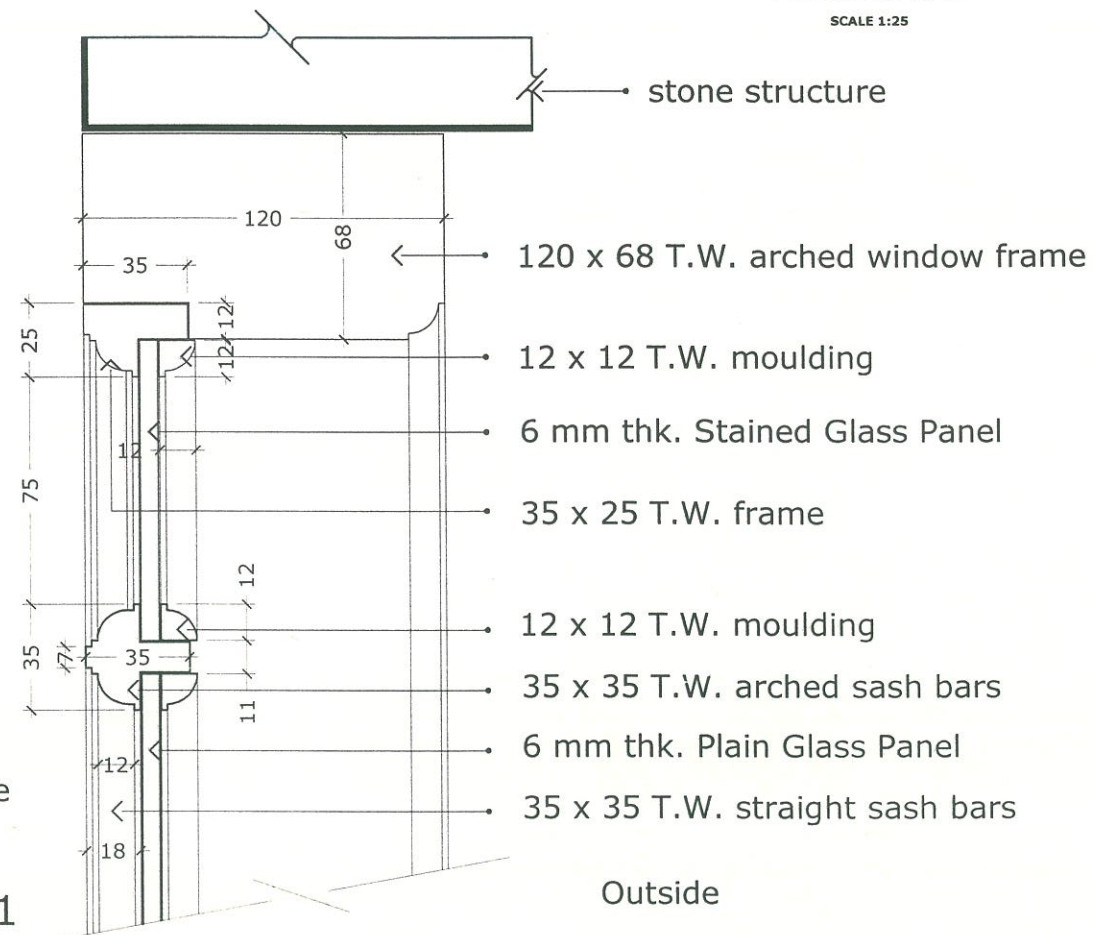


PLAN

ARCHED WINDOW : W1

SCALE 1:25

DETAIL: FIXING OF
STAINED GLASS @ W1



SECTION A-A

SCALE 1:25

stone lintel

stone structure

120 x 68 T.W. arched window frame

12 x 12 T.W. moulding

6 mm thk. Stained Glass Panel

35 x 25 T.W. frame

12 x 12 T.W. moulding

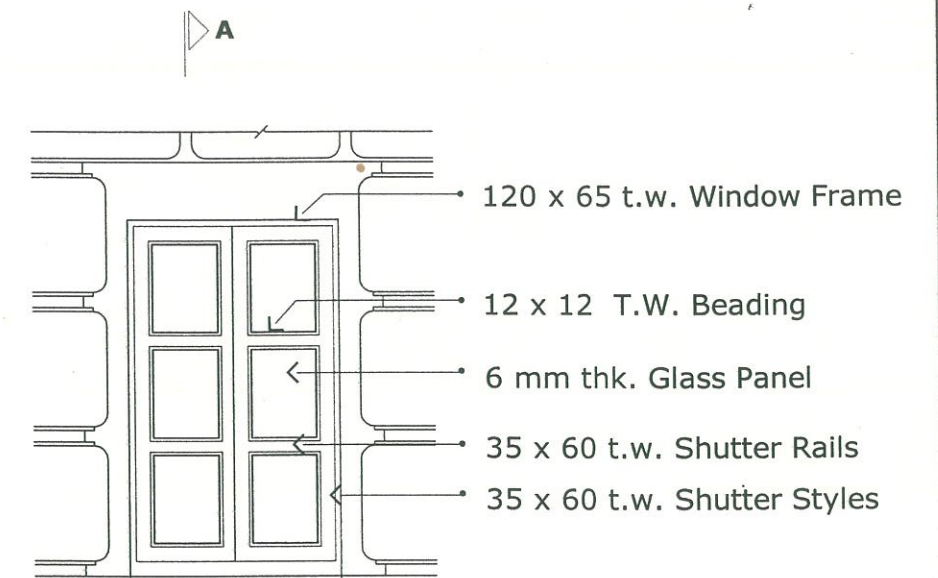
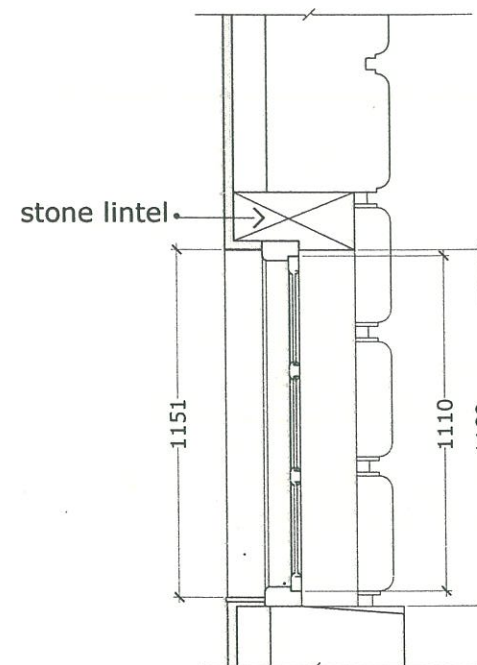
35 x 35 T.W. arched sash bars

6 mm thk. Plain Glass Panel

35 x 35 T.W. straight sash bars

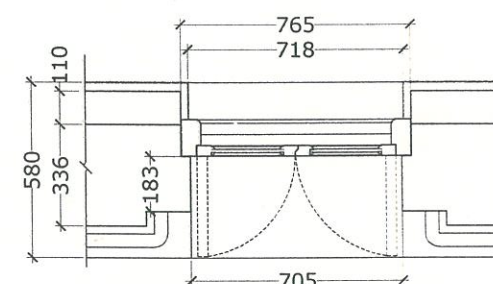
Outside

Inside



EXTERNAL ELEVATION

SCALE 1:25



PLAN

RECTANGULAR WINDOWS: W2

SCALE 1:25

SCHEDULE OF WINDOWS				
TYPE	NO.	SIZE	DESCRIPTION	
W1	2	1288 X 1518 (Max.) Semicircular Arched opening	T.W. casement window with glazed shutters. Fixed glazing and stained glass in semicircular portion of the opening as shown in the drawing.	
W2	8	711 X 1200 Rectangular opening	T.W. casement window with glazed shutters.	
W3	2	Dia. 1330 Circular Opening	T.W. window with fixed glazing.	

CONSERVATION: BALLARD BUNDER GATEHOUSE

DRAWINGS AS EXECUTED

DETAILS:- WINDOWS

DWG.NO.
BB/EX/11

DATE
28 MAY 05

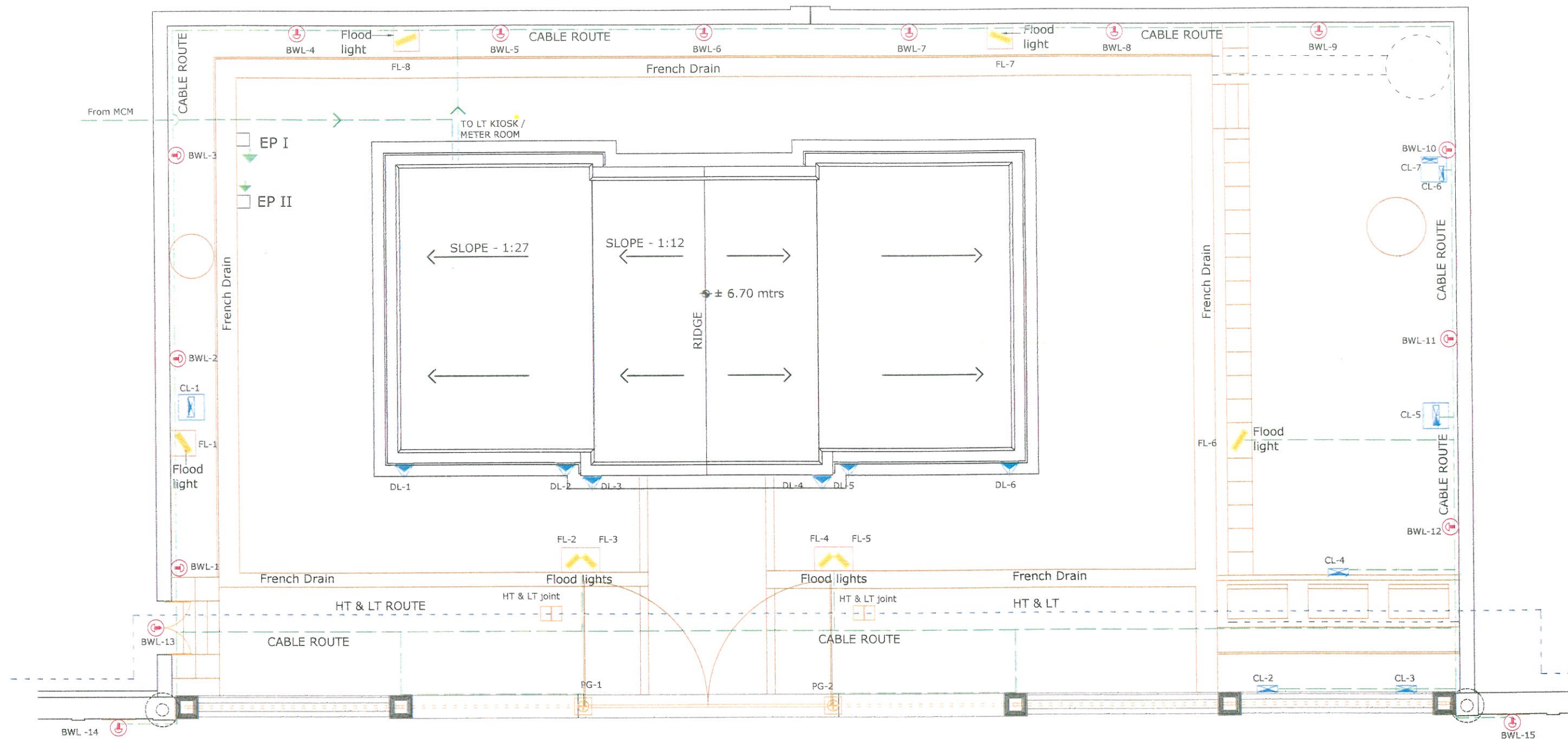
CLIENT : NAVAL DOCKYARD, MUMBAI

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NOTE: DO NOT SCALE THE DRAWING
DIMENSIONS WRITTEN ON THE
DRAWING SHALL BE FOLLOWED

SCALE
AS
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N



LEGEND:-

SYMBOL	ABV	DESCRIPTION	NOS
	FL	FLOOD LIGHT	8 NOS
	DL	DOWN LIGHT	6 NOS
	BW	BOLLARD WALL LIGHT	15 NOS

SYMBOL	ABV	DESCRIPTION	NOS
	CL	CORNICE LIGHT	7 NOS
	PG	PATHWAY GATE LIGHT	2 NOS
	LK	LT KIOSK	1 NOS

SYMBOL	ABV	DESCRIPTION	NOS
	EP	EARTH PIT	2 NOS
	HT & LT	HIGH & LOW TENSION CABLES	1 NOS
		CABLE ROUTE	

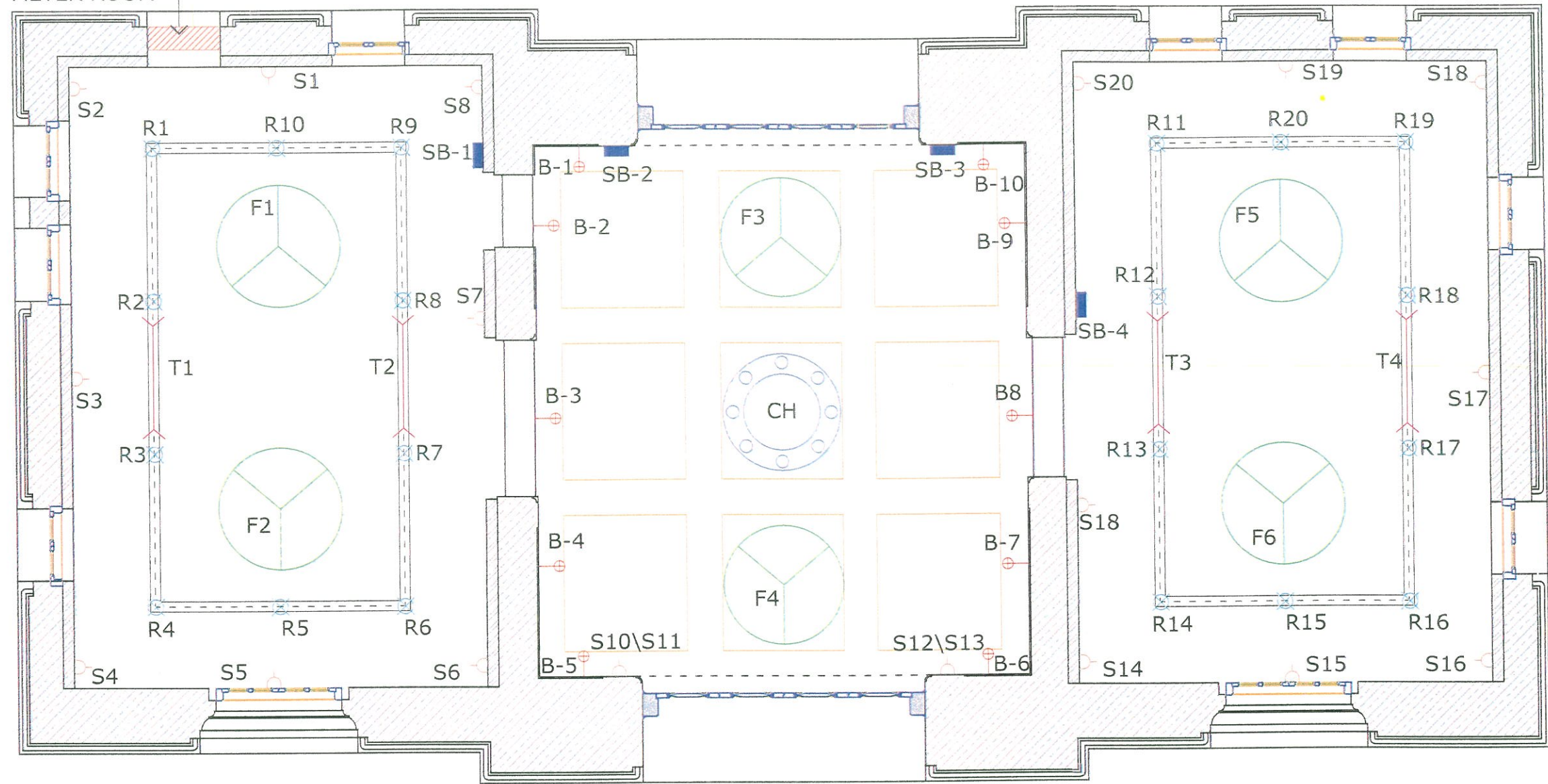
GENERAL ELECTRICAL LAYOUT

SCALE 1 : 100

CONSERVATION: BALLARD BUNDER GATEHOUSE DRAWINGS AS EXECUTED

ELECTRICAL LAYOUT PLAN		DWG.NO.	DATE
CLIENT : NAVAL DOCKYARD, MUMBAI		BB/EX/12a	28 MAY 05
PROJECT CONSULTANTS: K. UNWALLA ARCHITECTS 5/7, Kothari House, Oak Lane, Fort, Mumbai 400 023. Tel: 22670302, 56344857 Email: kunwalla@vsnl.com		SCALE	
		1:100	

LT KIOSK /
METER ROOM



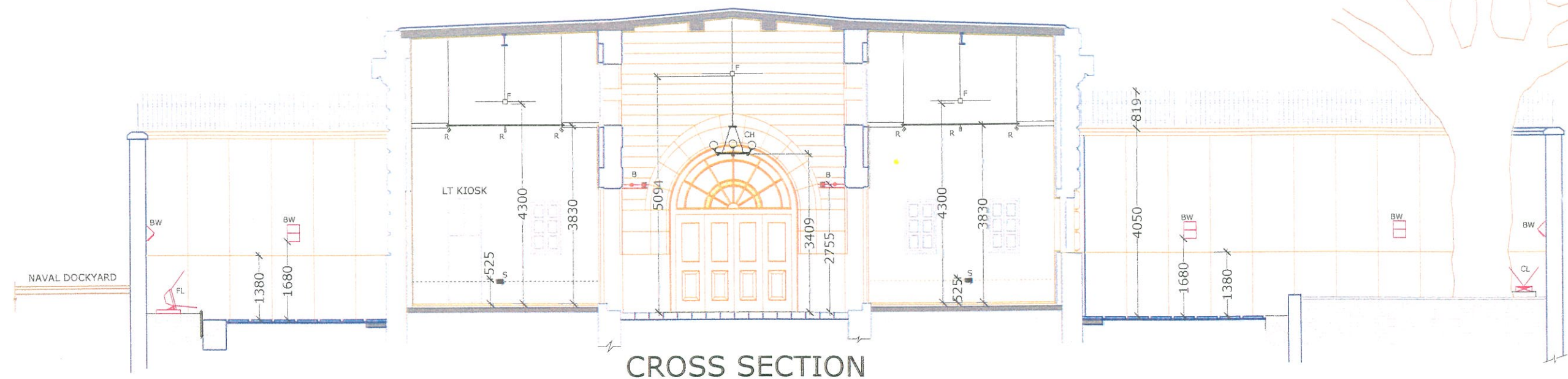
LEGEND:-

SYMBOL	ABV	DESCRIPTION	NOS	SYMBOL	ABV	DESCRIPTION	NOS
	T	TUBE LIGHT	4 NOS		F	CEILING FAN	6 NOS
	R	RAFTER TRACK LIGHT	20 NOS		S	SWITCH SOCKET OUTLETS	27 NOS
	B	BRACKET LIGHT	10 NOS		SB	SWITCH BOARD	4 NOS
	CH	CHANDELIER	1 NOS		LK	LT KIOSK	1 NOS

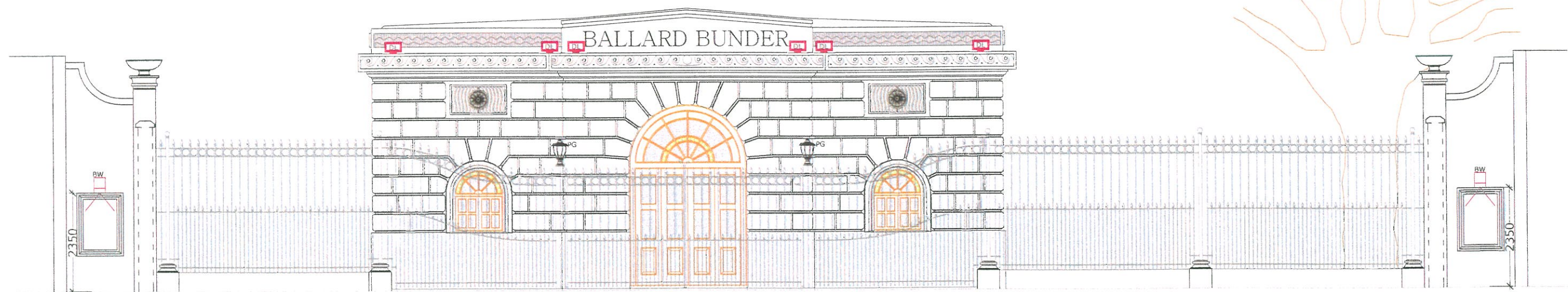
ELECTRICAL LAYOUT
FOR THE STRUCTURE
SCALE 1 : 50

CONSERVATION: BALLARD BUNDER GATEHOUSE
DRAWINGS AS EXECUTED

ELECTRICAL LAYOUT PLAN		DWG.NO.	DATE
CLIENT : NAVAL DOCKYARD, MUMBAI		BB/EX/12b	28 MAY 05
PROJECT CONSULTANTS: K. UNWALLA ARCHITECTS 5/7, Kothari House, Oak Lane, Fort, Mumbai 400 023. Tel: 22670302, 56344857. Email: kunwalla@vsnl.com		SCALE 1:50	



CROSS SECTION



ROAD -SIDE ELEVATION.


LEGEND:-

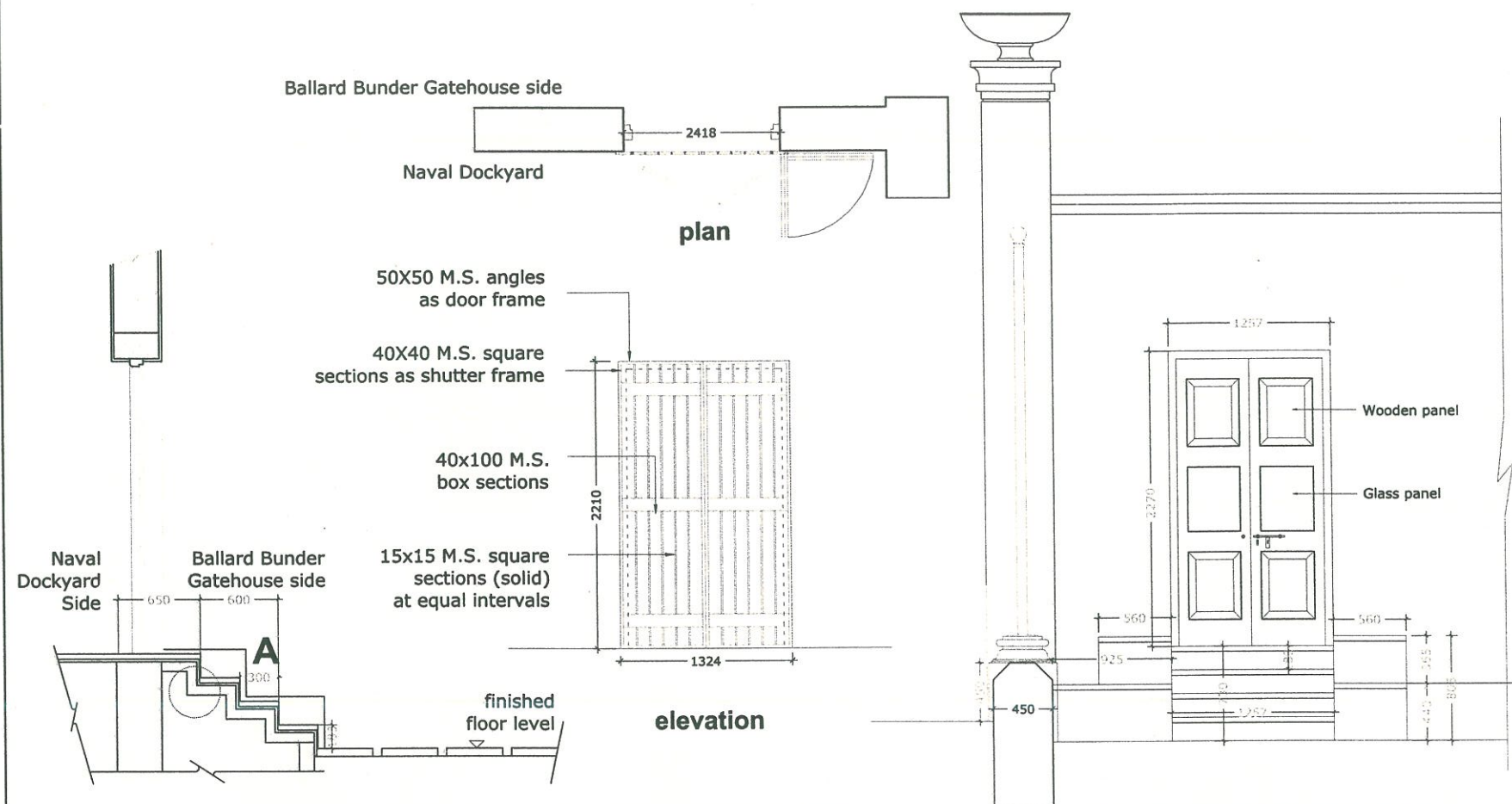
SYMBOL	ABV	DESCRIPTION
	F	CEILING FAN
	R	RAFTER TRACK LIGHT
	B	BRACKET LIGHT
	CH	CHANDELIER
	S	SWITCH SOCKET OUTLETS

SYMBOL	ABV	DESCRIPTION
	DL	DOWN LIGHT
	PG	PATHWAY GATE LIGHT
	CL	CORNICE LIGHT
	BW	BOLLARD WALL LIGHT
	FL	FLOOD LIGHT

CONSERVATION: BALLARD BUNDER GATEHOUSE

DRAWINGS AS EXECUTED

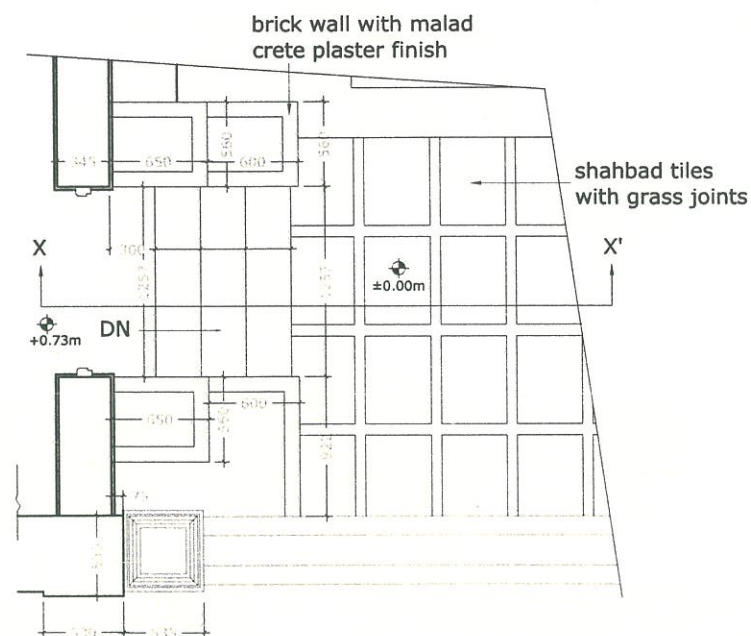
SITE ELEVATION / SECTIONS		DWG.NO.	DATE
BB/EX/12c		28 MAY 05	
CLIENT : NAVAL DOCKYARD, MUMBAI		NOTE: DO NOT SCALE THE DRAWING. DIMENSIONS WRITTEN ON THE DRAWING SHALL BE FOLLOWED.	
PROJECT CONSULTANTS: K. UNWALLA ARCHITECTS 5/7, Kothari House, Oak Lane, Fort, Mumbai 400 023. Tel: 22670302, 56344857. Email: kunwalla@vsnl.com		SCALE 1:100	 N



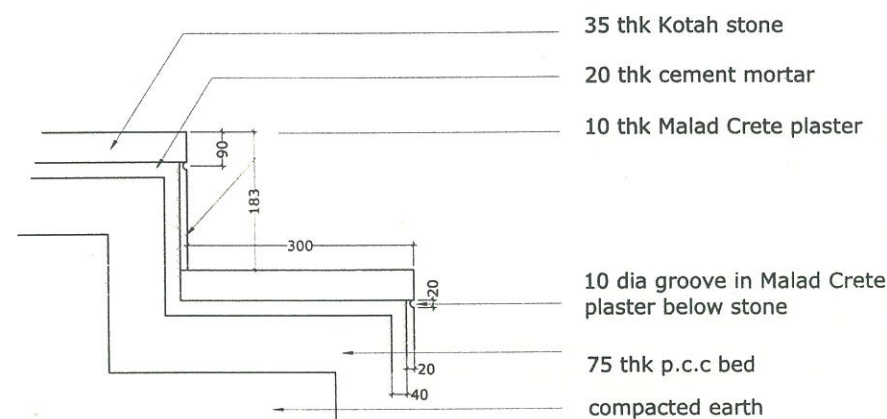
SECTION X-X'
scale 1:50

M.S GRILL GATE
(facing south east)
scale 1:50

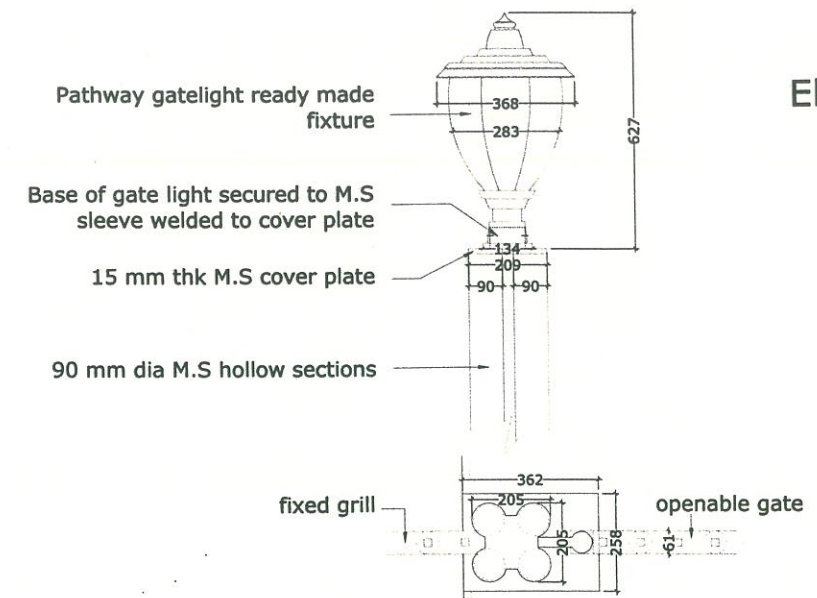
PANEL ENTRANCE DOOR
(north west elevation)
scale 1:50



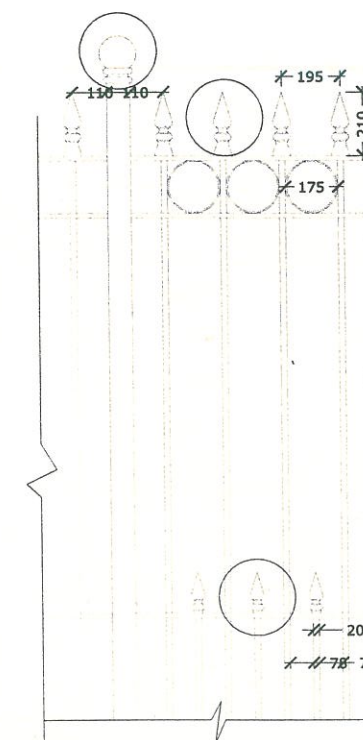
KEY PLAN
SCALE 1:50



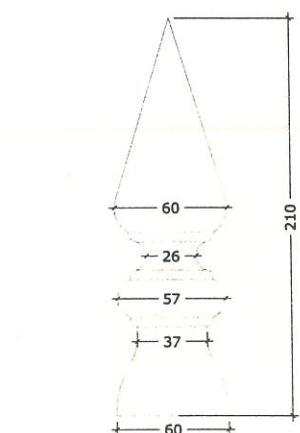
DETAIL A
scale 1:5



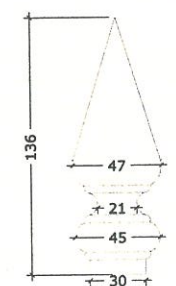
Part Plan & Part Elevation of Lamp Post in the grill fence.
Scale 1:20



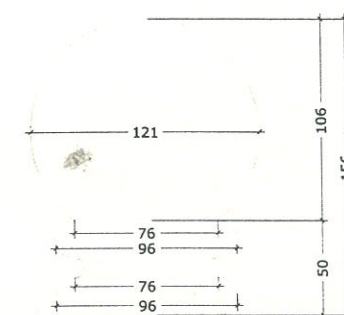
Part Elevation of C.I./M.S Grill Fence.
Scale 1:25



Detail of Upper C.I. Pinnacle.
Scale 1:4



Detail of Lower C.I. Pinnacle.
Scale 1:4



Detail of C.I. spherical head
Scale 1:4

CONSERVATION: BALLARD BUNDER GATEHOUSE

DRAWINGS AS EXECUTED

MISCELLANEOUS WORKING DETAILS

DWG.NO.
BB/EX/14
DATE
28 MAY 05

CLIENT : NAVAL DOCKYARD, MUMBAI

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SCALE
AS
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