World Heritage Scanned Nomination

File Name: 945rev.pdf **UNESCO Region:** ASIA AND THE PACIFIC

SITE NAME: **Chhatrapati Shivaji Terminus (formerly Victoria Terminus)**

DATE OF INSCRIPTION: 7th July 2004

STATE PARTY: INDIA

CRITERIA: C (ii) (iv)

DECISION OF THE WORLD HERITAGE COMMITTEE:
Excerpt from the Report of the 28th Session of the World Heritage Committee

Criterion (ii): Chhatrapati Shivaji Terminus of Mumbai (formerly Bombay) exhibits an important interchange of influences from Victorian Italianate Gothic Revival architecture, and from Indian traditional buildings. It became a symbol for Mumbai as a major mercantile port city on the Indian Subcontinent within the British Commonwealth.

Criterion (iv): Chhatrapati Shivaji Terminus is an outstanding example of late 19th century railway architecture in the British Commonwealth, characterized by Victorian Gothic Revival and traditional Indian features, as well as its advanced structural and technical solutions.

BRIEF DESCRIPTIONS

The Chhatrapati Shivaji Terminus, formerly known as Victoria Terminus in Mumbai, is an outstanding example of Victorian Gothic Revival architecture in India, blended with themes deriving from Indian traditional architecture. The building, designed by the British architect F.W. Stevens, became the symbol of Bombay as the 'Gothic City' and the major international mercantile port of India. The terminal was built over ten years starting in 1878 according to a High Victorian Gothic design based on late medieval Italian models. Its remarkable stone dome, turrets, pointed arches, and eccentric ground plan are close to traditional Indian palace architecture. It is an outstanding example of the meeting of two cultures as British architects worked with Indian craftsmen to include Indian architectural tradition and idioms forging a new style unique to Bombay.

1.b State, Province or Region: City of Mumbai, Maharashtra State

1.d Exact location: N18 55 23 E72 50 04

PREFACE

India has some of the world's most outstanding architecture ranging from rock cut caves, to temples, mosques and mausoleums, medieval palace complexes, step wells and churches. The Hindu, Buddhist and Islamic art is well known. The earliest colonial architecture of Portuguese origin like the church complexes in old Goa are recognized as masterpieces. Lesser known is the colonial Indo-British architecture of big metropolises like Bombay, Madras, Calcutta and Delhi. This architecture is about three centuries old and is a blend of various styles like Indo-Saracenic, Victorian Gothic, Neo Classical and Art Deco.

British architecture in India was a grand statement of imperial intention complimented by local skills and craftsmanship. It is this architecture, which introduced new styles, materials, construction techniques and traditions. In the last decade there has been an increasing recognition of the importance of colonial and 19th century architecture both nationally and internationally. The style is now considered unique and the need to preserve it for posterity is well recognised. However, there has not been a single nomination of British colonial urban architecture in India and this is an important gap in the 23 World Heritage Sites that have been nominated by UNESCO.

The three best buildings designed and constructed by the British in India are the Rashtrapati Bhavan or Viceroy's Residence in New Delhi, the Victoria Memorial in Calcutta and the Victoria Terminus Station, now known as the Chattarapati Shivaji Terminus, CST, in Mumbai. The CST is the finest amongst these examples. Dr Christopher London, architectural Historian and an expert on Victorian Architecture in Mumbai notes *"... CST is to the British Empire what Taj was to the Mughal Empire"*. It is one of the most splendid examples of Gothic Revival architecture in the world. But it is not currently well known outside India because it was built in Mumbai in a distant part of the empire and not in the West.

Victoria Terminus or VT station as it was and is still popularly known, was renamed in 1990's after the legendary local 17th century warrior Shivaji who fought against the Mughals. It is the centerpiece of Indo- British architecture and the premier symbol of the most important development in India since Sher Shah Suri built the Grand Trunk Road - the construction of the Indian Railways.

The construction of the railways was an engineering marvel that revolutionized the economy of the country, catapulting it overnight from a medieval nation into the industrial era. The Indian railway network, was the largest in the world when laid in the mid 19th century. It still continues to fulfill its original intention, occupying an equally important status today.

Originally known as the Great Indian Peninsula Railway (GIPR) when it was established, the network starting from CST became the Central Railways after Independence.

The Indian railway, which is still one of the largest network of railways in the world, originated at the historic CST site. The first historic train left for Thana covering a distance of 21 miles on 16th April 1853. At the time, there was only a small shed as the station and it was known as Bori Bundar station.

The CST station was the first railway terminus building in the sub-continent and the first in Asia too. It is one of the finest Victorian Gothic buildings in Mumbai both in grandeur and in detailing as compared to other Gothic Revival buildings in the city and the country. It is significant both in its exteriors and interiors and it still has its authenticity preserved to a large extent. The CST is a commercial palace that epitomizes the glory and romance of the railways. It was a commercial venture that was extremely profitable both for the West and for India.

The building represents for the way it combines the unique Indian tradition of craftsmanship, which is evident in the abundant carving and other stylistic embellishments, with British architectural skills. It was seen at the time as a statement of Indo–British endeavor. Rudyard Kipling's father, Lockwood Kipling, who was responsible for training many of the Indian sculptors involved. And the building is famous especially for its sculptural embellishments. The statue of Progress on top of the dome is a tribute to the vision of those who built it. It expresses the confidence of the local community that commissioned and contributed to this building.

It is hoped that the nomination of CST will give long overdue recognition to the architecture of the Raj especially the buildings of the industrial era in India. This should be the first step towards enhancing awareness and for extending the nomination to a larger context. This would include the entire ensemble of significant Gothic Revival public buildings, which were erected as part of the restructuring` plan for Bombay in mid 19th cent, intended to allow Bombay to take its place amongst the great cities of world.

Special thanks are due to INTACH Mumbai chapter especially Mrs. Tasneem Mehta- Convenor INTACH and Coordinator of this project, Mr. Vikas Dilawari -Conservation Architect and his team of architects. Valuable inputs and feedback on cultural significance and architectural history were provided by Mr. Foy Nissen, architectural historian, Mumbai, Dr Colin Cunningham, Senior Visiting Research Fellow at the Open University, UK and from Dr Christopher London, architectural historian from the UK.

Thanks are also due to Solicitor Rajan Jayakar for lending copies of old postcards. Thanks are due to Mega vision and its technicians for preparing a digitized map of Fort area and for digitizing the drawings of CST and other buildings at such a short notice.

Jan 2003

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    Source: Bombay Gothic, Dr. London. C.

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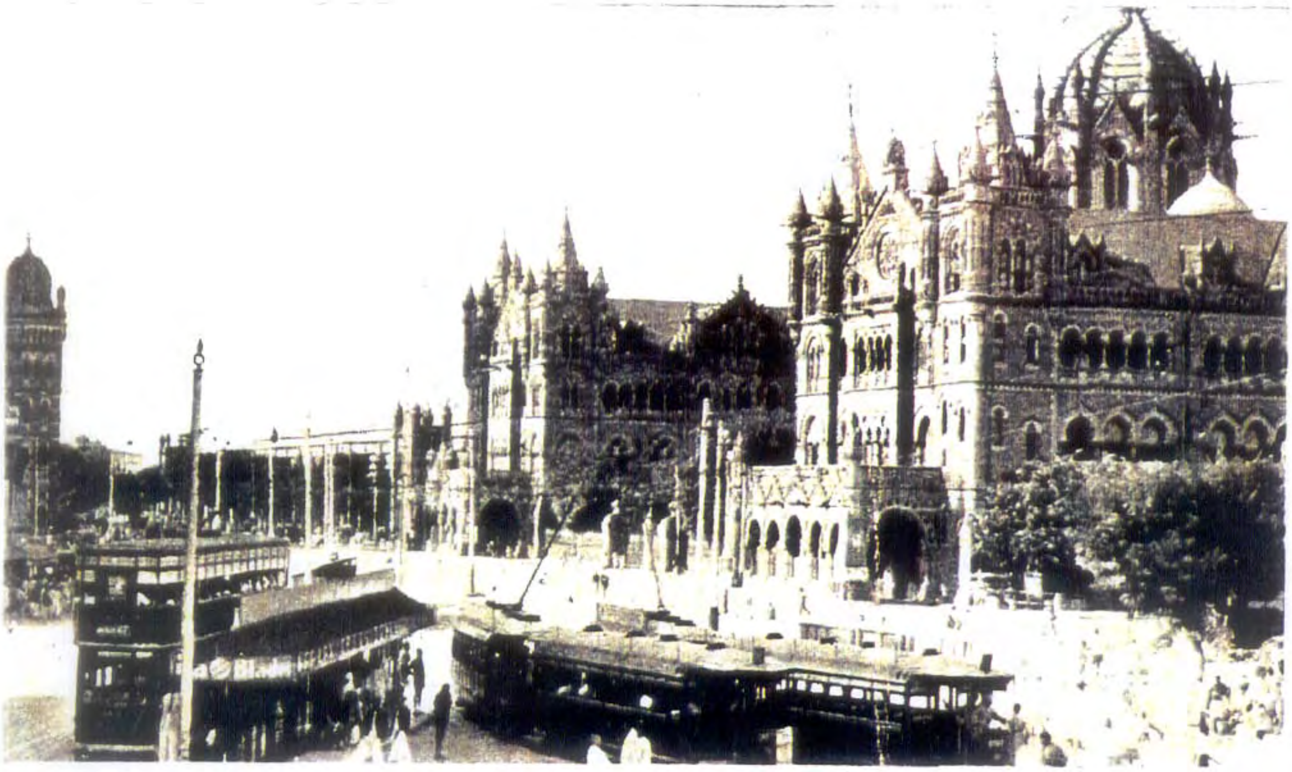
Photograph Credits

1) Mehrotra R. and Dwivedi : Photo 1
2) Mr Rajan Jayakar: Photos 2-8, 76- 82
3) CST: Photos 9,10,11,16,30, 31,45,46, 47, 59,60-63,70,73
4) Dr. London: Photos 8,72
5) Y.D.Pitkar: Photos 33,34,36-41,51-53
6) All other photographs : INTACH Mumbai

3.& 4: Archival view CST with trams in forecourt. Circa early 20th century.

Victoria Terminus, Bombay.



BOMBAY. 'Bori Bunder' tram terminus showing the Victoria Terminus & G. I. P. Railway's Head Office

5& 6 : View of front façade of CST Circa : early 20th century

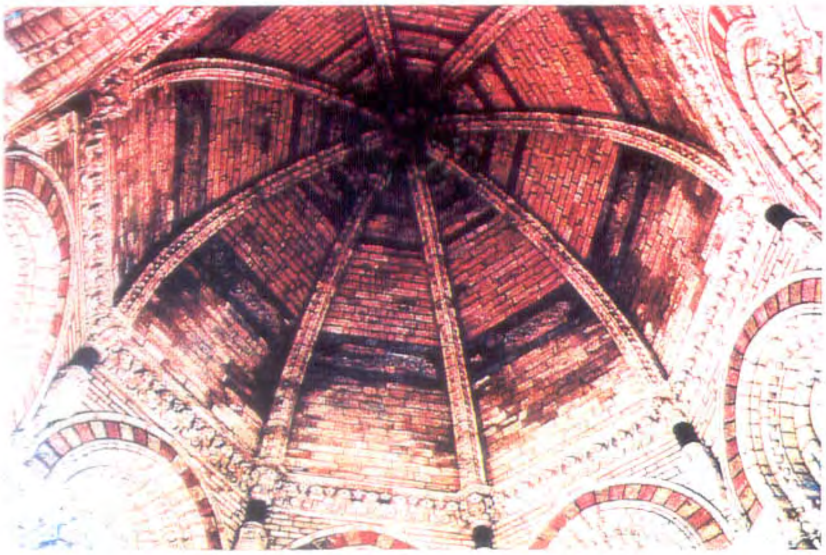
6 & 7 : View of the front façade with different mode of transport in the forecourt. Circa late 19th and early 20th century.

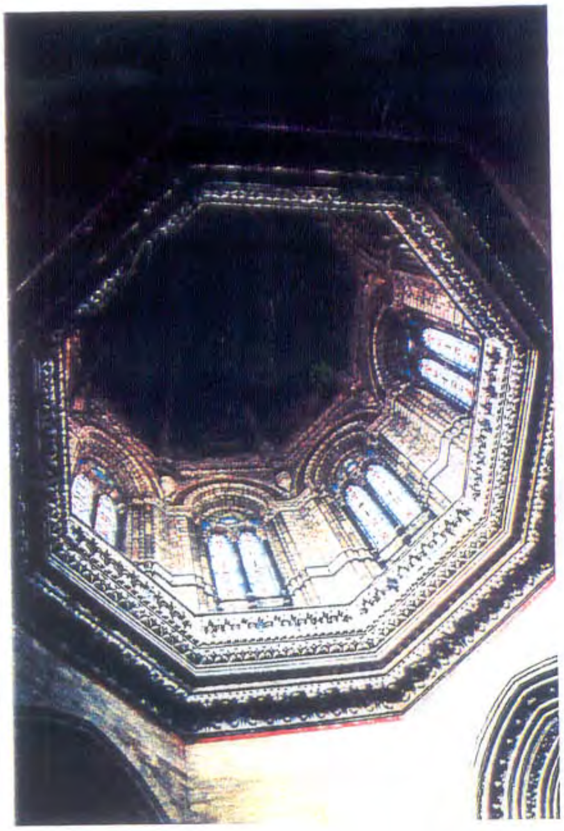
An imposing landmark of Mumbai.

5. The dome is placed on a high drum having two levels of very good quality stained glass panels on its eight sides with an allegorical statue of Progress symbolizing the railways and the city.

2. The building has very ornate WI railing with gate which houses a befitting landscape garden within. The gateways are flanked with life size statues of Lion and Tiger.

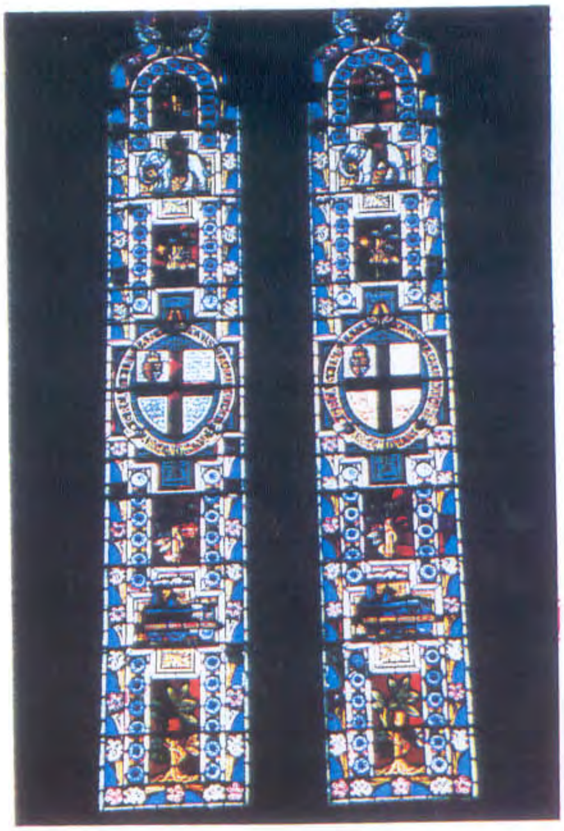
4. Series of different types of arches at each floor with highly decorated stone carving makes it one of the most splendid buildings of Mumbai



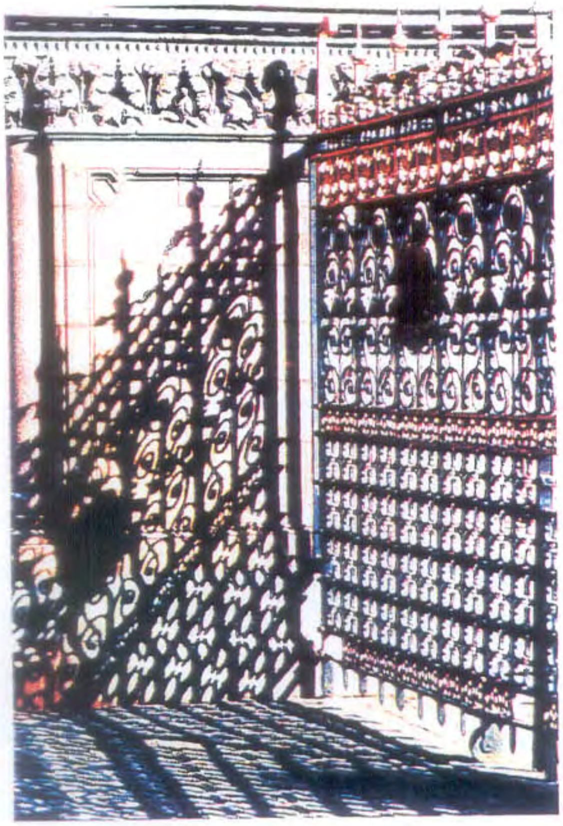


28. Ribbed dome resting on an octagonal drum, the first of its kind in Mumbai and perhaps on any railway station in the world.

29. High quality stained glass in the top panel, where as bottom panel has poor replacement.

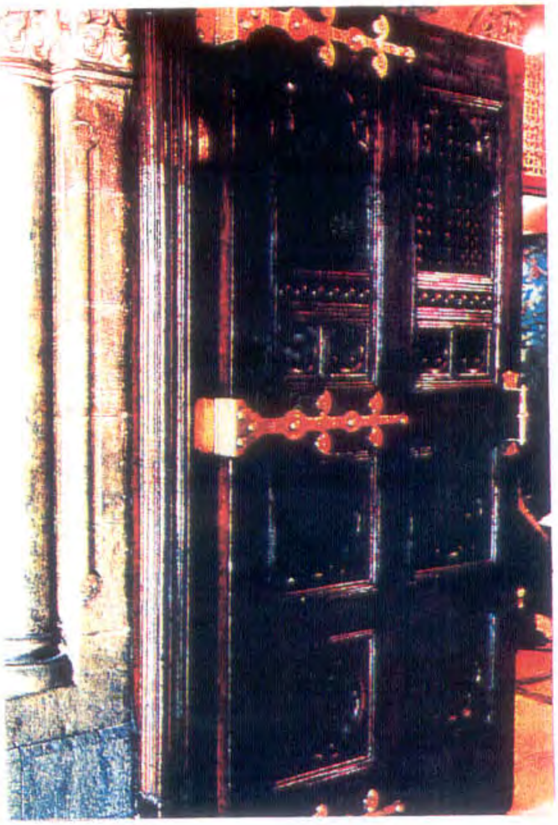


30. The original stained glass with coats of arms and corresponding paintings of locomotives



32. **Highly decorated WI railing and gate**

31. **Master pieces of craftsmanship- highly decorated teak main doors**



33. **Encaustic tile dado in banqueting hall**

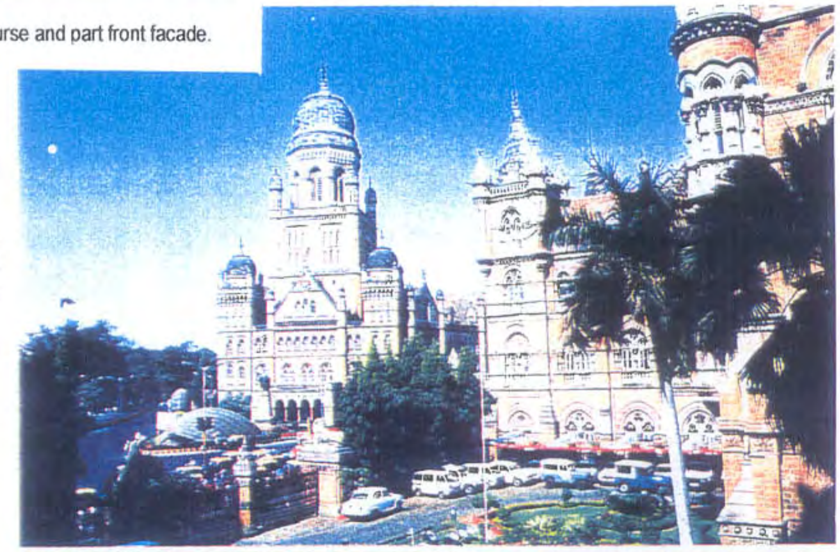
34. Highly decorated and originally richly coloured and gilded WI railing was one of the highlights [illegible]

35.
View of rear East facing elevation. This is the only façade that has been altered subsequently by additions, encroachments and hoarding.

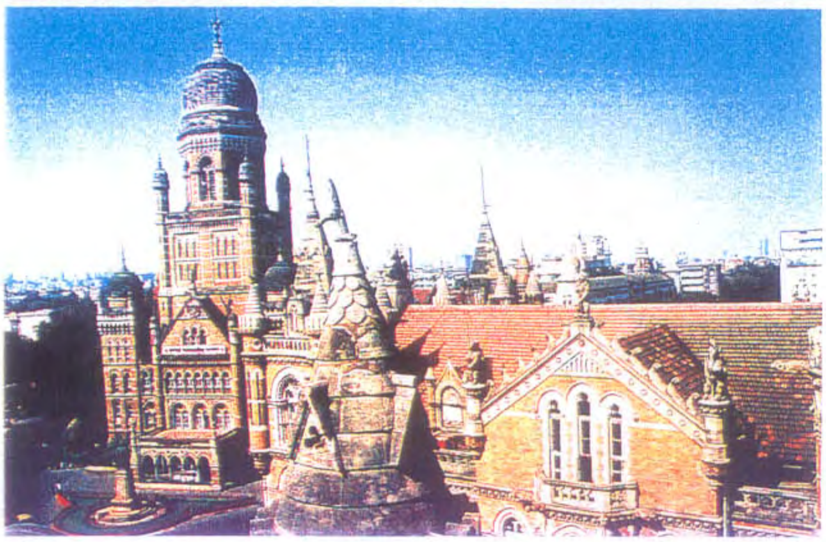
36. Insensitive extension done in 1980's to meet the growing need of space.

5. View of its concourse facing the west looking forwards Crawford Market (now called Phule market)

View of the concourse and part front facade.



6. The similar architectural language (Gothic Revival) of the two landmarks namely CST and BMC designed by the same architect FW Stevens makes it one of the strongest visual nodes in Mumbai



7. Use of similar material, architectural style , mass and scale creates a strong ensemble by these two large public buildings making them icons of Mumbai

8. Use of polychrome masonry , animal motifs and coats of arms decorates this building everywhere.

9. Detailed view of the high level of carving in stone that adores this building.

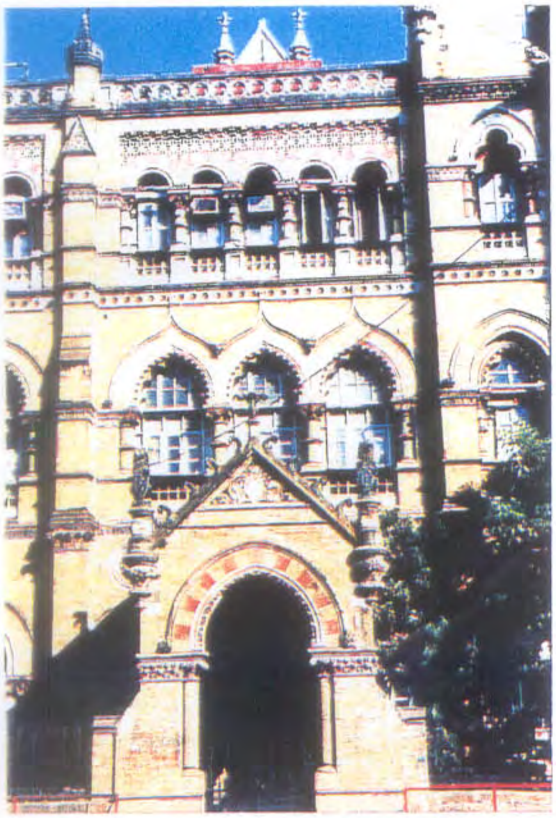
10.
The ornamentation of this building creates an interesting skyline which epitomizes the Gothic Revival architecture.

11.
Distinctly noticeable features are the Ogee shape arches on the first floor.

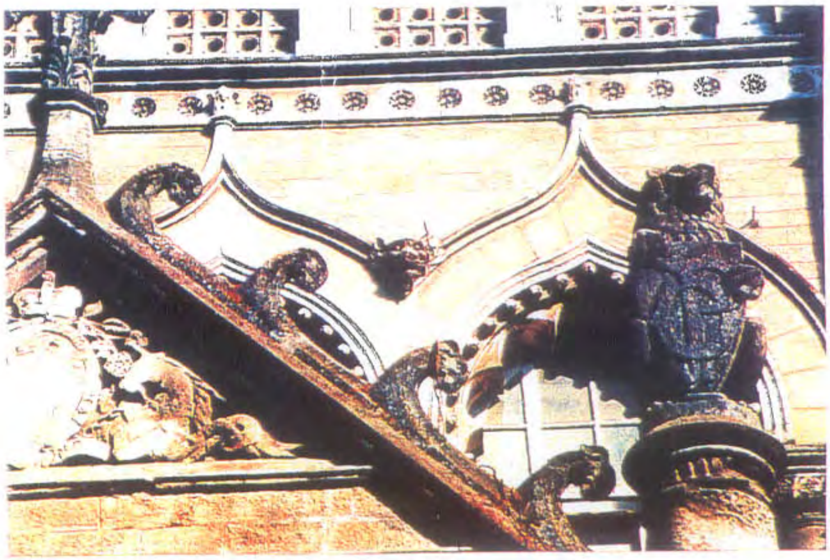
12. The crowing feature of CST is its dome, on eof the first public buildings in Mumbai to have one, more for a dramatic purpose rather than a function.

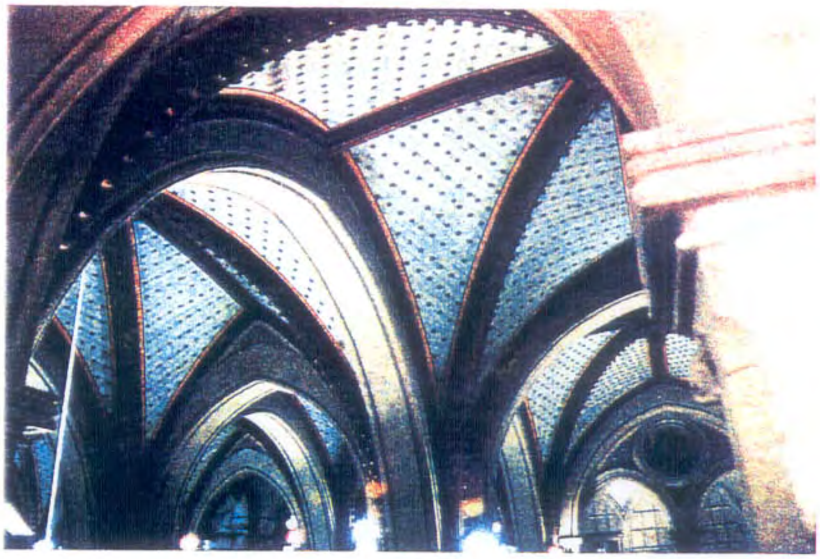
13. The intricate carving has a wide range of subjects ranging from animal motifs, foliages, geometric pattern, figure heads and coats of arms.

14. Corner turret details is reflection of the inspiration from St Pancras Station in London.



15. Many of the openings have unfortunately been sealed , the proposed restoration project aims in opening these up in future.



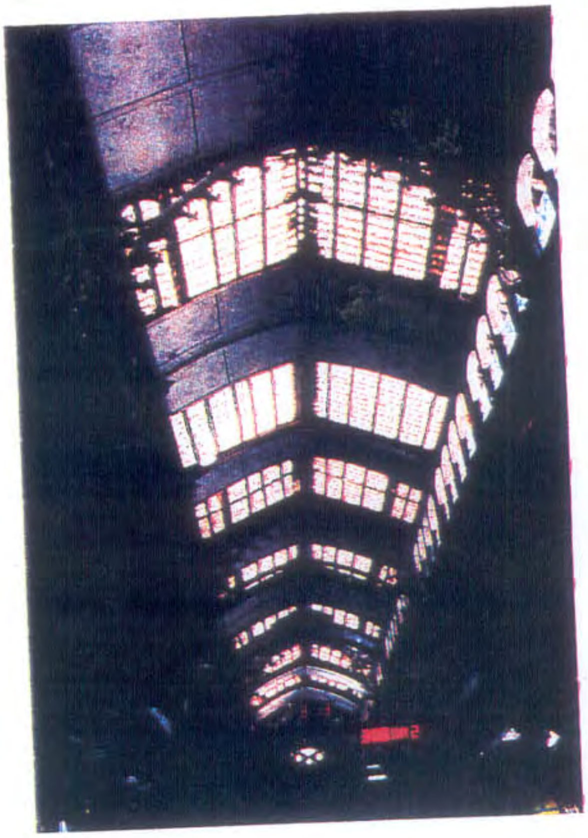


16. Gothic Revival interiors- ribbed vaulting with gilt work still inatct.

17. View of star chamber – booking offices. The interiors are equally significant as its exteriors.

18 The high quality maw tile dado in its star chamber

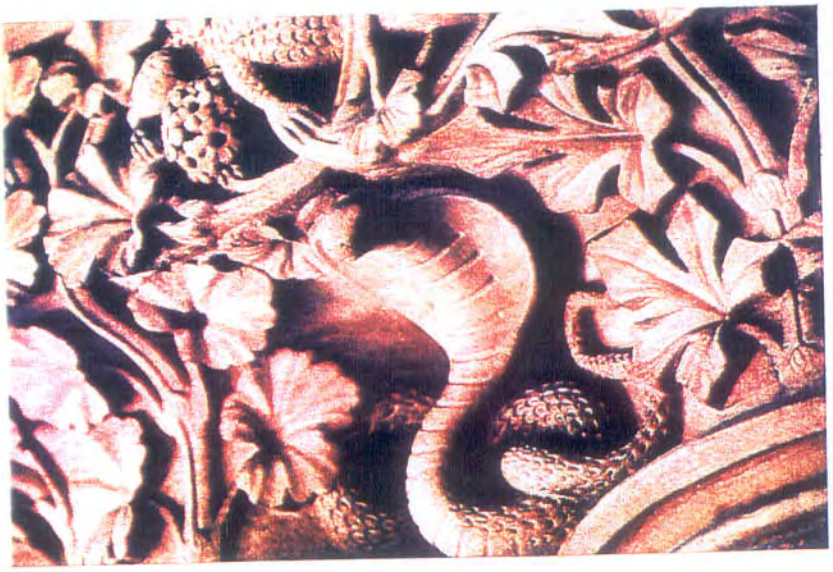
19 Decoration to steel work – a very conspicuous Gothic Revival detail,



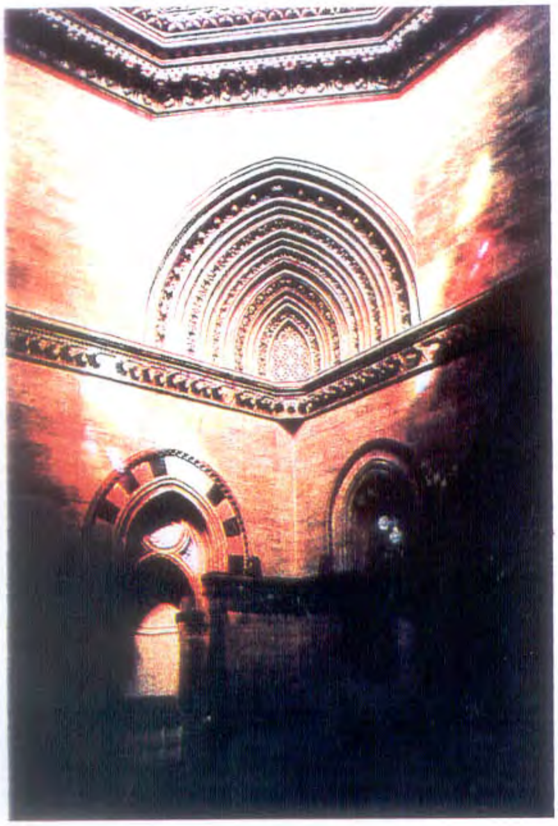
2.0. View of the original concourse- reflecting high engineering skills in use of steel in late 19th cent

21 Arch tympanums decorated with Indian Flora and Fauna.

22 Highly craved floral and animal and bird cornices adorns the building at each level.

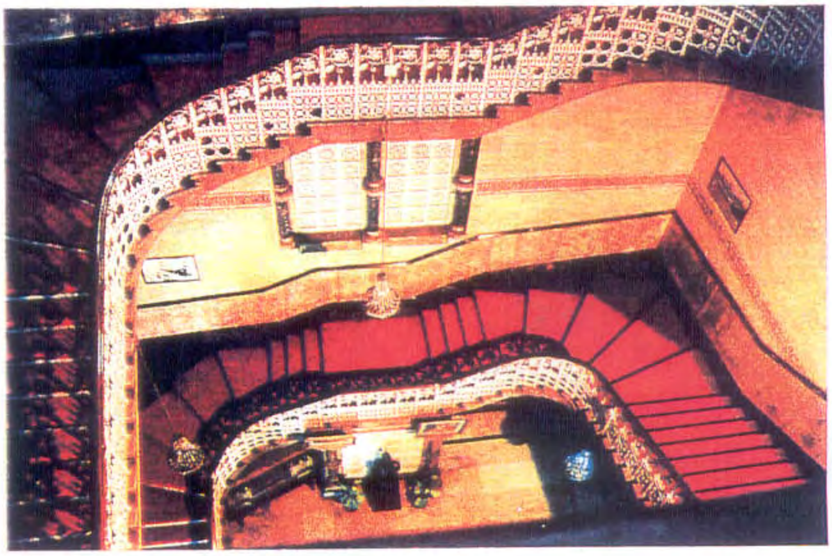


23. Use of local species of animals in carvings



24. Decorative squinches/pendentives in the staircase area to make the square plan an octagon.

25. The highlight of the interiors is its dome and grand central staircase.



26. View of wide passages cum verandah which climatically protected the main building

27. Banqueting hall on ground floor with its original interiors.

1. Identification of the Property

1.a Country (and State Party if different):
India . Refer Fig 1: Map of India

1.b State, Province or Region
Maharashtra, Western India. Refer Fig1 : Map of India and Maharashtra

1.c Name of Property
Chhatrapati Shivaji Terminus (formerly Victoria Terminus) Station.

1.d Exact location on map and indication of geographical coordinates to the nearest second

The site is located at latitude 18 degrees 55 minutes 23 seconds north and longitude 72 degrees 50 minutes 4 seconds east.

Refer Fig 2 : Map of Mumbai

The cultural property identified for inscription consists of the main head office building located on South side, its appurtenant open spaces on West, South and East followed by the concourse on its North.

Refer Fig 4 : Location Plan of Fort Precinct.

The site is located in the Island City of Mumbai – i.e. Southern most part of Mumbai City. It is located just outside the historic Fort area on its Northern side. The site comes under `A' ward of the Municipal Corporation of Greater Mumbai.

Refer Fig 6 : Site plan (reduced copy, original scale 1 : 480)

1.e Maps and / or plans showing boundary of area proposed for inscription and of any buffer zone

The inscribed area consists of the main head office building, the concourse and the appurtenant open space flanking the main building. The inscribed site is delineated as per architect FW Steven's original design.
Refer Fig 5 : Site plan (reduced copy, original scale 1:1000)

Existing Buffer zone

The inscribed site falls under Sub Precinct 11 VT precinct of the Fort precinct as per Govt. of Maharashtra, heritage legislation 1995, Sr. 633. This buffer zone is defined by W.Hirachand Marg on South, Dr D.N Road on West, P D'Mello road on East and the boundary wall of St George Hospital on the North.

Refer Fig 14 : The Fort Precinct – A conservation zone

1.f Area of property proposed for inscription (ha.) and proposed buffer zone (ha.) if any.

To get additional protection additional buffer zones have been proposed. These are:

Proposed Buffer zones:

Buffer zone 1: Which is the prohibited zone, which constitutes of sub precinct 11 – VT Station precinct as defined by Urban Development Department of Govt. of Maharashtra Sr. No. 633 in Heritage Regulation for Greater Mumbai 1995. This is an immediate buffer zone surrounding this cultural property and a larger portion of the area is under Central Railway ownership. Remaining area belongs to the St George Hospital. This constitutes the area on Eastern side of the inscribed site. This buffer zone is defined by W.Hirachand Marg on South, Dr D.N Road on West, P D'Mello road on East and the boundary wall of St George Hospital on the North.

Buffer zone 2: Constitutes the track area and vacant area of Carnac Bundar, which belongs to the Central Railway only. This constitutes the North side. It is defined by P D 'Mello Road on East, the Carnac Bundar bridge on the north, the railway boundary wall on West, inclusive of the new administrative building flanking Dr DN road and the out station concourse along with the boundary wall of St George hospital on its South

Buffer zone 3: Constitutes the following 3 sub-precincts on the Mumbai Fort Precinct: Sub-precinct No 5: Esplanade sub-precinct, Sub-precinct No 12: The BMC sub precinct and part of sub-precinct 14 i.e. Oval sub-precinct. The buffer zone is defined by Dr D.N road on East, L. Tilak Road on its North, and M.G Road on its West. This has the residential, institutional and commercial fabric around the inscribed site located on its southern and western parts.

Refer Fig 35 : Proposal 1 for Buffer Zone

1.f.i Inscribed Area*:*

An area in which alteration of the existing state is strictly regulated to preserve the natural and/or historic environment.

The inscribed area as scaled from the original drawings is 2.85 hectares. This includes the ground floor and open space of the administrative building, and the concourse area. The built area of all floors works out to 4.02 hectares

Refer Fig 15 : Site plan and its boundary,
Refer Fig 16 : Proposed area for inscription of World Heritage List

1.f.ii Buffer Zone: an area in which development actions over a certain scale are controlled to conserve the cultural landscape and natural environment.

Refer Fig 35 : Proposal 1 for Buffer Zone

Description	Area in Hectares
Inscribed site	2.85 Ha
Proposed Buffer Zone 1	17.5 Ha
ProposedBuffer Zone 2	25.6 Ha
ProposedBuffer Zone 3	47.11 Ha

2. Justification for Inscription

2.a Statement of significance

2.a.i ***Architectural uniqueness of CST***

Chhatrapati Shivaji Terminus (or the erstwhile Victoria Terminus) building which was constructed in the year 1888 was originally meant to house the administrative headquarters of the Great Indian Peninsula Railway (GIPR). The construction of this building was started in the year 1878 and was completed in the year 1887. It must surely rank among the half dozen greatest railway stations of the world. If St Pancras in London, Penn Central Station in Philadelphia, Helsinki Railway Station, the Gare (now Musee) d'Orsay in Paris and Amsterdam main rail station are other likely contenders, it is at least arguable that CST is the grandest of all.

Architecturally it is Italian Gothic in style. This building, which has received worldwide appreciation because of its series of well-proportioned and ornamental arches, its spires and domes and, above all, its fabulous richness of figurative and animal sculpture, has the dignity of a cathedral. The ornamentation of the west facing main facade has numerous bas-reliefs and series of well-proportioned and delicately ornamented runs of arches and friezes. The crowning point of the whole building is the central dome, carrying at its apex, a colossal 16' 6" high figure of a lady pointing a flaming torch upwards in her right hand a spoked wheel low in the left hand symbolizing "Progress".

This dome is the first octagonal ribbed masonry dome that was adapted to an Italian Gothic Revival style building and is the first on any public building in Mumbai. It is the only stone dome of its kind on any station in the world.

There are a large number of other embellishments in statuary, which the architect has introduced in decorating the large frontage. These include gargoyles, allegorical grotesques carrying standards and battle-axes etc, figures of Indian flora and fauna and relief busts representing the different castes and communities of India. On the facade, are also in prominent position, bas-reliefs of the ten directors of the old Great Indian Peninsula Railway (GIPR) company. The entrance gates to CST carry two columns, which are crowned, one with a lion (representing the United Kingdom) and the other with a tiger (representing India) and there are tympana portraying peacocks. All of these are sculpted in Porbunder limestone.

Refer : Present day photographs (snaps no 9-73), page v - xxxiii

2.a.ii ***Historic context of the site:***

Bombay, the *Urbs Prima in India,* is not an indigenous Indian city, but instead a generic colonial port city. Built by the British mainly for trade purposes, it was not originally planned. For centuries Bombay Island formed a coastal outpost of the land-based Hindu powers in Western India, but remained outside the sphere of maritime commerce, which encompassed other seaports in the region, such as Sopara, Thana, Kalyan and Chaul. In the mid-fourteenth century the island came under Muslim domination and passed into Portuguese hands two centuries later.

In 1661, the significant event that contributed towards changing Bombay from an insignificant group of villages and islands to one of the largest cities of India and its financial and commercial capital today, was the handing over of the island of Bombay to the British by the Portuguese, following a matrimonial and military alliance of Princess Catherine of Braganza with King Charles II of England.

After a few unprofitable years as crown property, the commercially unproductive island was transferred in 1667 to the East India Company, to which it owes much of its early development. Merchants settled from elsewhere and the ship building industry prospered. The growth of the town necessitated protection and hence fortification (and thus the name *Fort*). The Fort had three gates, the Apollo gate, the Church gate, and the Bazaar gate. This fortification had on its western side, a semicircular stretch of open ground, the *Esplanade* (the present day maidans or open green spaces) to provide a clear range of fire from the *Fort*, which by then had become an important military outpost.

Refer Fig 8 : Fortification of mid 19th cent superimposed on present day Fort area

From the mid 19th cent Bombay's most enlightened Governor, Lord Elphinstone, fostered expansion of trade, introduced markets, set up revenue and education systems. With the improvement of trade connections with the interior, the introduction of the railways and the opening of the Suez Canal, Bombay was transformed into the main commercial centre of the Arabian Sea.

The latent forces of commercial and economic prosperity that had been accumulating in Bombay since the 1830's reached a climax with the cotton boom of the 1860's. This coincided with the arrival of the next Governor, Sir Bartle Frere. He planned a series of works – widening of roads, formation of a municipality, and expansion of the city by demolition of the fort ramparts, land reclamation – and commenced the building of a magnificent ensemble of High Victorian public buildings along the sea front.

These grand buildings have been acclaimed as the finest surviving Colonial (Victorian Gothic) architectural ensembles in the world. They are monumental statements of civic pride, and they herald the genesis of a genuine British Indian imperial style. A new architectural image was defined for the sub-continent, an image of grandeur, supremacy and elegance as manifested by the High Victorian style. The attempts to control the surrounding context through urban design set the context for these buildings. Civic spaces such as Horniman circle, and Flora Fountain were restructured, augmented and interlinked with the help of landmarks to create a magnificent city comparable to Victorian London, not just in its civic architecture but also in its exuberance, panache and sheer dynamism.

Dr Christopher London notes,

> "…*The Ramparts Removal Committee was the first formal government organization formed to commence construction and urban planning in the city. However, its role was greater in importance than the name would imply. For the committee was formed of architects and engineers under the direction of Trubshawe, a British architect brought to Bombay especially for this work. So, for the first time, the leaders of current architectural practices were called upon to advise and assist, locally, those working in Bombay. There were many forces at work to bring about these changes, but the most important factor introduced was the establishment of the 'Bombay Special Fund'. The fund, specially*

formulated by Frere for Bombay, more than doubled the amounts of money available annually for public spending, between 1862-67". [i]

Refer Fig 9 : Public buildings in restructured Fort Precinct.
Refer Fig 10 : Significant Neo Gothic Buildings in the Fort Precinct
Refer Fig 11 : Birds eye view of restructured Fort area
Refer Fig 12 : Birds eye view Fort & Esplanade

2.a.iii ***Development of Indo British architectural style***

In the early twentieth century, there was much experimentation with the appropriateness of styles to be employed in India. One school advocated that the British architecture in India had to be reflective of the native architecture and traditions and this resulted in the formation of a new style called Indo-Saracenic architecture.

This style tried to fuse distinctive Islamic architectural features with the buildings that were being designed by British Architects in mid nineteenth century and early twentieth century in India. The revival of the form was predominately devoid of the original skills and traditions and dependent on modern constructional technology. The style adopted the form and plan of the grand Victorian architecture but dressed the building with features and embellishments that were of indigenous origins such as chajjas (overhangs), jalis (perforated screens), and verandahs.

The early experiments resulted in the amalgamation of the Gothic revival and Saracenic style creating marvels like the Anjuman E Islam building (C. 1893), and B.M.C building (C. 1893). This style was further refined removing all Gothic influences in the early 20th century, represented in buildings like the General Post Office (C. 1911-13), Prince of Wales Museum of Western India (C. 1915), and the Gateway of India (C. 1922) at Apollo Bunder. These buildings display an extraordinary level of architectural and engineering skill and represent a very sophisticated form of eclecticism.

Towards the middle of the 19th century there was a distinct change in the spirit of the city; the Imperial image was replaced by the cosmopolitan, international and modern, evident from the construction of Marine Drive, a sweeping promenade, which also happens to be one of the longest Art Deco Stretches in the world.

2.a.iv ***History of the Indian railways :***

This has been well summarized by Dr Mariam Dossall in her book "Imperial designs and Indian Realities" extracts of which are as follows :

"…The rationale for the development of railways, as with every other public works project, was dual. The need for 'political lines', or railways which would connect politically disturbed areas with military and administrative centres was nearly as great as that for gaining access to raw materials and obtaining markets for British goods.

In Britain, the railways had proved to be amongst the most lucrative areas of investment in the second quarter of the nineteenth century. Taking their cue from Britain, leading merchants and financiers of Bombay formed the' Inland Railway

Association' in April 1845.The railways were intended to provide an improved system of transport and communications by which the town could obtain, increasing resources and exercise greater control over its hinterland. Railways and shipping constituted the two out- stretched arms of the metropolis. While one reached deeper into the hinterland, the other linked Bombay more effectively to Britain and the rest of the world. Between 1845 and 1875 important decisions concerning the construction of the Indian railways were taken".

2.a.v Planning the Railways

Dr Dossal further describes the planning of railways and the impact on trade as:

"...As soon as surveys were undertaken, technical advisers had to decide, as in all developmental projects, whether the work could best be done by the East India Company directly, contracted out, or some third alternative devised which combined both contracting out with government supervision and control. The setting up of the railways in Western India received high priority during Lord Elphinstone's administration….

…The logic of railway building required that a comprehensive plan be worked out, which would link the main producing centres with the port cities. Trunk lines were to be supported by feeders or branch lines to develop the railway network and were to be laid in areas where they could tap the most extensive and profitable of resources.

.. In 1862, with administrative reorganization and the arrival of Bartle Frere as the new governor, railway matters were once again seriously considered. Frere's imperial vision made him view railway development in an all-India context. He advocated that the Madras Railway network extend through Mysore and meet the Sadashivgarh line. This would 'give a vast impetus to both cotton and coffee trade, and pay better than any line of equal length in South India'.

To meet the great demand for cotton in England, Governor Frere proposed that branch lines be contracted out to various tramway companies to link the cotton districts. If it was made clear in the contract that the company would be paid on the completion of a section, costs could be kept in check and a railway line would prove to be no more expensive than a good metalled road.

Roads and railway were complementary and both equally necessary. Without a good connecting road the produce and people would not be able to easily reach a railway station from the surrounding countryside. For the full economic potential of the presidency and the country to be utilized, railways and a road network had to be developed simultaneously. Road building would receive considerable impetus if funds were obtained from local tolls and ferry funds instead of relying on imperial funds alone.

Frere believed that the effect of the railways on the whole country had been' marvelous', and had substantially promoted commerce and agriculture in the country. For instance, Indian merchants were able to travel 276 miles a day, reach Bombay, conduct their business transactions and return to Sholapur within two days. This increased mobility was admitted by Indian merchants to be of 'infinite value' to commerce',

On 21 April 1863 the GIP Railway over the Bhor Ghat incline was opened to traffic. Large numbers of visitors from Poona and Bombay went to witness the historic event as the railway had the longest and highest locomotive lift in the world. Due recognition was given on the occasion to the Work of Chief Engineer J. Berkeley who had designed and executed most of the works on the incline.

The coming of the railways introduced far-reaching changes in India. Harbingers of the modern age, the railways contributed to the reorganization of the economy, to greater political centralization and control of the country, and to changed perceptions of time and space. Contemporaries spoke of their magnificence and daring with wonder."

Refer Fig 3 : Map showing Railway networks in Mumbai including the historic route.

2.a.vi ***The GIP Railway Terminus & offices:***

"…While Bombay town had been chosen as the site for the railway company's headquarters and terminus, the important question of where in Bombay these were to be constructed had not been settled at the time when Governor Bartle Frere took office. By November 1863, the GIP Railway had laid some 550 miles of railway. Though major advances had been made in railway construction, the details regarding the terminus had not been worked out. Frere remarked casually, 'we are still debating about the Great terminal stations of both lines in Bombay Island'. Meanwhile, with land prices rising, the Bombay Government feared that the enhanced value of land would make the railway terminus more costly than before. The Government of India had sanctioned Rs 10 lakhs for land required for the construction of the terminus but by 1863 the amount estimated for the land was Rs 30 lakhs.

For the GIP Railway terminus and passenger station a site at Mody Bay was proposed by Mr. Ayrton, secretary of the Railway Company. This was acceptable to both the London Board of Directors and the Bombay Government. The local Board of Directors, however, were opposed to it and proposed instead a temporary goods and passenger station at Bori Bunder, which could be enlarged with additions from the Esplanade and from land reclaimed from the Harbour side.

The land required for the GIP Railway terminus was about eighty acres. In 1861 the Bombay Government had entered into an agreement with the Elphinstone Land and Press Company to reclaim two-thirds of Mody Bay, of which 100 acres were to be given to government for the construction of the terminus. Work on the GIP Railway terminus was eventually begun in May

1878 and completed in 1888. The offices cost Rs 16,35,562 and the station Rs 10,40,248. It was opened to traffic on I January 1882”[ii].

Dr C London notes,

“...Stevens then began work on the most famous of all his projects in Bombay. There had been some intervening small undertakings, but in June 1876 the first drawings for the Great Indian Peninsula Railway Terminus and Offices were begun. In 1877 the government officially "lent" Stevens to the Railway Company, and in 1878 he left on a ten-month furlough for Europe. ***While there, he studied all the new and important termini, which might aid him in the design of his Bombay undertaking****. He returned to India with a complete set of plans, and in late 1878 the ten-year span of construction began. VT was a costly building to construct at around £260,000. It has a pivotal function and place within Bombay's life. It stands between the docks and harbour behind and the concentrated city centre before its principal west-facing facade.* ***In many ways the station serves as a link between East and West, as travelers moving from the Suez canal eastwards to India, landed at Bombay and boarded a train here for points inland. It was a true gateway into the subcontinent.*** *The station's appearance and plan is most closely linked to G. G. Scott's unbuilt proposal for the Houses of Parliament in Berlin, published in The Architect in 1872. Stevens placed attractively laid-out gardens at the front and back of the building, and provided one of the most opulent and durable Victorian interiors extant in Bombay. Tiles from Maw & Co. combine with richly coloured Italian marbles, white Sienna and Porbunder sandstones, teakwood etc. The J.J. School of Art professors and students designed and decorated the interior, under the supervision of Stevens and John Griffiths, its Superintendent”[iii].*

2.b Possible comparative analysis (including state of conservation of similar properties)

2.b.i ***As compared to other railway stations around the world :***

With the development of air travel, the rail ways were affected all over the world and many stations in the US like the Union Terminal – Cincinnati (1933), and others in Europe like the Musee D’ Orsay, Paris, declined due to fall in railroad passengers. This led to the disuse of the terminals and modification for other uses. However, even after 115 years the CST is very much active and in constant use as a station and head-office of Central Railways. In comparison with other railways stations of Europe and US it is still one of the grandest stations and perhaps the only one to have a dome. The covered station caters to the one of largest commuter populations in the world.

St Pancras Station, London: designed by one of the leading Gothic Revival architects of England Sir G.G Scott. This was built just prior to the CST in Mumbai and it derives its inspiration from Salisbury Cathedral. It is Gothic Revival in style and an excellent blend of old architectural style and tradition, with the most updated modern material and technology. The Gothic Revival style was then the prevailing National Style in England. Unlike St Pancras, which also houses a railway hotel, whose purpose was to attract more travelers, the CST houses the administrative office of the GIPR (now the Central Railway). Dr Cunningham has commented that the planning of CST is notably superior to that of St Pancras. (Refer Annexure IX : Letter from Dr Cunningham))

The predominant material used in the construction of St Pancras is brick while that of CST is stone with more elaborate carvings making the overall effect more elegant. It competes with St Pancras in scale and richness as well.

Refer Photograph 74, page 17.

CST : As Davies notes

> *"…It is the finest Victorian Gothic building in India. Inspired by Scott's St. Pancras Station, it was erected between 1878 and 1887. It is a highly original work albeit one rooted firmly in the tradition of Ruskin, Scott and Burgess. The building epitomizes the spirit of the age in which it was built, and it is a paean of praise to the railway, which more than any other factor fostered the rise of Bombay. It is the supreme example of tropical Gothic architecture, with only a subtle hint of Saracenic motifs; a riotous extravaganza of polychromatic stone, decorated tile, marble and stained glass. Unlike St Pancras, VT is symmetrical and is surmounted by a colossal masonry dome, ostensibly 'the first applied to a Gothic building on scientific principles', and this claim is probably true. Beneath the dome the staircase rises in majestic sweeps to each floor. The booking hall is spanned longitudinally and transversely by pointed arches with wooden groin-vaulted ceilings decorated with gold stars on an azure ground and reminiscent of Scott's Interiors at St Pancras. The dado is clad in Maw's glazed tiles of rich foliated designs. The windows are filled with stained glass or with ornamental wrought iron grille-work by Scott's to reduce the glare of the sun"[iv].*

2.b.ii ***As compared to other stations in India:***

Like Chennai, Old Delhi, and Calcutta. The CST surpasses all these stations in its grandeur, style, richness and scale.

Chennai: The Central Station, Madras's main railway station, was built by architect R.F.Chisholm, one of the pioneers of the Indo-Saracenic movement in India. This building was one of the last to be built by Chisholm in Chennai (erstwhile Madras), and is the palatial headquarters of the Madras and South Mahratta Railway (now southern Railway), and opened in 1922. The building is built of pure granite and possesses an ornate construction style. It combines traces of both Saracenic arches as well as Gothic ones, with elaborate wrought iron balustrades and other detailed ornamentation.

Refer photograph 75 , page 17

OTHER COMPARABLE RAILWAY STATIONS

74. St.Pancras Station Railway Station, London, circa mid 19th century

75. Chennai Railway Station, India, Late 19th –early 20th century

2.b.iii *Comparison with other railway stations in the city:*

According to Jan Morris in the Spectacle of Empire:

> *" And of course the imperial railways were most imperial of all in India. The grandest of the Indian stations, Victoria Terminal at Bombay was thought by connoisseurs to be the grandest station anywhere. "V. T'. as everyone called it, certainly was majestic in a different way from the neo- classical palaces put up by the railway engineers in Europe or America because its symbolism were much more complex ; designed by F.W Stevens, Commander of the Most Eminent Order of the Indian Empire, it proclaimed not only the glory of engineering, as they habitually did, and of financial enterprise, probity, responsibility and the other standard nineteenth- century virtues, but also the more ornamental merits of sovereignty. It looked partly like Oxford College, but partly like an oriental fantasy, and if had frescos of steam engines upon it, and portrait medallions of the directors of the Great Indian Peninsular Railway Company, it also had monkey gargoyles, sculpted elephants and ramparts lions in sentinel. It was truly a depot of dominion, and from it, along the 25000 miles of the Indian railway system, the authority of empire seemed to flow".*

CST is the icon of Mumbai and the pride of Mumbai's heritage. Though the railways have many other listed heritage buildings in the city like the:

Western Railway Headquarters (Circa. 1893- 1899) at Churchgate designed by the F.W Stevens.. The Western Railway (erstwhile BB CI) wanted a building to house its office staff. But this building required no terminal building as Churchgate station was across the street. The style of the building as per Dr London "…blended the Indo-Saracenic with Venetian Gothic, and the final appearance tends to be more towards Indian than the Italian in overall effect. Built of blue basalt stone laid in courses, white Porbandar stone was employed for domes, mouldings, capitals, columns, cornices and carved enrichments. The building sculptural programme was less elaborate than Stevens's previous works.

This building has a conservation master plan.

Bandra Station (Circa.1888) Is one of finest suburban railway stations of Mumbai. Viewed from outside it projects a distinctive 19th century architectural form with its cascade of rooflines. The century old railway station, an excellent architectural blend of Victorian Gothic and the vernacular.

This building has a conservation master plan.

Bombay Central Station (Circa.1930). This is the next terminus building constructed after CST. It is designed by the firm Gregson Batley and King. It caters to the need of 20th century railways and reflects the more of industrial architecture in its interiors as it has extensive use of structural steel. The exterior is plain with subtle Art Deco motifs having local inspirations.

Reay Road Station (Circa. 19th cent). It is an elegant and unusual essay in compressed space utilization with nothing else quite like it in the city. Use of local stone characterise the super structure

Byculla Station: (Circa. 19th century) Pitched roof originally tiled, surmounting solid masonry construction, it has cast iron column interiors. It preserves much of the 19th cent material ambience.

Amongst these the CST surpasses them in its grandeur, aesthetics and in its function

2.b.iv ***Comparison with local buildings of the same era in Mumbai***.

Calcutta is known for its Neo Classical style of architecture, Chennai (Madras) for its Indo Saracenic buildings and Mumbai for its Gothic Revival architecture. A style that was prevalent in Britain in mid 19th century under Queen Victoria's regime. Bombay became prosperous in the mid 19th century and the Gothic Revival style was employed in Bombay, a distant part of empire to express sign of modernity.

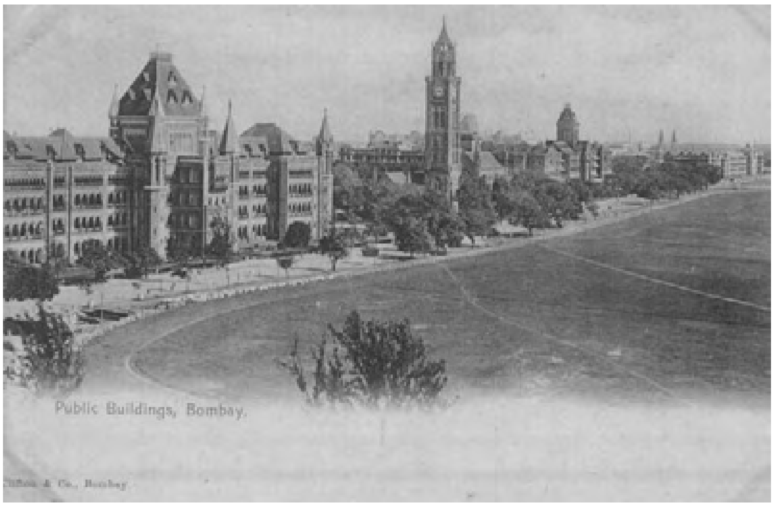
The Gothic Revival style is noticeable for its verticality, lofty heights achieved by its pointed arches, towers, spires and turrets. Stained glass, gargoyles and ironwork forms an equally significant part of this architecture.

South Mumbai has the largest ensemble of Gothic Revival public buildings in one setting **-** a rare surviving example of its kind in the world. This ensemble has some pure Gothic Revival building like the Rajabai Clock Tower designed by Sir George Gilbert Scott, and some of the finest hybrid examples in the Indo Gothic style like the Bombay Municipal Corporation designed by F.W Stevens. CST represents a unique experiment of the Gothic Revival style chosen to meet the needs of the railway in the 19th century and where a dome is introduced as a crowning feature.

The CST is the grandest building of this ensemble both in scale, detailing and ornamentation both in its exteriors and interiors. This building is the outstanding example of Gothic Revival architecture in India.

Refer Fig 10 : Significant Neo Gothic Buildings in the Fort Precinct
Refer Fig 13 : Vantage Location of CST

GOTHIC REVIVAL BUILDINGS



76. An ensemble of High Gothic Revival building which came in place of demolished fort walls. Circa 1860s - 70s. Note : The High Court and the Rajabai Clock Tower.

77. Crawford Market now called Mahatma Phule Market. Circa 1865.

78. High Court Building from Oval Maidan. Circa 1878.
Source: Bombay Gothic, Dr. London. C.

INDO GOTHIC BUILDINGS

79. Bombay Municipal Corporation

INDO – SARACENIC BUILDINGS

80. General Post Office. Circa 1909 – 1911.

81. Prince of Wales Museum now Ch.Shivaji Sanghralaya. Circa 1915

82. Gateway of India. Circa 1922- 1924.

Old Secretariat Building (1867-74): This building is Venetian Gothic in style and was designed by Col. Henry Clair. The decorative carvings done here are by the local Indian artists. The most impressive part of this building is it's central tower with the flag mast. The staircase has a great window 90' high whereas the tower height is 170' and the length of the building is 470'. The other outstanding features are; excellent carving in Hemnagar stone, arcaded verandahs, structural polychromy, huge gables, and crested iron work. In scale this building is comparable to CST but the emphasis on verticality is achieved by a central tower and not a dome.

The building is looked after by the Public Works Department (PWD) and so far the building does not have a conservation master plan nor there is a complete documentation available like that of CST.

High Court (1871-1879): This majestic structure is 560' long and 187' tall. Col. J. A. Fuller designed it. It was constructed in basalt stone and is early English Gothic in style with Venetian overtones.

The building is comparable to CST in scale and grandeur. It also has allegorical sculptures like the statues of Justice and Mercy on its spires. The highlight of this building is the central pointed tower and spires, which are a continuation of Gothic Revival principles. This building is a few years earlier than the CST and has no domes. Compared with CST it has a different colour and texture of masonry, as it is constructed in grey basalt instead of buff stone. It also lacks the comprehensive ornamentation of CST.

The High Court is looked after by the Public Works Department (PWD) and has recently has a conservation master-plan prepared. It lime stone spires were recently cleaned under professional conservation advice.
Refer Photograph 78 , page 20

University of Bombay Buildings (1868-78):, Standing next to the High Court and a part of the ensemble of colonial public buildings along the Oval Maidan, these buildings include the Convocation Hall and the Rajabai Clock Tower and the library building.

Rajabai Clock Tower is another outstanding landmark of Mumbai. Designed in the Gothic Revival style of the 14th century, the architect Sir George Gilbert Scott was one of the most popular Victorian architects in the UK. Interestingly he designed these buildings from the UK without ever visiting India.

This landmark building is 268' tall like so many other clock towers of the world. It has a variety of ornamentation of both foliage and animal motifs executed by the students of the Bombay School of Art. Adorning the upper facade of the tower are 24 statutes of various castes of Western India. The clock tower was at one time equipped with 16 different bell chimes. The remarkable features of this building are; stone carving, Italian tiles, wooden barrel vaulted ceiling of the library and its stained glass. However, the overall scale of the building makes it less telling than CST.

The library building has been recently restored and was awarded the UNESCO Asia Pacific Award 2000.
Refer photograph 76, page 20

Bombay Municipal Corporation (BMC) Building (1893): The Bombay Municipal Corporation Head office building was constructed in 1893 and designed by F.W Stevens the same architect who designed the CST station. This building introduces Oriental elements like domes and minarets in its external façade. This is the first building in the city to introduce the Saracenic theme. It is a sister building to the CST, having similar scale and is dominated by a prominent corner oriental dome, which is the crowing feature. Instead of statue of progress there is an allegorical sculpture of *Urbs Prima in Indis*. Its masonry and detailing is similar to that of CST using buff colour local basalt and soft Porbunder for carving. However, the ornamentation here is not as ornate as compared to the CST, and the site and layout are, in any case, determined by CST.

Unlike CST the BMC is located on a trapezoidal site with roads on all sides. The interior like the CST has a grand staircase with a double dome. Its here that the dome technique has been modified and within double domes the space is utilized positively as storerooms and for the water tanks for this building, a deviation from CST's open dome, which only serves an aesthetic purpose. Thus we can see that the dome of CST established a mode that was subsequently followed in all public buildings in Mumbai.

The interiors of the BMC and CST are comparable with one another in finish and detailing. Instead of the waiting room (now banquet hall) and conference hall in CST, which have elaborate interiors with encaustic tile dados, in the BMC the large Corporation Hall has elaborate woodwork both in ceiling and dado.

The BMC has a special Heritage Conservation Cell that looks after its 24 heritage properties . The Corporation hall was damaged in a blaze 3 years ago. This was restored to its original glory by INTACH. There are plans to decongest the building and restore it in phased manner after the successful restoration of the Corporation Hall. A conservation masterplan is also being prepared.

Refer photograph 79, page 21.

General Post Office (1909-11): This building was erected in 1909-11 under the supervision of George Wittet, and was designed by John Begg in the Indo-Saracenic style incorporating elements of the local Bijapur style of architecture. It is amongst the earliest building to adopt a complete Indian style. The architectural vocabulary of the early 20th century now distinctly shows a change both in facades and in silhouette, which is more Indian in character.

This building is grand like the CST but has more emphasis on horizontality than verticality. There are no allegorical images. There is a distinct shift in the construction technology as more of structural steel and lime cement concrete is used instead of teakwood. The nature of ornamentation is different too and is influenced by local traditions. The central hall has a double height with traditional Islamic techniques to span the dome (with the help of squinches). This dome is one of the largest ferro-concrete dome at that time in the country. It has different colour and texture of stone as compared to other Gothic Revival building - grey basalt. It has limited ornamentation as compared to CST.

This building was also partly damaged in fire and a restoration plan has been prepared for restoring it.
Refer photograph 80, page 22

2.c Authenticity / Integrity :

The building still retains a large percentage of its structural integrity, however due to excessive increase in usage and occasionally due to insensitive repairs and additions, there has been a moderate change in the authenticity.

With increasing awareness of conservation the railway authorities have been keen on conserving the building. A comprehensive and systematic phase of conservation works has been identified and currently undertaken.
Refer Annexure VI : CD of ACC Architectural conservation master plan prepared by ACC

The details of authenticity surveys of floor plans are as follows:

	State of Authenticity	Percentage (%)					
	Range	Gr.Flr	1st Flr.	2nd Flr.	Attic Flr.	Roof	Average
1	Intact, original or Minor alterations	82.3	56	48	83.3	35	60.92
2	Moderate to Major alterations	13.1	44	52	16.7	65	38.16
3	Completely altered	4.6	-	-	-	-	0.92
	Total						100%

Refer Fig 23- 28 : Authenticity Surveys - Plans

The details of authenticity surveys of external elevations are as follows:

	State of Authenticity	Percentage (%)				
	Range	West	North	East	South	Average
1	Intact, original	79	62	48.8	67	64.2
2	Minor to moderate alterations	19	36	22.2	33	27.6
3	Major to completely altered	2	2	29	-	8.2
	Total					100%

Refer Fig 29- 32 : Authenticity Surveys - Elevations

Analysis of the above data reveals that to a larger extent CST has retained its authenticity, though minor alterations have been carried out. These interventions are like adding partitions in verandahs space, enclosing the arcades with glazed teakwood windows, placement of AC's, vinyl flooring over the existing flooring, etc. **It is easily possible to revert these back to original condition when the complete restoration project is conceptualized** (part of this has already commenced). Only a small percentage of authenticity has completely been damaged due to alterations carried out earlier. This will be reverted back to the original condition as far as possible by reconstruction using similar materials and techniques.

It is intended to restore the public or visible areas to their original glory. The inner operational areas will also be considered for restoration. However, if they cannot be restored due to functional or other reasons, they will be sensitively treated to recreate a matching ambience as close to the original as possible.

2.d. Criteria under which inscription is proposed (and justification for inscription under these criteria).

Refer : Archival photographs (from 1- 8) and present day photographs (9 - 73),
Refer : Annexure II : Copies of few Measured drawings

2.d.i.i Represents a masterpiece of human creative genius

CST or VT when designed was the first terminus station in the subcontinent, a trendsetter, a commercial palace representing the new economic wealth of the nation. It was the symbol or signature of the city that claimed to be the jewel in the crown – *`Urbs Prima in Indis'.*

> *"Bombay VT is one of the architectural treasures of India -long may it so remain. … The Victoria Terminus station is the finest Victorian Gothic building in India. Inspired by Scott's St. Pancras Station, it was erected between 1878 and 1887. It is a highly original work albeit one rooted firmly in the tradition of Ruskin, Scott and Burgess. The building epitomizes the spirit of the age in which it was built, and it is a paean of praise to the railway, which more than any other factor fostered the rise of Bombay. It is the Supreme example of tropical Gothic architecture, with only a subtle hint of Saracenic motifs; a riotous extravaganza of polychromatic stone, decorated tile, marble and stained glass. Unlike St Pancras, VT is symmetrical and is surmounted by a colossal masonry dome, ostensibly 'the first applied to a Gothic building on scientific principles', and this claim is probably true. Beneath the dome the staircase rises in magisterial sweeps to each floor. The booking hall is spanned longitudinally and transversely by pointed arches with wooden groin-vaulted ceilings decorated with gold stars on an azure ground and reminiscent of Scott's Interiors at St Pancras. The dado is clad in Maw's glazed tiles of rich foliated designs. The windows are filled with stained glass or with ornamental wrought iron grille-work by Scott's to reduce the glare of the sun.*
>
> *...Most of the surface ornament, foliated sculpture and ironwork was designed by the Bombay School of Art in conjunction with Stevens, who conceded that it was quite the equal of anything to be found in Europe"[v].*

The scale and grandeur of this building produce a sense of wonder and awe. It is the most prominent and symbolic landmark of Mumbai.

Bombay city has been described as the finest Victorian city East of the Suez. The Gothic Revival style was deliberately chosen as most suitable to express the aspirations of the wealthiest and most dynamic of Indian cities. Compared to the classical revival style of Calcutta and Madras it demonstrated energy, a vitality and freshness of form and image. The ensemble of new public buildings constructed at the turn of the century with a Gothic Revival silhouette formed by towers, turrets, spires, and domes gave a new skyline to the city that was conspicuously visible to ships entering the bay. Taking together scale and architectural richness, CST stands out as the most prominent landmark of Mumbai – an icon of Mumbai's heritage.

2.d.i.ii ***Exhibits an important interchange of human values, over a span of time or within a cultural area of the world, on developments in architecture, monumental arts or town planning and landscape design;***

CST is the physical representation *par excellence* of the meeting of two great cultures. The British conceptualized and planned the architecture of the city to represent dramatically the new ideas of progress and modernity. British architects worked with Indian craftsmen to include Indian architectural traditions and idioms, in the process forging a new style unique to Bombay. Gothic revival architecture of Mumbai unlike classical architecture of Calcutta provided scope for marriage of decorative traditions with British planning.

CST stands at the transition point of these two styles, when the Neo-Gothic style, which was already established, introduced native features and ornamentation, thus paving the way for the coming of the more 'oriental' Indo-Saracenic style. CST is the last and finest Gothic Revival public buildings in Mumbai. It is a vital part of the link between the new construction technology of the late 19th century (i.e. use of structural steel) and the subsequent development of new architecture.

CST, as the headquarters of the GIPR in Mumbai, was the first terminus and headquarters in the sub continent envisaged on a grand scale to represent the economic might and power of the Empire.

As a railway terminus it represents the life of the city in microcosm. It reflects the importance of the railway system; it is a symbol of Bombay, of progress and modernity reflected in the allegorical image of `Progress' surmounted on the dome.

According to Dr C. London:

> *"...The allegorical sculptural programme provided for the station was carried out in Bath stone by Thomas Earp: and depicted Commerce, Agriculture, and Civil Engineering at the apex of its entrance pediments, in addition to Progress atop the dome, Queen Victoria at the second storey level, and Science and Trade tympanums at ground floor level. The railway directors and the sixteen castes are also depicted, in addition to peacock tympanums and the well-loved recumbent allegorical sculptured Lion of Britain and Tiger of India at the forecourt entrance. There are also an endless and un-catalogable profusion of other sculptures and forms, which embellish the building adding to its legendary richness of detail. The elephant on the stained glass panels reflects the luxury of Indian travel"[vi].*

Governor Frere's grand public buildings were meant to be landmarks amongst the residential grain and are representative of Indo British culture. The CST when designed was the centerpiece of Frere's scheme, and was intended as the most prominent landmark facing the west with two maidans (open green spaces) or esplanades in front. It dominated both the maidans and its tower 250 ft tall made it the most visible landmark building from ships entering the bay, and from the port in back bay. It was prominently seen from the entire native town and it continues to dominate the Fort precinct where it is located.

Refer : Fig 13 : Vantage Location of CST

2.d.i.iii *Bears a unique or at least exceptional testimony to a cultural tradition or to a civilization which has disappeared*

CST is one of the first station buildings in the world to have a stone dome. It is also amongst the first grand public buildings of this scale to be built in the city and the country that integrated the industrial revolution technology with a historic architectural style. It introduces the technique of dome construction, which became popular with all later public buildings in the city.

2.d.i. iv : *To be outstanding example of a type of building or architectural or technological ensemble or landscape which illustrates a) significance stage(s) in human history; or*

It must surely rank among the half dozen greatest railway stations of the world.

The railway epitomizes the industrial revolution. CST is an outstanding example of a building type intimately associated with this revolution. The technological development is also highlighted in the architecture of the concourse, which covers the large uninterrupted spans of the concourse with extensive structural steel. This use of decorative ironwork and structural steel is the earliest example of industrial architecture adapted to public buildings in Mumbai.

The railway was and still is the primary means of travel in the country. The advent of the railways and the strategic location of CST in Mumbai along with the timely opening of Suez Canal spurred the country's economic progress making Mumbai one of the most attractive commercial cities in the world.

The advent of the railways changed the socio-economic and political scenario of the country. It linked the different parts of the country, resulting in increased trade and prosperity. Faster transport and communication enabled the networking of people, goods and ideas leading India to rapidly modernise unlike any other colonised country.

CST is intrinsically linked to the identity of the railway network that was established in India as the transport of the age of industrialization. The railway was then the most important development for the economy of the nation and it continues to play a vital economic role in the country's growth.

CST, as the headquarters of the GIPR in Mumbai, was the first terminus and headquarters in the sub continent envisaged on a grand scale to represent the economic might and power of the Empire.

Architecturally it is a gem both in planning and detailing as it meets all the functional needs of a 19th century railway terminus and of its administrative office. These functional requirements are well integrated with Gothic Revival architectural detailing and ornamentation. Its dome of dovetailed ribs, built without centering, was a novel achievement of the era.

2.d.i. v ***: Be an outstanding example of a traditional human settlement or land-use which is representative of culture(cultures) especially when it has become vulnerable under the impact of irreversible change***

The station is still very much in use as a terminus and administrative headquarters of the Central Railway, as it was planned 115 years ago. Unlike many other stations of the world that have become redundant on account of a drop in rail passengers, this station has expanded its use and is as active as ever. When the station was conceived, 6 trains used to run; presently some 1050 trains (suburban and outstation) run through it carrying about 3 to 3.5 million people daily.

2.d.i.vi: Be directly or tangibly associated with events or living traditions, with ideas, beliefs with artistic and literally works of outstanding universal significance.

CST is a statement of national pride, a symbol of the city because of the transport and technological revolution it celebrates. The building is therefore directly associated with the ideas of Indo British development, and has become a symbol of national pride. No other building in Mumbai compares with it in grandeur and scale. It continues to be the symbol of Mumbai's pride of place as '*Urbs Prima in Indis'*- India's first city.

> *"It is a statement of pride. It bespeaks the incomparable power and beauty of steam.... It is Victoria Terminus, 'VT' to everyone in Bombay, the southern terminus and headquarters of the Great Indian Peninsula Railway. The Bombay architect F. W. Stevens designed it. It was opened in 1887 in time to celebrate Queen Victoria's Golden Jubilee, and it could make a persuasive claim to be truly the central building of the entire British Empire -the building which expresses most properly the meaning of the imperial climax."* - Jan Morris

The Railways played a very important role in the development of the Indian economy and it continues to do. It is also the largest employer in the world, with strength of about 1.6 million employees. Apart from transiting passengers it plays an equally important role in transferring of goods. The ideal location of CST very close to the harbor facilitates this.

150 years since its inception, the Indian Railways today cover over 62, 000 kilometers and carry 430 million tonnes of freight traffic and 4, 500 million passengers in a year. The Indian Railways are Asia's largest and the world's second largest railway system under a single management.

CST symbolizes the image and spirit of the city of Mumbai, as the place of opportunity and enterprise. Everyday, the millions of people who pass through the portals of this terminus reaffirm their faith in the city's ability to make dreams come true, and the building of the terminus itself further reinforces this with its palatial dream-like quality. CST station belongs to the people of Mumbai; it was designed as such, and till today, continues as such. It is alive and responsive to its many users, and has grown to accommodate the many changes and transformations that the city itself has gone through.

The Indian Railway is the largest network of railways in the world, and its builders were aware of the magnitude of this undertaking. It was a fitting step, therefore, when the building to house the headquarters of this network, and receive its passengers, was conceived on a similar grand scale. The terminus for the Central Railway was to be a pioneering and awe-inspiring building, the political significance at the time being to reinforce the economic might and technological greatness of the Empire, as it set about consolidating its position in the sub-continent. Today it stands as a symbol of the important role that the railway has played in the development of the Indian economy and in unifying a hugely diverse country.

The British undertook the construction of the extensive railway network across the Indian sub-continent for important strategic reasons, to facilitate greater control and penetration over the hinterland, and also make communication and access easier.

Although the transport of arms and troops for defense was an important function, economic activities, such as exporting raw materials to the west and opening up new markets for imported British products became easier with the establishment of the railway network.

CST was crucial in these developments. The railways also led to easier and cheaper domestic travel and helped in unifying the country. These reasons are equally valid today and the railways are still used for these original purposes.

3. Description

3.a Description of Property

3.a.i ***Exteriors*** : Chhatrapati Shivaji Terminus (or the erstwhile Victoria Terminus) building was constructed in the year 1887, and was originally meant for housing the administrative headquarters of the Great Indian Peninsula Railway (GIPR).

The CST or erstwhile Victoria terminus station building has been considered as one of the finest station buildings of the world and architecturally one of the most splendid and magnificent late Victorian Gothic Revival edifies existing today.

Also refer Section 2.d.i.i

3.a.ii ***Interiors :****.* *(*Refer Annexure III Lithographs from Builder 1886)

The Builder of 23rd Oct 1886 describe its interiors as;

> *"The hall is 82 ft. in length x by 76 ft. in width, and 42 ft. in height, and contains first and second class booking - offices on the eastside, a telegraph-office on the south side, and a luggage office on the north side. On the south side, the buildings overlook a garden, which will be tastefully laid out. stone caps carved out of solid stones in situ, weighing over 1 ½ tons each. The hall is spanned transversely and longitudinally by large pointed arches, resting on massive Coorla basalt buff-coloured stone central piers and the columns of beautiful polished Italian red and grey marbles, capped with rich foliated Sienna.*
>
> *The walls of the offices above the hall and the groining are carried by the arches, and the piers are consequently built of very solid fine cut – stone masonry. Corridor 13 feet in width are placed on the either side of hall, the arches and columns of which carry the galleries and superstructure. The columns of the corridors are of polished black marble with bright yellow veins and grey marble beautifully marked, surmounted by massive carved Porebunder stone caps of bold design. These columns are placed alternately in pairs, and are very effective in contrast with the surrounding coloured materials. The wooden groining is decorated with gold stars on an azure ground, and the moldings of the main ribs are strongly emphasised in red, dark blue, and gold, the carved work being picked out in the same colours. This decoration although simple has an imposing effect. The columns of the galleries or upper corridors are of black marbles with yellow veins, and the railing is of ornamental wrought iron, with French polished handrail, and is decorated in chocolate colour, picked out with bright red and gold. In the centre arch on the south side is placed a large clock, 3 ft. 6 in. in height, in diameter, in a delicately – carved white Sienna sandstone stand.*

A dado, 4 ft. 6 in. in height, runs round the hall, composed of Maw & Co's glazed tiles, of rich foliated design, in red and buff colours with a base in chocolate, buff, and black and above this the walls are lined with white Porebunder stone. The flooring is paved with unglazed colour tiles of foliated and geometrical patterns, arranged in large square panels. The panels of the stone tympanums of windows are filled in with coloured glass of subdued tints and varied designs, the former having the effect of toning down or reducing the glare of the Indian sun. The tympanums of the arches of doorways are filled in with ornamental wrought iron open grille – work, appropriately decorated in colours and gold, and perforated woodwork of rich design, for ventilation. The counters of the booking, telegraph, and luggage offices are beautifully executed in local coloured woods and are provided with handsome open glass railings. The hall is approached from the public road, on the west side, through a spacious carriage porch and a entrance corridor.

The latter we illustrate and now proceed to describe: - the corridor is 42 ft. in length, 11 ft. in width, and 22 ft. in height, and is divided into four bays by transverse moulded arches, each bay being in a star pattern in Porebunder white stone and Hemnugger red stone, three courses of the former to one of the latter. The main diagonal ribs are richly moulded and carved, and spring from the backs of grotesque animals at the angles. The central bosses are formed into heads of the lion and tiger (typical of the United Kingdom and India) form the mouths of which the ornamental gas-pipes of lamps for lighting the corridor are suspended. The arches and groining of corridor are supported by massive red and gray polished Italian marble columns, beautifully marked, with richly - carved caps of varied design. The moulded and carved bases of columns rest on pedestals, which are panelled and moulded.

There are four large arched doorways leading from the corridor to the hall, each being 8ft. in width. The doors are of teakwood, massive in design, and handsomely moulded and panelled, and French polished. The polished brass mountings, such as hinges, &c., are ornamental and bold in character, and are well executed. The tympanums of arches of doorways are panelled in teakwood, and are filled in with coloured glass of subdued tints and foliated design at the bottom, and ornamental open wrought-iron grille-work decorated in colours and gold at top. The paving and large entrance steps are of hard blue basalt stone, the former being worked in panels with a hearting of diamond-shaped stones, and a border running round, 1ft. in width.

The decorations, carving, and other work were executed by native workmen under European supervision and guidance. The models of foliated sculpture were designed and provided by Mr. Gomez and the students of the Bombay School of Art, under the direct supervision of Mr. J. Griffiths, the superintendent. The ornamental counters were supplied by the East India Art Manufacturing Company, Bombay, from the architect's designs. Signor Gibello was the contractor for the coloured decorations, *and the ornamental wrought ironwork was supplied by the Metal Department of the Bombay School of Art, also from the designs of the architect. Messrs. Burjorjes Rustomjee, Maistry, Co. were the general contractors for the work. The whole of this important work has its commencement, under the direct supervision and control Mr. F. W. Stevens, F.R.I.B.A., A.M.I.C.E., who also designed the buildings. And he has been ably assisted by Mr. Siteram Khanderao, assistant engineer, and Mr. Mahderao Janardhan, supervisor, Public Works Department.*

The work, of which the hall forms part, is rapidly approaching completion, and will be the largest of its kind yet erected and certainly the most extensive modern architectural work in India.

A coloured photograph of these buildings was exhibited at the Royal Academy in 1881, the principal feature of which was a large masonry central dome, the first, we believe, applied to a Gothic building on scientific principles. This we hope to illustrate in detail among other drawings at some future time. The cost of buildings when completed will be about a quarter of a million sterling.

The illustration of the hall is from a coloured drawing by Mr. Nattress, and that of the entrance corridor from a photograph by a Bombay native artist, Mr. Shushunker Narayan.

We may add that the illustrations of the carved details, & Co. are taken from the photographs of the models prepared at the School of Art. These carvings were modelled from the local flowers plants and animals, and have been beautifully carved by native workmen under the direct supervision of Mr. Stevens, who considers the quality of the work to be quite equal to anything of the kind in Europe".

3.b History & development:

Among the best and also one of the earliest stations to be built in this part of the world, is the Victoria Terminus in Bombay, at Bori Bunder. It derives its name from Queen Victoria because the station building was formally opened on jubilee day in 1887. Before 1852 when its first pier was constructed, Bori Bunder in Bombay was just a landing place for country boats. The first station at Bori Bunder was a "a miserable wooden structure". Most of the upper class passengers boarded trains from Byculla, which had a pretentious platform and an attractively built shed. Originally Victoria Terminus was intended to accommodate only the offices and the main station.

CST station was constructed at the site of the temple of Mumbadevi, which was then shifted to its present site.

Since 1887, additional buildings at adjoining sites have been erected. The annexed building was used as a hospital during the 1914-18 world war and is now used for offices. The new station building was opened in 1929, to deal with the main line traffic. The additions were so designed as to harmonise with the architectural magnificence of the 1888 building and to create an impressive composite effect. The old and the new stations together comprise one of the largest and busiest station terminals anywhere in the world.

The outstation platforms No 6-16 were added in 1929 around the same time when Bombay Central Terminus was being opened. In 1970's on the East side flanking the main building an additional wing was added by demolishing low pitch roof toilets on the ground floor. This is an undesirable intervention and will be demolished in future when decentralization of CST happens with formation of additional sub zones.

The reservation centre on the East was constructed in 1984's. The road footbridge near Anjuman E Islam School linking the rear platforms footbridge was added in late 1980's. The subways connecting CST across Dr DN Road and Mahapalika Marg were added in 2000.

3.c Form and date of most recent records of property -

The property now belongs to Government of India (Ministry of Railways). The land records of the building are available with the chief engineer's office of Central Railway as well as the local revenue authorities. The building structure is recorded in the service building registers of the Mumbai division of Central Railway. All the new drawings (which have been retraced from the original drawings) of the building have been documented in a booklet form and all old drawings of the architects dating back to 1870's –80's are being catalogued and is going to be restored professionally. This would then be copied in different media's; namely microfilming, Xeroxing and by photography (prints and slides) and will be preserved in the national archives

Refer : Annexure I (Copies of few original drgs of FW Stevens) and Annexure II (Copies of few measured drawings- retraced)

3.d Present state of conservation:

The Architectural Conservation Cell of ACC have prepared a detailed fabric status report or architectural conservation plan This was prepared in1997-98 based on which further course of actions have been formulated:

As summarized in the architectural conservation plan report of ACC:

> "...In totality it is summed that the Heritage building is in excellent shape structurally while the architecture, despite the pollution and overuse, continues to hold its status in the urban setting of Mumbai. It is the areas of adequate and sympathetic use, modern building services and attention to systematic and professionally managed restoration programes followed with training to in-house staff which requires to be taken cognizance of immediately."

Refer : Annexure VI : CD of Architectural Conservation master-plan prepared by ACC

3.e Policies and programmes related to the presentation and promotion of the property.

The policy of the railways is to preserve the structure in the best possible manner. As a functional station and a building it cannot be turned into a comprehensive tourist attraction. However, it can be preserved as the best Indian example of the finest Gothic Revival architecture with limited tourist access to reveal the significance of the building. For this the railways has drawn a conservation and tourism plan to be executed in phases for enhancing the life of the building, maintaining the originality of the building and allowing limited regulated access respectively. The railways will seek professional help from advertising and public relation event managers to promote awareness of this heritage site.

Refer Appendix I : Proposals, and Fig 33-34 : Proposed Tourist Plan

4. Management

4.a Ownership

The CST (erstwhile Victoria Terminus) including its moveable and immovable assets is owned by Central Railway under the Ministry of Railways, Government of India.

4.b Legal status

All legal rights of the property are vested in the Ministry of Railways, Government of India.

Mumbai became the first city in the country to have heritage legislation, which was enacted by Government Regulation No 67 in April 1995, which listed about 624 buildings as listed protected heritage structures. Eight precincts were identified of which the biggest one was Fort area having 14 sub precincts. A multi-disciplinary committee called Mumbai Heritage Conservation Committee (MHCC) was established to ensure protection of heritage buildings. 624 buildings with grades, of which approximately 63 are, grade I, including the CST receiving maximum legal protection. The role of the committee is to review and advise proposals related to heritage structures and precincts. Presently work on precinct areas has started for which draft recommendations have been prepared, but these are yet to be implemented.

The Fort area precinct has a restriction on heights of the building to 24 mts (except cessed properties which have been recently exempted). There is also restriction on amalgamation of property and road widening to ensure that heritage character is maintained.

Refer : Annexure IV : Heritage Regulation of Greater Mumbai, 1995.

4.c : Protective measures and means of implementing them :

4.c.i ***Protection of the building under Mumbai Heritage Conservation Committee rules***

Under the Government of Maharashtra's Urban Development Department's Heritage Regulations for Greater Mumbai, 1995, the CST (erstwhile Victoria Terminus- Bori Bundar) Building is listed as a Grade I building, Sr No 121 page 21.

Definition

Grade I: Heritage Grade I comprise of buildings. And precincts of national or historical importance, embodying excellence in architectural style, design, technology and material usage; they may be associated with a great historical event, personality, movement or institution. They have been and are the prime landmarks of the city.

Objective:

Heritage Grade I deserves careful preservation.

Scope for Changes:

No interventions would be permitted either on the exterior or interior unless it is necessary in the interest of strengthening, and prolonging the life of the buildings or precincts or any part or features thereof. For this purpose, absolutely essential and minimal changes would be allowed and they must be in accordance with the original.

Refer : Annexure IV : Heritage Regulation of Greater Mumbai, 1995.

4.c.ii ***Protective measures and means of implementing them***

With the growing sensitivity to and recognition about heritage conservation, the Railways are aware that any proposed expansion due to growing needs is to be appropriately incorporated. Close coordination is essential between all of its departments.

At present there is no separate establishment for carrying out the specialized maintenance and repairs of CST main building. The day-to-day maintenance is carried out under the direct supervision of the custodian who looks after all the civil engineering maintenance activities. The electrical and signal and telecommunication department carry out the maintenance of electrical & telephone installation respectively. A maintenance manual for the buildings on the best methods of conserving has been prepared by the ACC for the building.

As CST is a grade I heritage structure which is being nominated as a World Heritage Site the present status of maintenance was reviewed and some of the problems were identified. To overcome these administrative problems higher level of monitoring is proposed.

Refer : Appendix I : Proposals : Proposed management committees

4.d Agency / agencies with management authority

The administrative control and the management of this property are with the Divisional Railway Manager, Mumbai division, Central Railway. The day-to-day maintenance and protection of the building is also the responsibility of the Divisional Railway Manager.

His postal address is as under:

The Divisional Railway Manager
Central Railway, Annexe Building,
CST (Victoria Terminus),
Mumbai 400001, India.

4.e Level at which management is exercised (eg. On property, regionally) and name and address of responsible person for contact purposes.

The Chief Engineer, Central Railway, Mumbai exercises the overall control as far as the major investment proposals and the formulation of policies regarding this property is concerned. His postal address is as under:

The Chief Engineer
Central Railway,
Victoria Terminus,
Mumbai 400001
India, Tel : 00 91 222 2694696

4.f Agreed plans related to property (e.g., regional, local plan, conservation plan, tourism development plan)

4.f.i ***Regional***

On a regional level, the Railways are in the process of formulating a re-structuring plan with regard to the zoning of the railways across the country. The creation of new railway zones is proposed, and this would lead to the sub-division of the existing Central Railway. CST being the administrative headquarters of the Central Railways would thus see a reduction in the number of its users and functions. Such a proposal would lead to the de-congestion of the CST building, thus further enhancing its status and reducing the current pressures on the building.

The Mumbai Metropolitan Regional Development Authority (MMRDA), the apex planning authority for Mumbai city is in the process of executing a programme called the MUTP or Mumbai Urban Transportation Plan. This Plan envisages the up-gradation of the existing transport network of the city through the development of new transport corridors, improvement of existing linkages, and increase in carrying capacity of the existing transport facilities. Further, new solutions for Mass Rapid Transit are also being explored, so as to take off the tremendous load from the existing systems.

Any plan that promotes decentralization is beneficial to the CST, as it would once again reduce the existing load on the terminus that has reached its peak carrying capacity. This would thus allow the building to better take on additional roles as an important tourist destination and a heritage site of incomparable value.

4.f.ii ***Local***

The Central Railway has already recognized that the existing north-south pattern of Mumbai's transportation network needs to be modified. With the aim of reducing the congestion on the existing transport terminals new terminals have been established for out-station trains, in keeping with the projected urban trends for Mumbai, that envisage the reduction of the role of the Central Business District at South Mumbai, and the emergence of new business districts in Bandra-Kurla and New Bombay, and to meet their new standards of operational needs. The Bandra and Kurla Terminus were set-up with these objectives in mind, and have since their inception, reduced the load on the existing terminals. Other schemes to decongest CST are being considered and will be further investigated.

With the shift of operations of the MPT (Mumbai Port Trust) to adjoining Nhava Sheva JNPT, the entire eastern water front is which is with the MPT will be soon opened for re-development. This will have far reaching consequences on the city and on CST, it being in a strategic location. It is premature to speculate on the nature of this development in the absence of which the identification and protection of the buffer zones becomes very significant.

4.f.iii ***Conservation Plan:***

A five-year plan initiated in 1997-98 started with the appointment of the Architectural Conservation Cell of ACC, as Consultants to the Central Railway for the CST building.

The first step has been completed with the production of a competent document the 'Architectural Conservation Plan', which is a fabric status study undertaken in 1997-98 by Architectural Conservation Cell of ACC. The Central railways have accepted this plan.

Refer : Annexure VI : CD of ACC conservation master-plan prepared by ACC

Following on the recommendations of this plan, the cleaning of the west facade that is the most affected due to rain and wind direction, was carried out.

The next phase that is planned is the rationalization of the services, which is being currently studied and is to be undertaken in a phase manner.

The Railways plan to demolish the incongruous additions and extensions along the Eastern side in a phased manner so as to regain the original façade, which was covered by these extensions.

Training in conservation studies and practice, for Central Railways employees is the next step in enhancing in house conservation skills. In the absence of such in house skills, interventions will be carried out by qualified trained and experienced conservation architects.

Phase of Works :

- ***Phase I: 1997-2003:*** Preparation of Fabric status report – architectural conservation plan prepared by conservation professionals for the Railways.

    1) Allocation of funds for carrying out work in phases and for feasibility study of existing services.
    2) Cleaning of West – Front facade complete.
    3) Formation of two level committees.
    4) Appointment of consultants and specialist and identifying suitable agencies to carry out the work

- ***Phase II : 2004-2009 – 5 year plan – main components***:

    1) Complete restoration of external facades, rendering building water tight
    2) Up-gradation of services, removal of redundant and incompatible services
    3) Removal of unwanted additions, which have altered the character and authenticity of the building. Circulation areas like passages, corridors, and service areas to be restored to its original function and character.
    4) Restoring the concourse and star-chamber to regain its original appearance.

5) Demolition of car park shed, removal of hoardings from concourse and around the heritage site.
6) Traffic management around site
7) Comprehensive training program for staff so as to create in-house expertise and in-house conservation cell.
8) Tourism Management Plan developed and implemented.

- ***Phase III : Long term plans to be undertaken in 2009- 2014***: Includes desirable works concerned with finishes like regaining lost authenticity of interiors, landscaping, and greening in Buffer zone.

4.f.iv ***Tourism Development Plan***:

Refer : Appendix I :Proposal - iii) Proposed Tourist Development Plan

4.g Sources and levels of finance

The sources of finance for this building are the consolidated fund of India. Money required for maintenance for day-to-day working, or for development purpose is taken from the consolidated fund of India, after the sanction of the budget by the Parliament.

The Railways have the means to generate and set aside funds for conservation work required for the upkeep of their buildings.

4.h Sources of expertise and training in conservation and management techniques

With the growing awareness of conservation in Mumbai the situation is changing fast. We have in our city about a dozen trained conservation professionals who have worked on preparation of conservation plans both at the macro and micro level. Some of these plans and inspection reports have led to much needed conservation of buildings and precincts.

Architectural conservation has recently emerged as an important discipline in India. With the coming of the Multinational companies in a liberalized economy the historic buildings in the Fort received a much-needed facelift. Many of the new companies have established offices in important heritage buildings especially along the D.N. Road, which is the main arterial road leading off the CST and the prime business area of the city. The new owners have made a great effort to conserve these buildings. The successful examples include Amarchand Mansion, Deutsche Bank, American Express Branch Office at Flora Fountain, ANZ Grindlays Bank Head-office at M.G Road, and the Standard Chartered Bank at Fort, among others.

Important institutional buildings soon followed the same trend and the Army & Navy Building, the David Sasoon Library and the J.N Petit Library have been successfully restored to their former glory. This has led to an increased awareness on the part of the government who continues to be the largest owner of the grand institutional buildings. Conservation efforts by government departments include the restoration of the BMC Corporation Hall, the Elphinstone College, the High Court and the Rajabai Clock Tower and the University Library buildingThe state of art restoration work at Rajabai Tower and Library building of University of Mumbai was recongnised by UNESCO and awarded the Asia Pacific Conservation Award (Honorable mention) for 2001. The restoration of the fire damaged BMC Corporation Hall received the Indian Heritage Society Urban Heritage Award for 2002.

The management of this building is with Indian Railways personnel who presently have the experience in maintaining the heritage structures of this type. For specialized conservation the Railways use the best professional skills with help of expert NGO's and qualified trained and experienced conservation architects.

The staff is well acquainted with normal civil engineering skills, through the Indian Railways Management Training Institute at the Railway Staff College, Vadodara and Technical Institute at Pune, called the Indian Railway Institute of Civil Engineering. It is due to start conservation courses at these two institutions. Distaster management is also proposed to be included in their training.

4.i Visitor facilities and statistics

The CST was designed as a railway station and also as the administrative headquarters of the Central Railways. Both these functions continue to be housed in the original buildings. An extraordinary increase in the volume and number of trains as well as passengers required expansion, and hence both the buildings and concourse were expanded to house new functions. The number of people who traverse through the site is approximately 3.5 million day.

The original booking office, known as the Star Chamber, is used even today as the suburban booking office, while most of the administrative offices continue as were originally designed.

Facilities for out-station passengers such as the waiting rooms and dining halls have been re-located to the new concourse area, as out-station trains all depart and arrive from here.

Public conveniences such as toilets, washrooms, information kiosks and food stalls now occupy the concourse areas.

It is proposed to augment the existing public facilities such as toilets, benches, dustbins, signage, by adopting a uniform and appropriate design for the same that would enhance the heritage structure, and not detract from the same. Professionals with expertise and experience in this field will be consulted for the same.

4.j Site management plan and statement of objectives

The Central Railway administration is aware of the importance of conservation of this property in its originality following all principles of conservation. An accepted conservation management plan has already been drawn up called the Architectural Conservation Master Plan prepared by "Architectural Conservation Cell, Research and Consultancy directorate of Associates Cement Companies. This conservation plan assures that its integrity and out standing universal value is maintained while it continues to fulfill its original operational functions.

Refer : Annexure VI : CD of Architectural Conservation master-plan prepared by ACC

4.k Staffing levels (professional, technical, maintenance).

The upkeep and maintenance of this building is done by the technical and non-technical staff as per the standard norms and yardstick followed on all over the Indian railways which needs to be enhanced considering this to a be a special heritage structure.

At the managerial level, an assistant engineer has been posted at CST. He is assisted by a senior sectional engineer and one sectional engineer and support staff.

The Divisional Railway Manager, Mumbai and his team of senior officers also exercise managerial control at the divisional level.

5. Factors Affecting the Site

5.a Development Pressures (e.g. encroachment, adaptation, agriculture, and mining).

5.a.i. ***Encroachments*** : There is no encroachment in the proposed inscribed site i.e. in the CST administrative head office building and its open-space and in its concourse. However in its immediate vicinity in buffer zone 1, its South and its West side on the footpath and the main road the existing encroachments have been removed.

5.a.ii Redevelopment: There is a potential threat to the site from the insensitive redevelopment of the areas surrounding it (viz. a viz. scale, mass, use of finish material and obliteration of the view & axis of station etc), therefore regulated buffer zones have been proposed to limit these pressures.

5.a.iii. ***Adaptation*** : From 1878-1887, the time this building was designed and constructed to the present date, it has maintained its function as the main railway terminus for the Central Railway as well as housing the administrative offices. However, the most significant change has been in the increase in the quantum of passengers that have been using the facilities of the terminus. From an initial 4 railway tracks, the terminus now has 6 suburban and 10 separate out-station tracks. This has led to the re-structuring of several areas, most notably, the concourse areas, with the addition of annex buildings, and also altering of the original circulation patterns. The large volume of passengers using the VT suburban lines daily meant that the main building could no longer be used as the main entrance, and this was accordingly modified. Further, the increase in the volume of trains and passengers correspondingly requires increased support staff and infrastructure, and hence the number of users of the administrative offices has also increased. The increase in new users has to be accommodated, and hence wherever possible, attempts have been made to adapt the existing spaces for the increased number of users.

The railways have taken a decision to decongest and the building is in the process of being conserved and maintained.

The areas most affected are the corridors that were provided all around the building. These corridors, that are 12 feet wide, are designed both for circulation, and as a climatic buffer for the interior spaces. The corridors of the North, South and East façade have been almost entirely modified to accommodate new users. This has lead to the blocking of the natural ventilation systems of the building, thus requiring artificial ventilation measures to be introduced.

An increase in the users correspondingly required an increase in the services for the building. Hence several toilet and wash areas have been added, as well as new overhead water tanks for the same. Electrical services also have increased, most notably air conditioning plants, and most of these service facilities have been added in the rear of the building, where open space was available. (this part of the building was originally a kitchen and canteen for staff, and was also landscaped.)

5.b Environment Pressures (e.g. pollution, climate change)

CST station faces much of the same environmental pressures that are faced by several buildings in Mumbai. However, it's extremely robust construction, and sound building materials have helped the building withstand the onslaught of these pressures. The main pressures include:

Extensive vehicular traffic, which occurs along the West façade that faces D.N.Road. This leads to highly polluted air, with high percentage of carbon monoxide. The facades that do not get cleaned by the monsoon are in poor condition. A high level of noise pollution due to traffic is also present along this corridor.

The East façade that faces the harbour and dock areas, and also the mills of Mumbai has been exposed to high levels of polluted air. However with the decline in industrial and harbour activities on Mumbai's east coast over the last few decades, this has been reduced.

The building is also exposed to the saline air of Mumbai, with its close proximity to the sea on 3 sides.

5.c Natural disasters and preparedness (earthquakes, floods, fires, etc.)

Mumbai region of Maharashtra state lies within seismic zone iii according to the classification of the earthquake zones. This building has withstood a number of earthquakes in the last 115 years and no sign of distress of deterioration has been noticed so far. From the past record, it has been observed that the area surrounding the CST building is not prone to flooding.

5.c.i ***Fire fighting***: To avoid any eventuality of fire in the building, necessary steps have been taken by provision of fire hydrants, fire buckets and portable fire extinguishers at various convenient locations. Electrical fittings are regularly monitored and upgraded. This building is a two storied structure (low-rise). The existing wet riser system needs to be checked and made functional, and upgraded where required.

5.d Visitor / Tourism Pressures.

The largest volume of users of CST are the daily passengers who frequent the suburban rail services, who number approximately 3 to 3.5 million per day. These users have limited access to the premises, primarily to the concourse and Star Chamber, which is the booking office. Hence the pressure felt by these visitors, though large, is minimized.

5.e Number of inhabitants within property, buffer zone.

Only staff and authorized personnel (totaling to 1800), and their visitors (400) enter and use the rest of the building, the daily number of which does not exceed 2200. However, even this number is above three times over the estimated capacity of the building, and hence requires to be reduced.

The ground floor of the northern wing of the building is used as the booking office for the suburban system where thousands of passengers are using this area for buying tickets.

5.f. Other . None

6. Monitoring

6.a Key indicators for measuring state of conservation.

A detailed report was in prepared 1997-98. It is recommended that the ACC report is augmented every 5 years so as to compare the change in fabric status. This is to be prepared by trained and qualified conservation experts. The in-house staff of railways would assist in the survey and thus gain exposure and experience

Refer : Annexure VI : CD of Architectural Conservation master-plan prepared by ACC

6.b Administrative arrangements for monitoring the property.

Refer : Appendix I : Proposals : i) Proposed management committees

6.c Results of previous reporting exercises.

A detailed chronological inventory of past interventions is desirable which includes referring archival records, referring old drawings for better understanding of the building. Some of conspicuous interventions are mentioned in the ACC report.

The following recorded measures have been undertaken in the past.

1. the statue of "progress" which was damaged in the 1969 due to lightening was restored to the original position with help of professionals from JJ College of Arts .

2. The lower half portion of stained glass in the dome drum that was broken and damaged was replaced during the centenary celebrations with acrylic sheets. These acrylic sheets were recently been redone in coloured glass with copper foil method in absence of traditional art techniques.

3. Scientific cleaning of the West facade was undertaken in 2000-02 by the ACC conservation team.

7. Documentation

7.a Photographs, slides and, where available, film/video

Refer : Photographs Archival (Photograph 1-8) page i to iv and Present day snaps (Photographs 9-73), pages v- xxxvii
Refer : Annexure VII : CD of Gothic in India, BBC Ch- 4 film
Refer : Annexure VIII : Glimpses of VT now CST'

7.b Copies of property management plans and extracts of other plans relevant to the property

Refer : Annexure VI : CD of Architectural Conservation Master plan prepared by ACC
Refer : Appendix I : Proposals
Refer : Appendix II : Drawings (especially Fig 35-36)

7.c Bibliography

1) The Builder, 1880-1893
2) The Building News, 1886-1893
3) Splendours of the Raj- Philip Davies, Dass Media Pvt Ltd
4) Spectacles of Empire – Jan Morris, Faber and Faber ltd.
5) Bombay to Mumbai , Rohatagi, P., Godrej P., and Mehrotra R
6) Imperial Designs and Indian Realities, Mariam Dossal
7) The Fort precinct in Bombay Vol I – Mehrotra R and Nest, G
8) ACC – Architectural Conservation Master plan
9) City of Gold, Tindall G, Penguin
10) Bombay the cities within – Dwivedi, S and Mehrotra R, India Book House
11) Heritage Conservation Policies Bombay, Dilawari V. Unpublished thesis, Univ of York
12) Gothic In India, BBC- Channel 4 Documentry. (film)
13) Bombay Gothic- Dr London C, India Book House.

7.d Address where inventory records and archives are held.

With Chief Engineers Works (CE-W), archives at CST and Maharashtra State Archives, National Rail Museum- New Delhi and National Archives, New Delhi.

8. Signature on behalf of property

AUTHORIZATION

1.
I____
the undersigned, hereby grant free of charge to Unesco the non-exclusive right for the legal term of copyright to reproduce and use in accordance with the terms of paragraph 2 of the present authorization throughout the world the photograph(s) and/or slides(s) described in paragraph 4.

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c) postcards – to be sold at the sites protected under the World Heritage Convention through national parks services or antiquities (profits, if any, will be divided between the services in question and the World Heritage Fund);
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Place	date	Signature, title function of the duly authorized

APPENDIX I : Proposals

Management Plan : The railways have an accepted conservation master plan prepared by ACC. This plan recommends means of carrying out repairs in a skilled and scientific manner. The recent works undertaken have been carried out following this master-plan. This master plans requires additional infra-structural support and needs to be viewed holistically. Hence the following accepted proposals which have framed for easier coordination. These are :

i) Proposed management committees

With the growing sensitivity to and recognition about heritage conservation, the Railways are aware that any proposed expansion due to growing needs is to be appropriately incorporated. Close coordination is essential between all of its departments.

At present there is no separate establishment for carrying out the specialized maintenance and reapirs of CST main building. The day-to-day maintenance is carried out under the direct supervision of the custodian who looks after all the civil engineering maintenance activities. The electrical and signal and telecommunication department carries out the maintenance of electrical & telephone installation respectively. A maintenance manual for the buildings on the best methods of conserving has been prepared by the ACC for the building.

As CST is a grade I heritage structure which is being nominated as a World Heritage Site the present status of maintenance was reviewed and some of the problems were identified. To overcome these administrative problems higher level of monitoring is proposed. Refer Section

The following managerial input is proposed to improve the maintenance standards:

a) High Powered Steering Committee (HPSC) is essential for reviewing any mega-plans around the CST (including its buffer zones) and outlining the broad principles and policies to protect the building and the context within which it is situated.

This committee shall consist of Government representatives including the General Manager, Central Railway, Municipal Commissioner, Municipal Corporation of Greater Mumbai- MCGM, Chairman, Mumbai Heritage Conservation Committee- MHCC, Traffic Commissioner, Chairman- Mumbai Port Trust (MPT), Secretary -Urban Development – Govt. of Maharashtra, Principal Secretary Tourism, INTACH Convenor, Conservation Architect, Mumbai Metropolitan Regional Development Authority (MMRDA) Commissioner & Jt Commissioner in-charge of Mumbai Urban Transport Plan(MUTP). If the need arises, individual experts can be consulted for opinions on specific issues.

The Committee in consultation with Mumbai Heritage Conservation Committee shall formulate detailed guidelines for CST World Heritage site buffer zone.

The High Powered Steering Committee and the two in-house committees described above shall assist in management. If technical assistance is required then external professionals and expert agencies with the appropriate expertise in architectural conservation and management planning shall be consulted.

b) Formation of an in-house Maintenance Committee.

The committee will consist of SDGM (Senior Deputy General manager), Chief Engineer– Works (CE- W), Chief Electrical Engineer – General (CEE – G), Chief Signal and Telecommunication Engineer (CSTE), and Chief Public Relation Officer (CPRO) who will be the coordinator. The committee will meet once in four months to review various aspects of maintenance of this building. This committee will also include a trained conservation architect as a permanent invitee. Depending upon the necessity, an architectural historian, urban designer and a structural engineer can be consulted to monitor the work.

The railway authorities have agreed that a qualified and experienced conservation architect will carry out any major works or interventions.

c) The Executive committee for day to day maintenance:

The day-to-day maintenance of this building is also a major activity. It involves daily cleaning of interiors, regular white washing repairing doors and windows, worn out electrical fittings and maintaining AC ducts, repairing water pipe lines, etc. This day to day maintenance will be monitored by a committee consisting of a Senior Divisional Engineer (coordination), Senior Divisional Electrical Engineer (General), and Senior Divisional signal and Telecommunication Engineer. This committee will undertake periodic inspection every two months. To ensure proper conservation during day to day activities a list of do's and don'ts shall be circulated for the guidance of the executive committee.

Central Railways have made the first steps in this direction by appointing ACC – Architectural Conservation Cell to prepare detailed a fabric status report or architectural conservation plan. Work based on this report was also undertaken namely the cleaning of the west facade in 2000-2002.

With formation of 7 new zones the Central Railways gets truncated, 3 of its eight divisions will become part of newly created zones, as and as a result there will be 37% reduction in number of people who serve the central railway in Mumbai. As a result there will be a reduction in the number of people working at the CST main building.

From the above it is clear that the Central Railway Headquarters at CST have already made a policy decision to be implemented in 3 years to keep all circulation areas like corridors, passages and stairs free of additions like partitions and storage cubicles.

ii) Disaster management plan :

It is proposed to conduct comprehensive disaster management training for the staff of the CST, to equip them better to cope with all situations.

Fire detectors (both smoke and heat) and alarms shall be installed.

iii) Proposed Tourist Development Plan

There has been a gradual increase in the awareness of the city's built heritage and this awareness is spreading and gaining momentum in a number of ways.

One such example of this is the numerous heritage walks that are conducted in the historic Fort area that forms the oldest fabric of Mumbai. These walks include the entire cluster of buildings that contribute to the visual and spatial quality of Mumbai, and are part of the proposed cluster of buildings to be included in the phased nomination later.

These buildings were designed with the aim of creating a unique image and skyline for Bombay, characterised by domes, towers, turrets, spires and steep pitched roofs. The panoramic aerial view of the many domes of different styles, shapes, sizes and colours is unique to Mumbai, and one of the city's special features. The central dome of CST is the finest amongst these.

The Railways are aware of the unique heritage that they possess in one of the largest and oldest rail networks in the world, and the numerous historic railway buildings and stations across the country. Several of these have been documented and listed, and advisory panels have also been drawn up for the protection of the same.

The railways regularly hold exhibitions on their premises show cased in trains highlighting their rich heritage, as well as the major political events of the past like the independence struggle. Displays of models of steam engines, old photographs and artifacts of the era are opened to the public, and are very well received by the public.

On the completion of 150 years of the GIPR this year, the Central railway organised a special run of the first train that left the CST 150 years ago. Original heritage coaches and engines that were restored and repaired were used for this journey from VT to Thana and the public enthusiastically received this.

These efforts show that there is a growing awareness and commitment to promote the unique heritage of the railways. There is a need to now consolidate and bring together all these measures, so as to create a comprehensive tourism development plan. Linking these events with the historic CST building is recommended, as this is the ideal location for such activities.

Several of the administrative offices of the Central Railway are closed over the weekend. During this period, a limited number of visitors can be conducted on special tours around designated parts of the premises. This would enable the beauty and grandeur of the CST to be shared by a greater number of people.

It is also recommended that the extensive and unique archives of the railways should be appropriately documented and its old drawings be restored first and then displayed or stored well in well maintained archives

There are several pockets of spaces that are currently under-utilised and vacant on the premises of both the building and the concourse and these would be the ideal location for these exhibits.

It is planned that on one of the under-utilised tracks, a heritage coach and engine temporarily berthed with exhibits, with a cafeteria, and souvenir shop on board, that would be a welcome attraction for tourists.

India has only one rail museum in Delhi. It is proposed that with the abundant land available in Carnac Bundar a regional Railway Museum should be built in Mumbai as the development of railways in the country was from here. This museum can also house the influence of railway and industrial revolution on the development of nation especially Mumbai. It is will be an added source of value to the tourist coming to see this great building.

Refer : appendix II : Drawings : Fig 33-34 : proposed Tourism Development Plan

iv) Proposals for Buffer Zones

The inscribed site falls under the delineated Fort area protected by Urban Development Department of Govt. of Maharashtra Sr No 633 in heritage regulation of Greater Bombay 1995. The Fort area precinct further has 14 sub precincts in it.

There are basic control guidelines for the entire Fort precinct however as the CST is being nominated for World Heritage Status it was imperative to revise the existing guidelines so to regulate the development around the CST to ensure that its setting is not altered.

This proposal has been sent to the Mumbai Heritage Conservation Committee(MHCC) who have responded favorably in principle to the request made by the Indian Railway to enforce additional regulations to safeguard the out standing universal value of CST and will review this proposal in detail shortly.

Refer Annexure V : letter from chairman - MHCC

In this proposal the existing **sub precinct No 11;** The BMC sub precinct of the Fort Precinct has been designated as <u>Buffer zone 1</u> within which the proposed inscribed site is located.

In addition, a third <u>Buffer zone 2</u> is proposed for the land under the Central railways. This includes the Carnac Bunder Area and the area abutting the Dr D.N Road.

Surrounding this zone (No 11) two additional sub precincts No 5 & 12 and part of sub precinct 14 has been proposed as additional <u>Buffer zone 3</u> to the main buffer.

Refer : Appendix II : Drawings : Fig 35,Proposal 1 ; for buffer zones

a) Guidelines for Buffer Zones:

Buffer Zone I: (sub-precinct 11) : is defined by DN Road on its west, W.Hirachand Marg on South , PD'Mello road on east railway tracks on the North.

The approximate area of this sub-precinct is 17.5 Hectare.

This zone includes many significant heritage structures like GPO (General Post office) Sr 258 which is a Grade I building, Fort St George Hospital, Sr 210 Grade III and Fragment of Old Fort Wall, Sr No 240 Grade I.

This area has been identified as precinct with prima facie objective being to protect the CST from haphazard insensitive developments i.e., from the East side of CST i.e., within Fort George Hospital complex which has abundant open space for development.

Guidelines are as follows:

- The Development plan of 1981-2001 has earmarked the CST area as C1 as commercial area this needs to be changed to an operational functional zone and not a commercial. No commercial activities are permissible
- This should be ideally a no development protective zone. However, if there is any proposal for public use then it is proposed to be restricted as low-rise development only (not higher the than the concourse ridge top or till the ridge level of the adjoining residential quarters of the hospital whichever is lower). Strict monitoring is essential for all proposed construction including street furniture, bus shelters, telephone booth etc.
- Grading of Fort St George Hospital is to be changed from grade III to Grade IIB and the whole complex is to be included in the grading as its present delineation in unclear whether the hospital or the complex building is listed.
- All encroachments abutting the heritage structures on PD Mello Road and on rear side of General Post Office are to be removed if illegal or rehabilitated in another location if they are legal and footpaths are to be restored back to its original condition. Grade I heritage site are to be free of any encroachments.
- Removal of all hoarding in this precincts. No new hoarding permissible.
- Color scheme of non listed buildings are strictly controlled, neutral colours like white or matching stone colour of adjoining heritage structures are permissible subject to permission from local stake holder (high powered steering) committee and MHCC.
- Any new development shall be predominately tiled roof top 75% of the floor area with a minimum gradient 25 degrees and partially flat terrace 25%. The new development is to be sensitive to existing heritages structures in mass, scale, architectural fenestration, and typology. New finishes if proposed are to be visually matching in appearance, colour and texture.
- Greens open space is be retained, no cuttings of old trees allowed.
- Unified street furniture and signage required for this zone. This is to be designed by professional designers and is to be approved by MHCC
- Listed buildings require skilful repairs with respect to authenticity.
- Any development or construction in this area requires Local Stake Holder Committees approval and then MHCC.

Buffer zone 2 (Railway land) : This belongs to the railways, the proposed guidelines are similar as those of sub precinct 11 (described above) .The idea is to avoid commercial, high rise development that shall congest the area, or obstruct or distract the view of CST from a distance or any location as a result be potential threat to the CST.

The present barren open space on the East can be suitably landscaped for public purpose rather than leaving it barren and unattended. The BPT gardens in Colaba is a successful example of converting a dumping site into one of the most tranquil and suitably landscaped sites of Mumbai.

The approximate area of this sub-precinct is 25.6 Hectare.

Buffer Zone 3:

Sub precinct 12 : The BMC precinct (approximate area: 47.11 hectares) **:** consists of predominant institutional building with large open spaces which is the essential character of this area. Many of these structures are listed individually and are hence protected.

Guidelines are as follows:

- This area is to be treated as equivalent to Grade II inclusive of all modern buildings. These modern buildings are allowed flexibility of modification subject to approval from MHCC and following the guidelines listed below
- No further development or development will be permitted in this zone which obstructs the view of CST from any road or through the maidans.
- Height of buildings to be frozen as increase in height mars the view of these historic landmarks thereby altering its cultural significance.
- Redevelopment proposals will be strictly monitored and only those buildings that are dilapidated or structurally weak and as certified by MHCC will be allowed reconstruction.
- Reconstruction of buildings will not be given advantage of extra height or FSI. Compensation for loss of FSI if any shall be in form of TDR (transfer of development right).
- Any works on such individually significant heritage buildings (Grade I) is to be carried out by qualified and experienced conservation professionals only.
- No amalgamation of plots allowed, no widening roads allowed as per existing rules.
- Cess rules overriding the heritage rules not applicable in this area.
- No encroachments or development of any kind is permissible in any of the open spaces.
- No hoarding or bill boards in this area
- No loud (in-terms of colour, material and size) signage allowed. Especially back lit & neon signage.
- No dish antenna, transmission tower, new water tanks, helipads etc, to be permitted on terraces and flat roofs which falls in cone of vision obstructing the view of these heritage buildings if viewed from ground level below.
- Modification to modern structures allowed but use of ultra modern materials like Glass, Aluminum panels which stands out as contrast to the historic character is to be restricted subject to the approval of MHCC or if its through an open national architectural competition as approved by Council of Architecture.
- In repairs, restoration and reconstruction of individually significant heritage structures like to like material is recommended as the best option as it is time tested. Other international rules of conservation like complete documentation, minimum intervention and retention of maximum original character should be adhered. All proposed additions should be sympathetic and harmonize with the old fabric in terms of mass, color, appearance and texture etc. However, subtle modern extensions are permissible subject to approval of MHCC
- No set backs allowed.

- This area is to be treated as a special tourist district and through traffic needs to be diverted to other arterial roads. Experimentation in traffic management like pedestrianisation of streets should be encouraged in particular D.N Road may be considered. Such an intervention shall result in less pollution which will help in preserving these landmarks
- No industrial activity or commercial activity, which pollutes or congests the area to be permitted respectively.
- Proposals regarding flyovers, subways, underground metros or parking is normally to be not allowed but may be considered keeping in mind above restrictions
- All encroachments – illegal structures to be demolished and monitored strictly.
- No box grills, no projecting AC or splits units to be allowed on main facades or facades abutting the road.
- Original teakwood doors and windows and fan lights which contributes to the architectural character be retained and not be replaced with metal or other materials.

Part of Sub precinct 14 : Oval precinct :

Guidelines are as follows:

- No development zone i.e., no new construction is to be allowed.
- all encroachments/illegal structures in and around Azad maidan are to be removed especially because this forms a forecourt to CST and BMC building together.
- The compound wall of this maidan is to be made perforated like that of the other maidans
- Parking of tourist buses that obstructs the view of CST from eye level or from across the maidan are to be removed from here.

Sub precinct 5: Esplanade Precinct

This constitutes planned area that was constructed after demolition of Fort walls in late 19^{th} century and early 20^{th} cent. This precinct has significant public, institutional and commercial buildings with few residential buildings. The development on East façade facing Dr D N Road constitutes of significant commercial buildings having designed and significant front facades with design controls in built like a mandatory arcade, stipulated cornices and floor heights, no set backs etc. The buildings facing the maidans on the west are institutional types with few palatial residences. In between these two stretches are located the schools and commercial/office buildings having traditionally a residential flat on its top floor belong to the caretaker.

This area has a distinct character due to its : planning (with open alleys), its typology and architectural language of buildings which merits protection.

Guidelines are as follows:

- This area is to be treated as equivalent to a Grade II inclusive of all modern buildings. These modern buildings are allowed flexibility of modification subject to approval from MHCC and following the guidelines listed below
- No further development or development will be permitted in this zone, which obstructs the view of CST from any road or through the maidans.

- Height of buildings to be frozen to existing heights as increase in height mars the view of these historic landmarks thereby altering its cultural significance.
- Redevelopment proposals will be strictly monitored and only those buildings that are dilapidated or structurally weak and as certified by MHCC will be allowed reconstruction.
- Reconstruction of buildings will not be given advantage of extra height or FSI. Compensation for loss of FSI if any shall be in form of TDR (transfer of development right).
- No amalgamation of plots or FSI or TDR to be allowed, no widening roads allowed as per existing rule. No set backs allowed.
- Cess rules overriding the heritage rules not applicable in this area.
- No development of any of the open spaces permissible, all encroachments to be removed.
- No hoarding or bill boards in this area
- No loud (in-terms of colour, material and size) signage allowed. Especially back lit & neon signage.
- No dish antenna, transmission tower, new water tanks, helipads etc, to be permitted on terraces and flat roofs which falls in cone of vision obstructing the view of these heritage buildings if viewed from ground level below.
- Modification to modern structures allowed but use of ultra modern materials like Glass, Aluminum panels which stands out as contrast to the historic character is to be restricted subject to the approval of MHCC.
- In repairs, restoration and reconstruction of individually significant listed heritage structures like to like material is recommended as the best option as it is time tested. Other international rules of conservation like complete documentation, minimum intervention and retention of maximum old should be adhered. All proposed additions should be sympathetic and harmonize to the old fabric in terms of mass, color, appearance and texture etc. However, subtle modern extensions are permissible subject to approval of MHCC
- No industrial activity or commercial activity which pollutes or congests the area to be permitted respectively.
- Proposals regarding flyovers, subways, underground metros or parking is normally to be not allowed but as special case if it benefits the city and the structures, the proposal can be considered.
- No box grills, no projecting AC or splits units to be allowed on main facades or facades abutting the road.
- All alleys spaces between two building should be kept free of encroachments like services , shops etc.
- Flooring of arcade is to be paved and to be redone in basalt only.

ii) Potential phase II : Nomination of ensemble of other significant public buildings built in restructured fort area as potential world heritage site

Nominating CST is the first step, however later on the entire ensemble of the restructured Fort area with Gothic Revival buildings can be considered as potential cluster nomination so to protect it holistically.

According to noted architectural historian of Mumbai ; Dr Christopher London in his published paper “Unbuilt projects in the restructure Fort precinct:

> *“….When Bombay began to demolish the fort walls on June 17 1862, a large tract of open land was made available for new buildings. The man empowered to plan what was built there was Sir Henry Bartle Edward Frere (1815 -1884). He took office as Governor of Bombay in April of 1862. At that time he drew up a master plan for the city's growth and he proposed that* ***fourteen buildings be constructed****. They were, eventually. This vigorous course of expansion required the choice of an architectural style to be made by those directing the project”.*

Some of the buildings that were eventually constructed at the proposed sites include: New Secretariat, The University buildings (namely the Senate House/Convocation Hall and Library building), the High Court, the Public Works Department, the Post & Telegraph office (CTO), Magistrates court, Small causes court and CST. The other were New Customs House, European Hospital, barracks, Government servants quarters.

The breaking of the historic fort walls was a bold step which released the pressure within the fortified area leading to better quality of life and setting a positive trend in planning which allowed public buildings with distinct vocabulary to be erected which has created a distinct image of the city which is worthy of preservation now.

Its this concept of Bartle Frere along with opens space in forecourt of which CST is a part that needs an overall inscription to be viewed holistically. The other sub precincts within the Fort precinct shall serve as a buffer zone to this plan.

Refer : Appendix II : Drawings : Proposal 2 ; Potential Phase II : Nomination of ensemble of other significant public buildings in the restructured Fort area.

- End notes :

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[i] Extracts from Dr London C's article "Un-built projects in the restructured Fort precinct", The Fort Precinct in Bombay, Vol I Edited Mehrotra R and Nest G. 1994

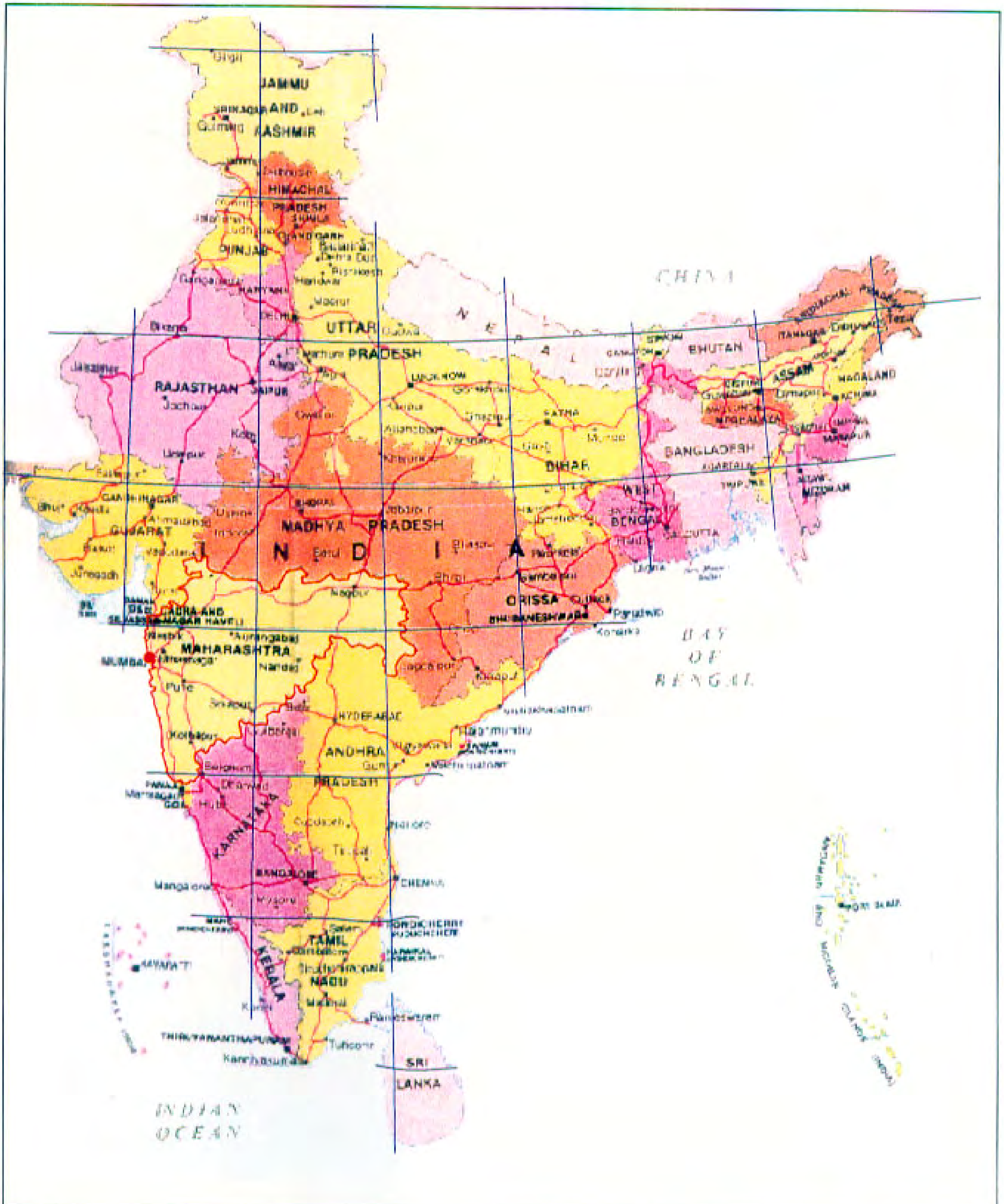
[ii] Dossal Marriam, Imperial designs and Indian Realities

[iii] Dr C. London – Architect of Bombay's Hallmark style – Stevens and the Gothic Revival. From Bombay to Mumbai, Marg publication

[iv] *Davies P, Splendors of the Raj*

[v] *Davies P, Splendors of the Raj*

[vi] Dr C. London – Architect of Bombay's Hallmark style – Stevens and the Gothic Revival. From Bombay to Mumbai, Marg publication.



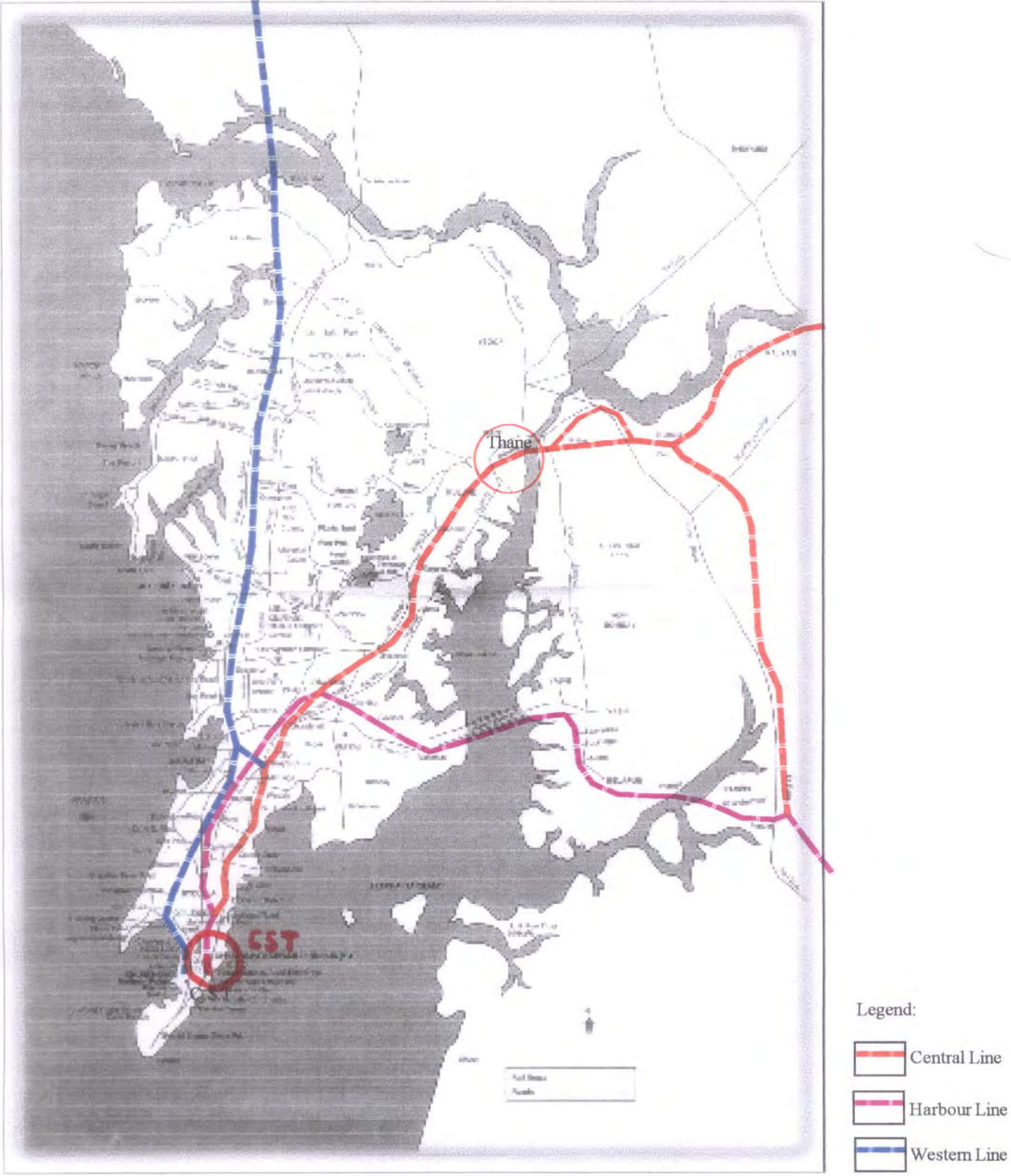
ource : Geographical Atlas of India

Fig1. MAP OF INDIA

NORTH

MAP OF MUMBAI

North



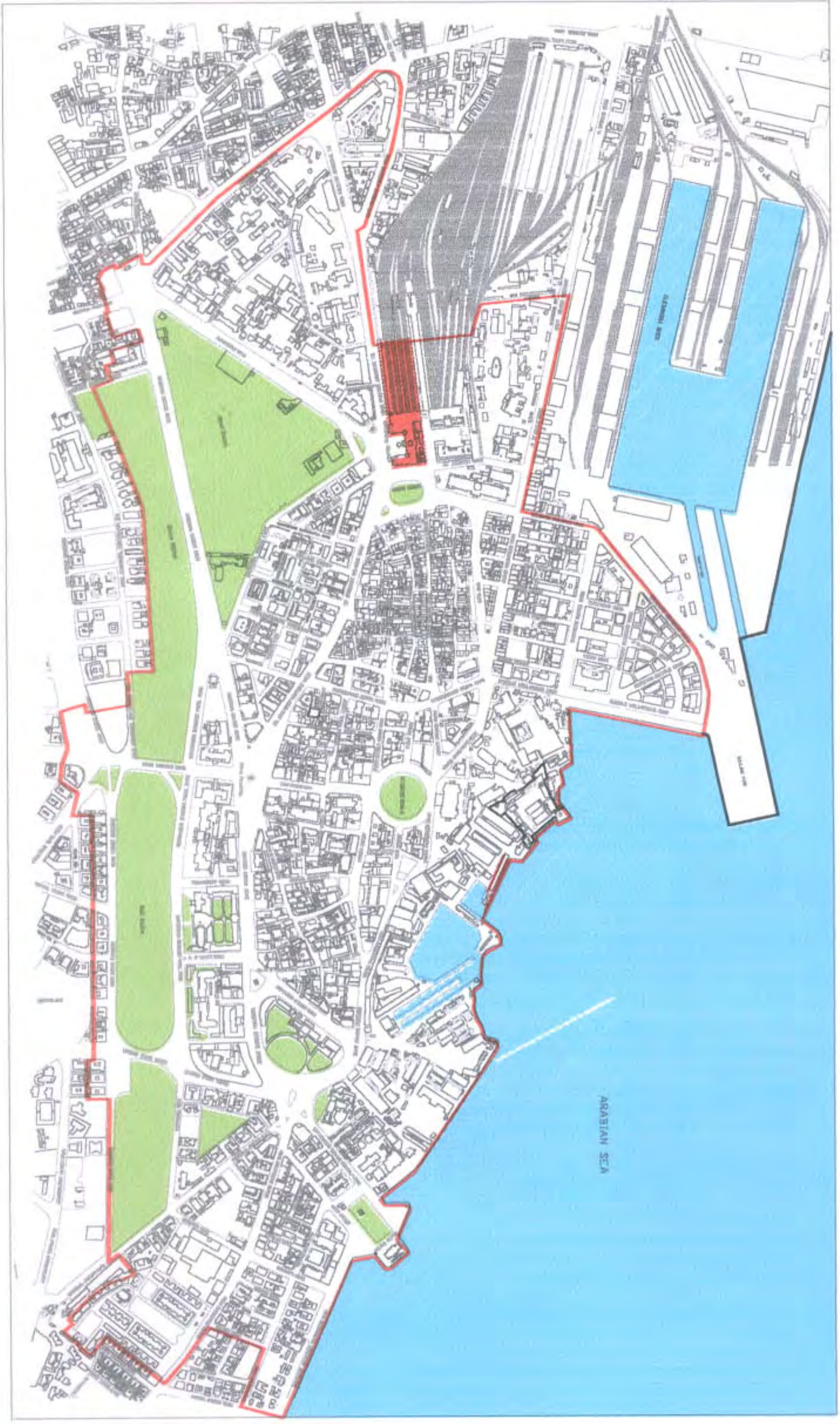
ANALYSIS :

This map of Mumbai shows its linear tructure and the three railway routes: the Central, Western and Harbour lines that form the lifeline of the city.

Also marked is the first historic route of the GIPR from Bori Bunder (CST) to Thana.

MAP OF MUMBAI

North



Precinct Boundary

Open Spaces / Green Areas

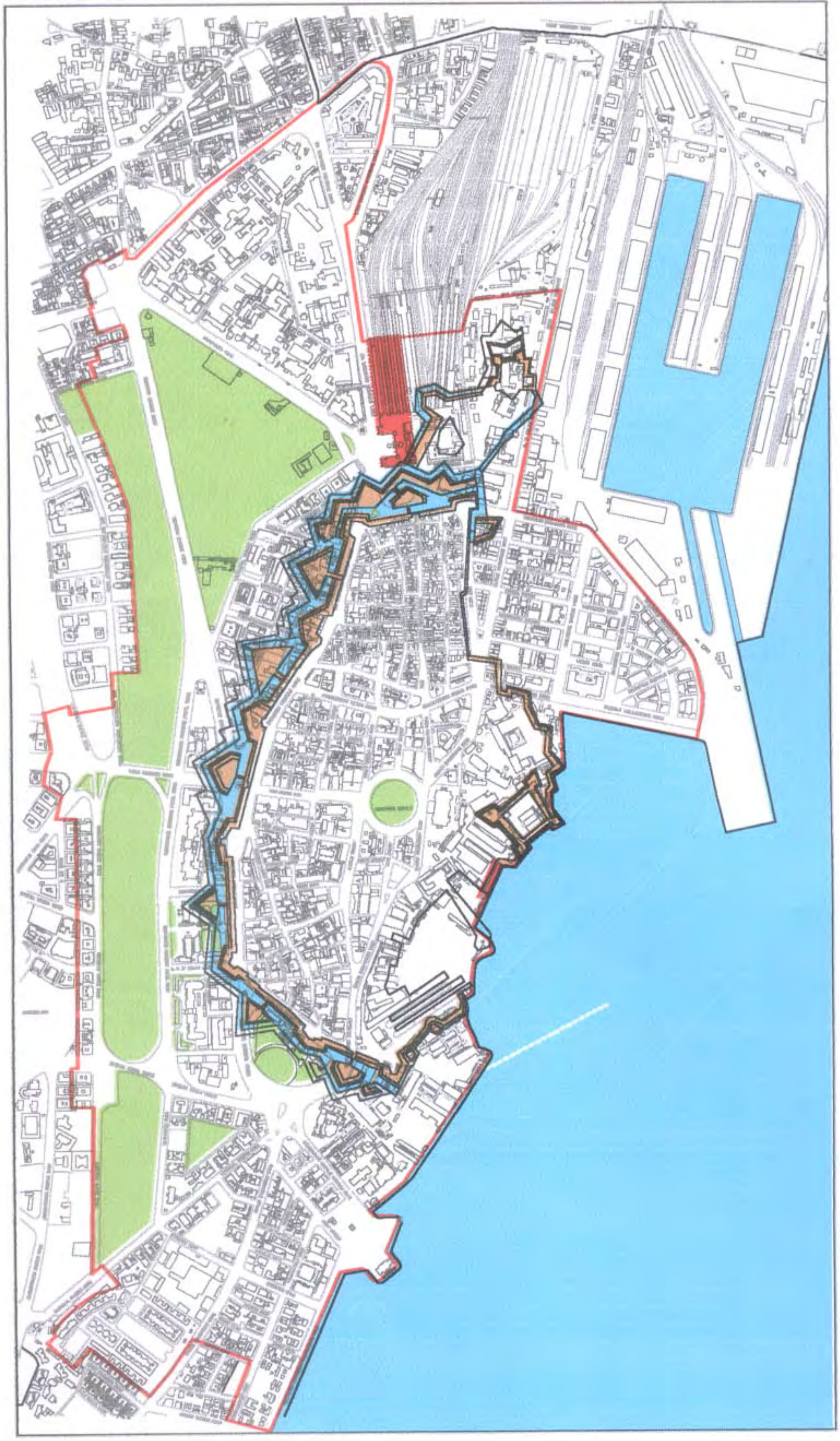
Chattrapati Shivaji Terminus

Note: The plan marks the location of CST within the Fort Precinct, the oldest building fabric of Mumbai. The plan also marks out the historic Bombay Castle, the open maidans that formed the foreground for the buildings, the dock area and the strategic eastern waterfornt.

Source : Plan - Megavision Technologies (P) Ltd. ,Fort Precinct & Sub Precinct boundaries : Heritage Regulations for Greater Bombay 1995 ,Sr.no 633

LOCATION PLAN- WITHIN THE FORT PRECINCT

North



Legend:

Precinct Boundary

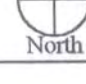
Fort Walls (demolished in 1860's)

Chattrapati Shivaji Terminus

Note: The plan shows the original fort walls in relation to the existing Fort Precinct, showing how the breaking of ramparts led to the expansion and transformation of the city.

Source : Plan - Megavision Technologies (P) Ltd. ,Fort Precinct & Sub Precinct boundaries : Heritage Regulations for Greater Bombay 1995 ,Sr.no 633

FORTIFICATION OF MID 19TH CENTURY SUPERIMPOSED ON PRESENT FORT PRECINCT



Legend

Open Spaces / Green Areas

Chattrapati Shivaji Terminus

Public buildingsin the restructured fort area.

Note: The plan marks out the significant public buildings that were built after the demolition of the fort walls, leading to the expansion of the fort area. The CST forms a part of this series of buildings that led to a changed architectural image for Mumbai.

Source : Plan - Megavision Technologies (P) Ltd. ,Fort Precinct & Sub Precinct boundaries : Heritage Regulations for Greater Bombay 1995 ,Sr.no 633

PUBLIC BUILDINGS IN THE RESTRUCTURED FORT AREA- LATE 19TH C - 20TH C

North

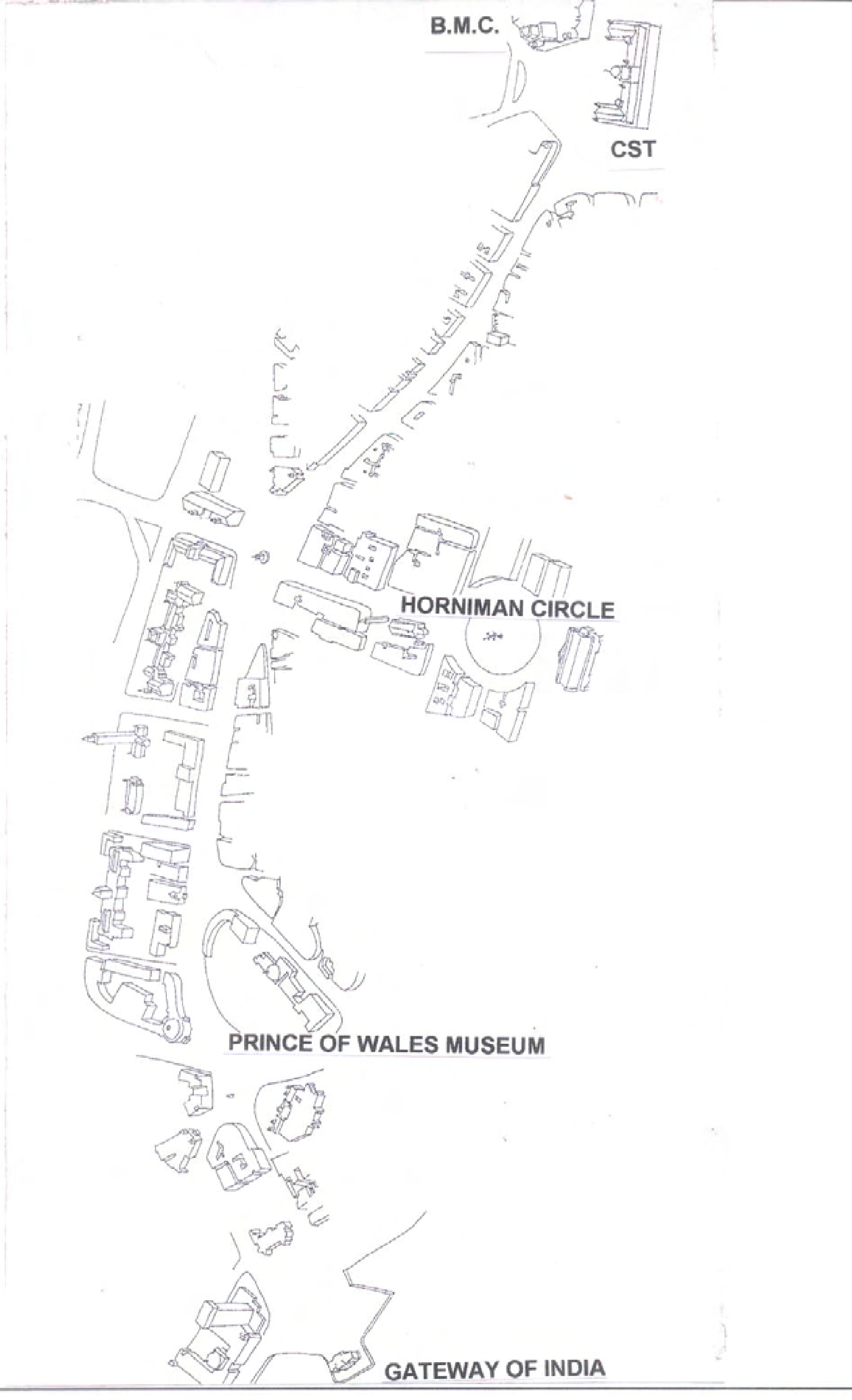
- Open Spaces / Green Areas
- Chattrapati Shivaji Terminus
- Neo- Gothic
- Indo Gothic / Indo saracenic

Note: The plan shows the Fort Precinct with the significant Neo-Gothic buildings marked. CST is a part of this cluster that contribute significantly to Mumbai's architectural image, and that merit conservation.

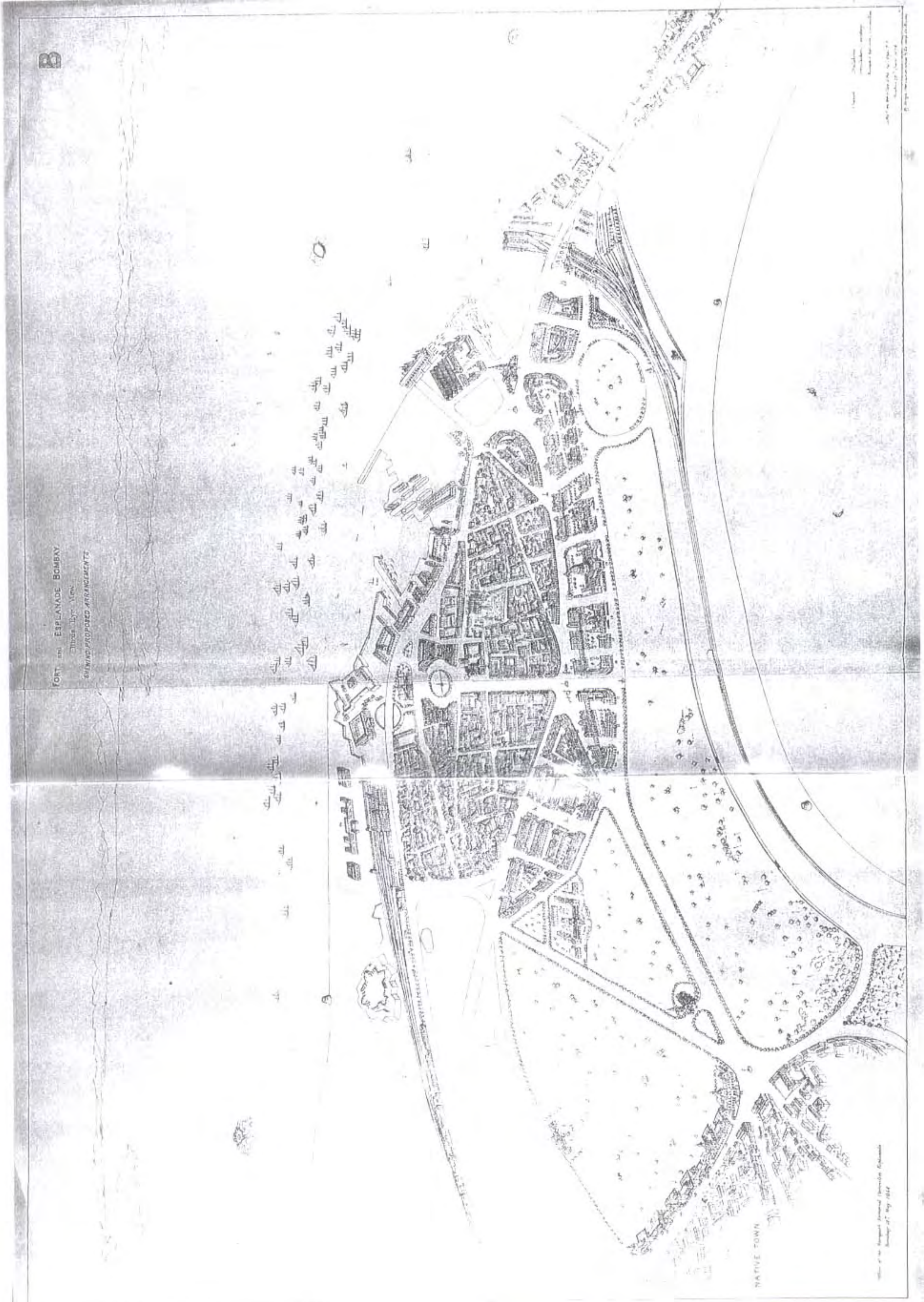
Source : Plan - Megavision Technologies (P) Ltd. ,Fort Precinct & Sub Precinct boundaries : Heritage Regulations for Greater Bombay 1995 ,Sr.no 633

SIGNIFICANT NEO-GOTHIC BUILDINGS IN THE FORT PRECINCT

North



CONJECTURED AXONOMETRIC VIEW OF RESTRUCTURED FORT AREA



* This view was drawn in the office of the Rampart Removal Committee, under the supervision of Trubshaw, the Committee's architectural Secretary.

FORT AND ESPLANADE OF BOMBAY

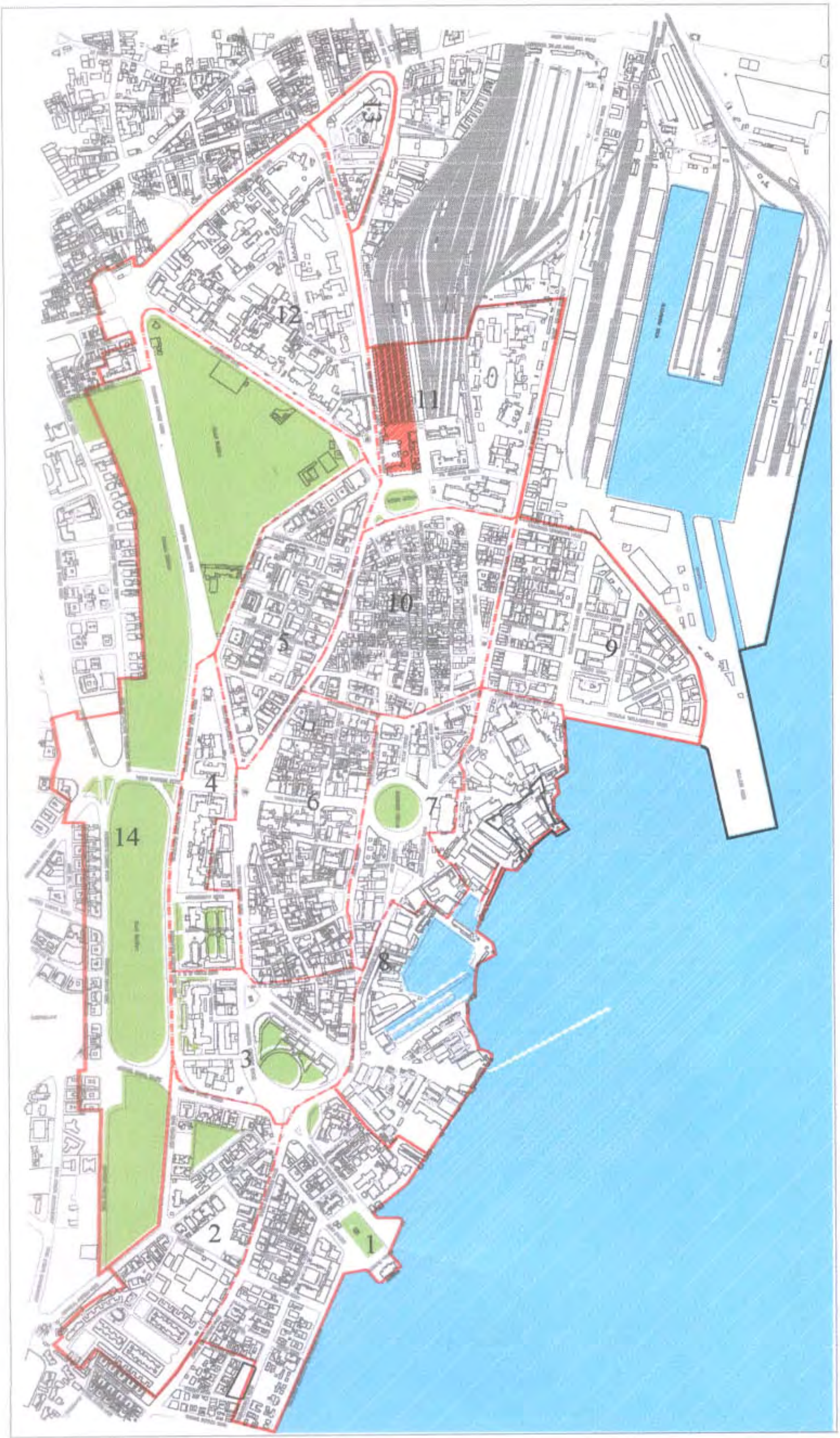
BIRD'S EYE VIEW SHOWING PROPOSED ARRANGEMENTS

ANALYSIS :

The plan illustrates the strategic location of the CST in close proximity to the docks and eastern waterfront, that was the centre of trade and commerce for Mumbai;between the fort precinct and the erstwhile native town, where the building stands as an important landmark, and focus of travel to and from the city;and as a symbol of empire and British sovereignty, seen from the open maidans in front, and further west, from the open sea and ships beyond.

North

VANTAGE LOCATION OF CST



Legend:

01. Gateway Precinct
02. Majestic Precinct
03. Museum Precinct
04. University Precinct
05. Esplanade Precinct
06. Fountain Precinct
07. Horniman Precinct
08. Naval Dock Precinct
09. Ballard Pier Precinct
10. BazarGate Precinct
11. C.S.T Precinct
12. B.M.C.Precinct
13. Crawford Market Precinct
14. Oval Precinct.

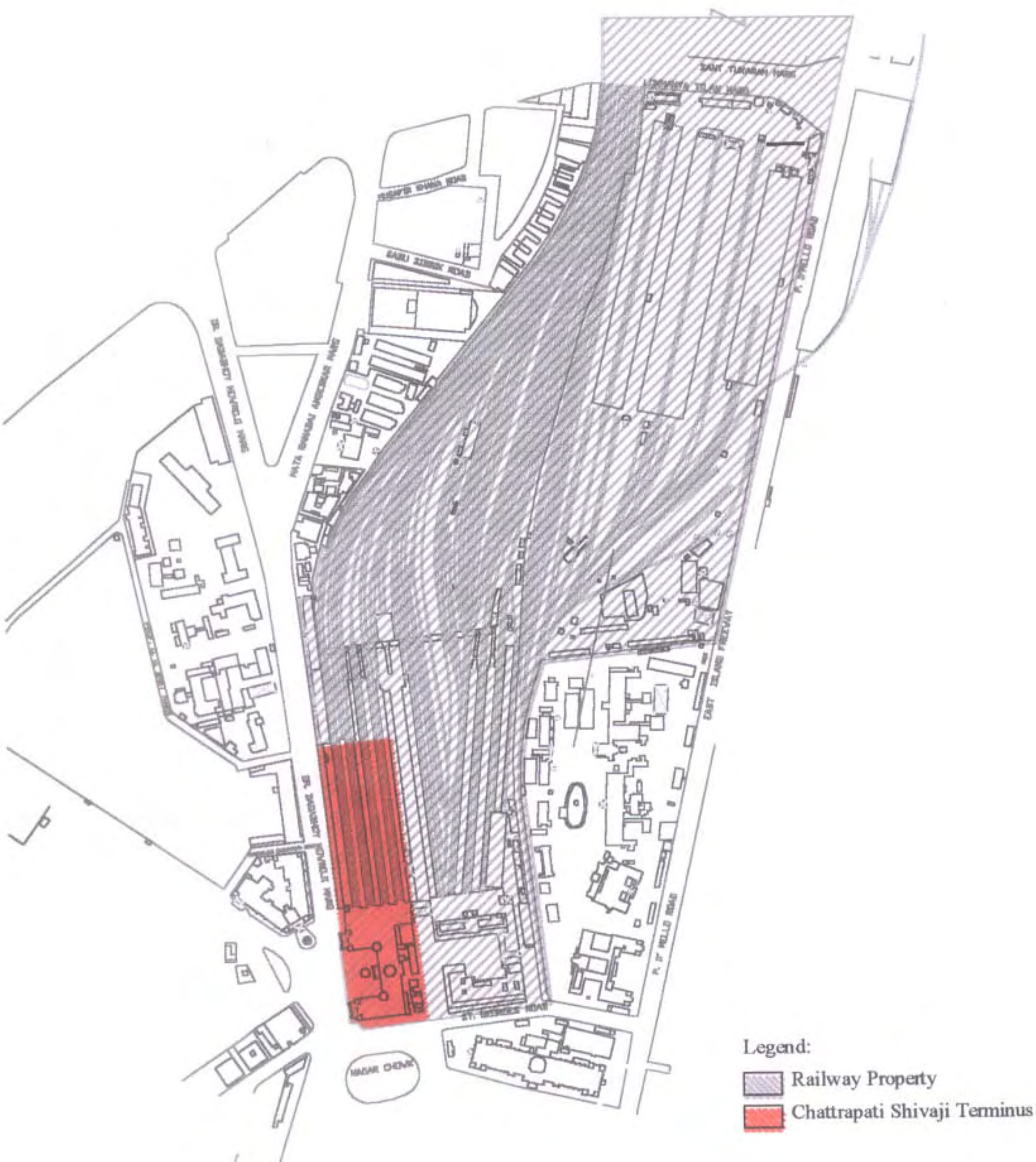
Precinct Boundary
Sub- Precinct Boundary
Open Spaces
Chattrapati Shivaji Terminus

Note: The plan marks out the Fort Precinct within its boundaries, as stated by the government of Maharashtra Urban Development Department's Heritage Regulations for Greater Bombay 1995. The regulations identifies the Fort Precinct and its 14 sub-precincts as a conservation zone requiring special legislation. Development Guidelines have been formed for sub-precinct 9 (Ballard Estate Precinct), and its intended to frame guidelines for all sub-precinct as well as the Fort-Precinct.

Source : Plan - Megavision Technologies (P) Ltd. ,Fort Precinct & Sub Precinct boundaries : Heritage Regulations for Greater Bombay 1995 ,Sr.no 633

THE FORT PRECINCT AND ITS SUB PRECINCT: A CONSERVATION ZONE

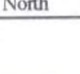
North

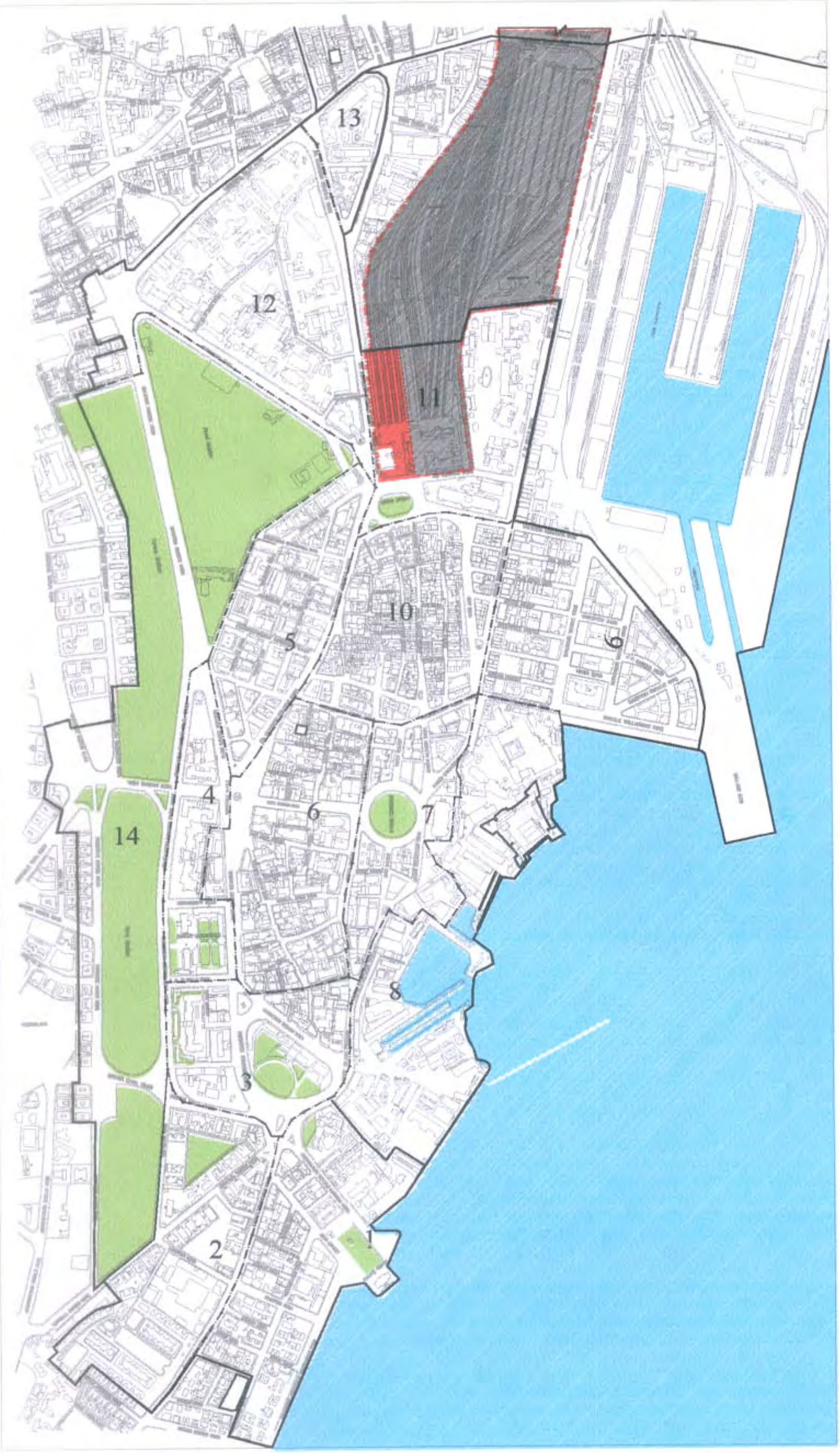


Note: The plan shows the site of the Chhatrapati Shivaji Terminus Bldg Administrative Office as well as concourse marked within its boundaries. This part that has been delineated is the original building and concourse designed by architect F.W.Stevens

Source : Plan - Megavision Technologies (P) Ltd. ,Fort Precinct & Sub Precinct boundaries : Heritage Regulations for Greater Bombay 1995 ,Sr.no 633

SITE PLAN WITH BOUNDARY





Legend:

01. Gateway Precinct
02. Majestic Precinct
03. Museum Precinct
04. University Precinct
05. Esplanade Precinct
06. Fountain Precinct
07. Horniman Precinct
08. Naval Dock Precinct
09. Ballard Pier Precinct
10. BazarGate Precinct
11. V.T. Precinct
12. B.M.C.Precinct
13. Crawford Market Precinct
14. Oval Precinct.

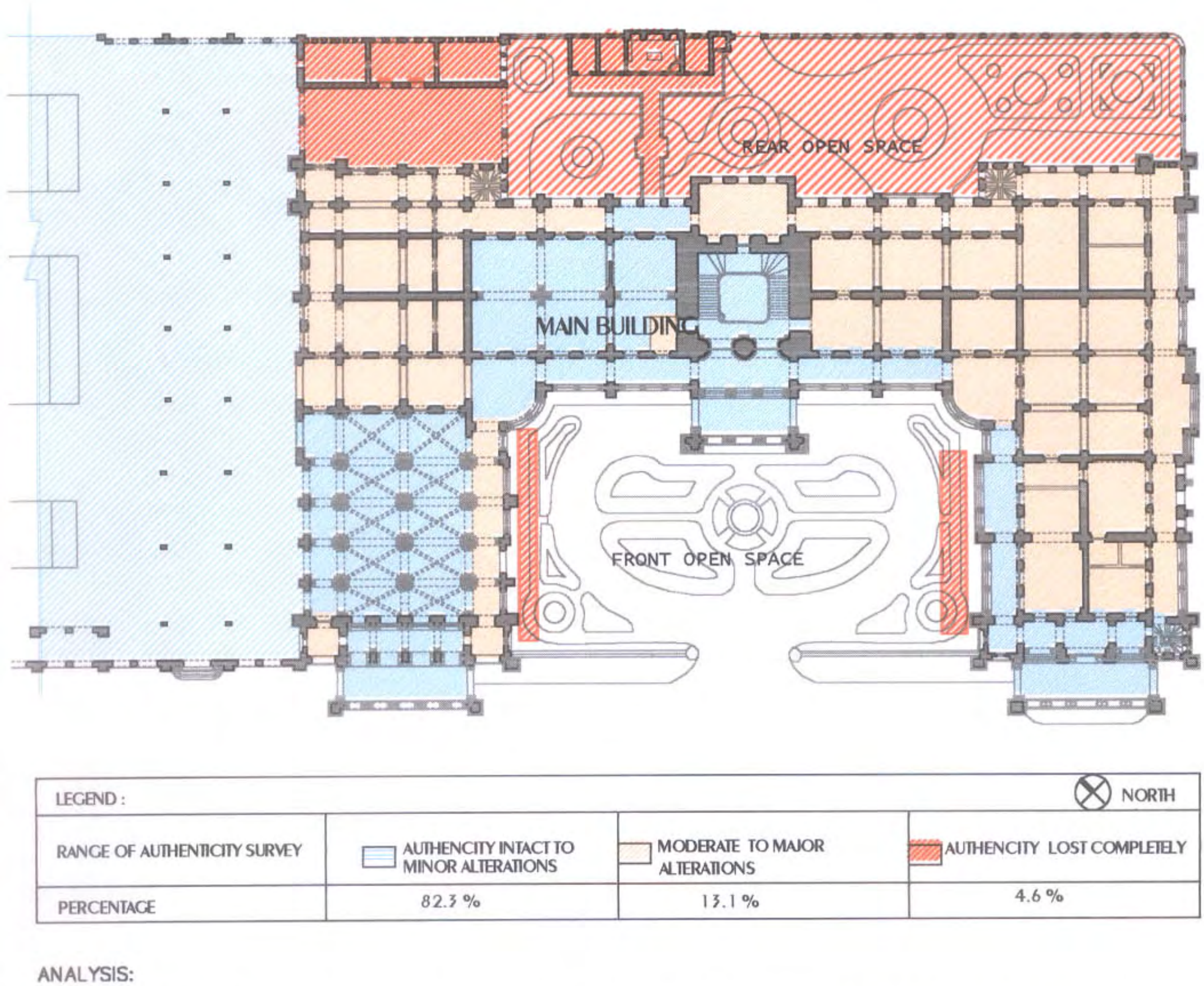
Precinct Boundary
Sub- Precinct Boundary
Open Spaces
Delineated For World Heritage Inscription.
Railway Property
Boundaries Of Delineated Area.

Note: The plan marks the proposed area for inscription of World Heritage Site status, in relation to the entire Railway property. the C-shaped administrative office building, the original 6 platforms and concourse have been proposed for inscription.

Source : Plan - Megavision Technologies (P) Ltd. ,Fort Precinct & Sub Precinct boundaries : Heritage Regulations for Greater Bombay 1995 ,Sr.no 633

PROPOSED AREA FOR INSCRIPTION OF WORLD HERITAGE SITE

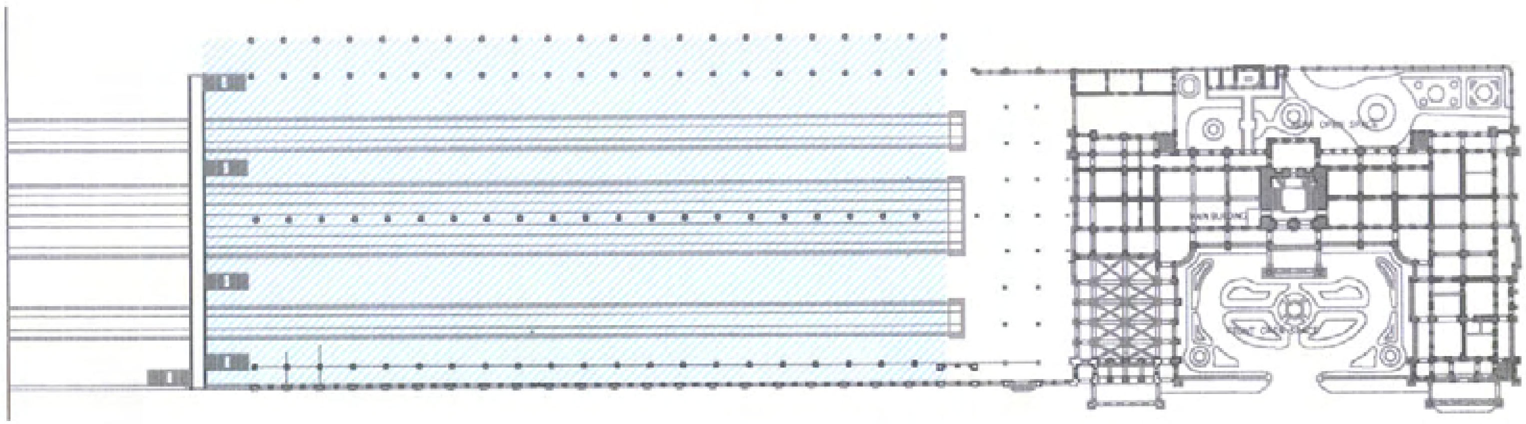
North



LEGEND :			NORTH
RANGE OF AUTHENTICITY SURVEY	AUTHENCITY INTACT TO MINOR ALTERATIONS	MODERATE TO MAJOR ALTERATIONS	AUTHENCITY LOST COMPLETELY
PERCENTAGE	82.3 %	13.1 %	4.6 %

ANALYSIS:

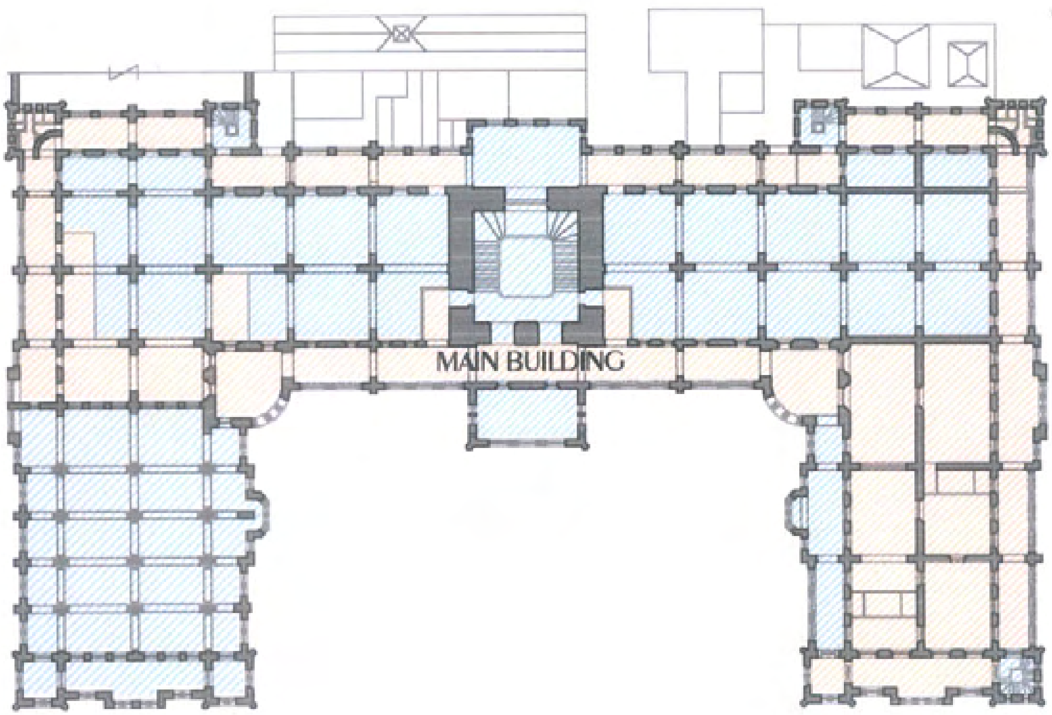
* The ground floor has maximum area accessible to public,and hence shows moderate to major changes in authenticity
* A considerable increase in the number of users has led to several additions, mostly in the appurtenant open spaces



LEGEND :			NORTH
RANGE OF AUTHENTICITY SURVEY	AUTHENCITY INTACT TO MINOR ALTERATIONS	MODERATE TO MAJOR ALTERATIONS	AUTHENCITY LOST COMPLETELY
PERCENTAGE	100%	——	——

ANALYSIS:

* The concourse shows minor alterations to authenticity, retaining original structural integrity, roofs, openings and some ornamentation.

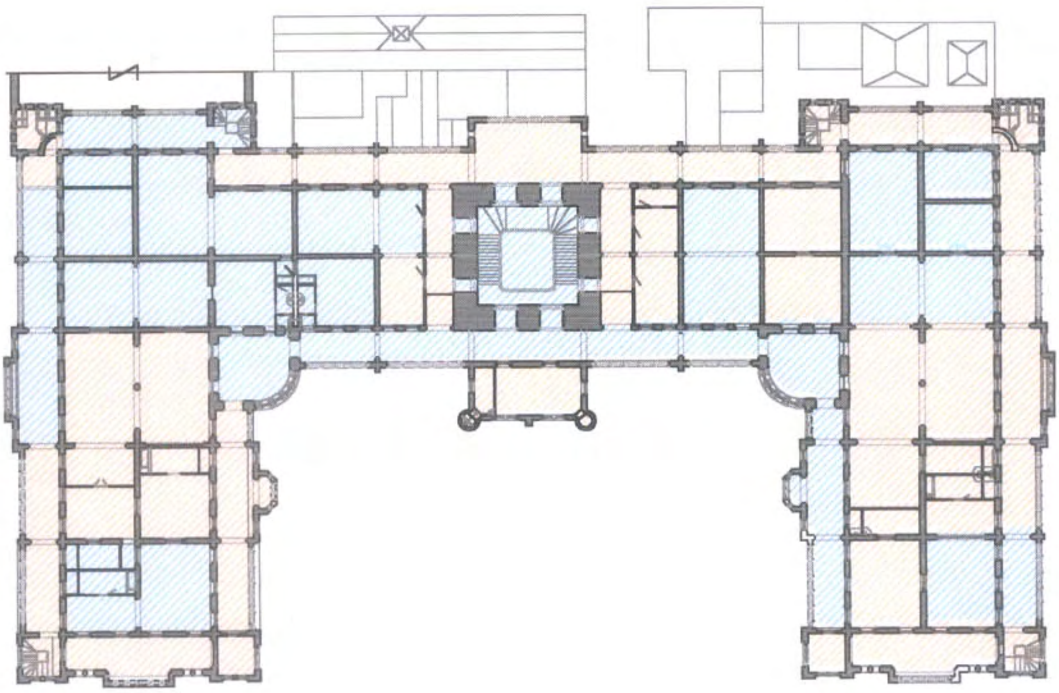


LEGEND :			NORTH
RANGE OF AUTHENTICITY SURVEY	AUTHENCITY INTACT TO MINOR ALTERATIONS	MODERATE TO MAJOR ALTERATIONS	AUTHENCITY LOST COMPLETELY
PERCENTAGE	56 %	44 %	——

ANALYSIS :

* Corridors converted to cabins show alterations in authenticity.

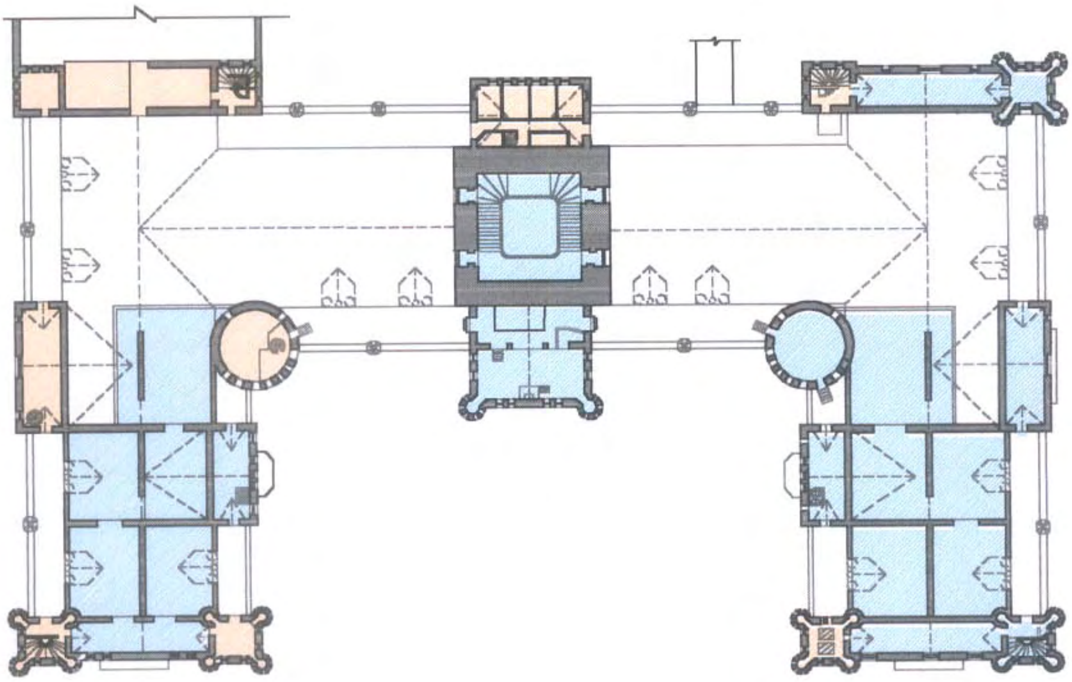
Up-gradation of services required to restore authenticity.



LEGEND :			NORTH
RANGE OF AUTHENTICITY SURVEY	AUTHENCITY INTACT TO MINOR ALTERATIONS	MODERATE TO MAJOR ALTERATIONS	AUTHENCITY LOST COMPLETELY
PERCENTAGE	48 %	52%	———

NOTES :

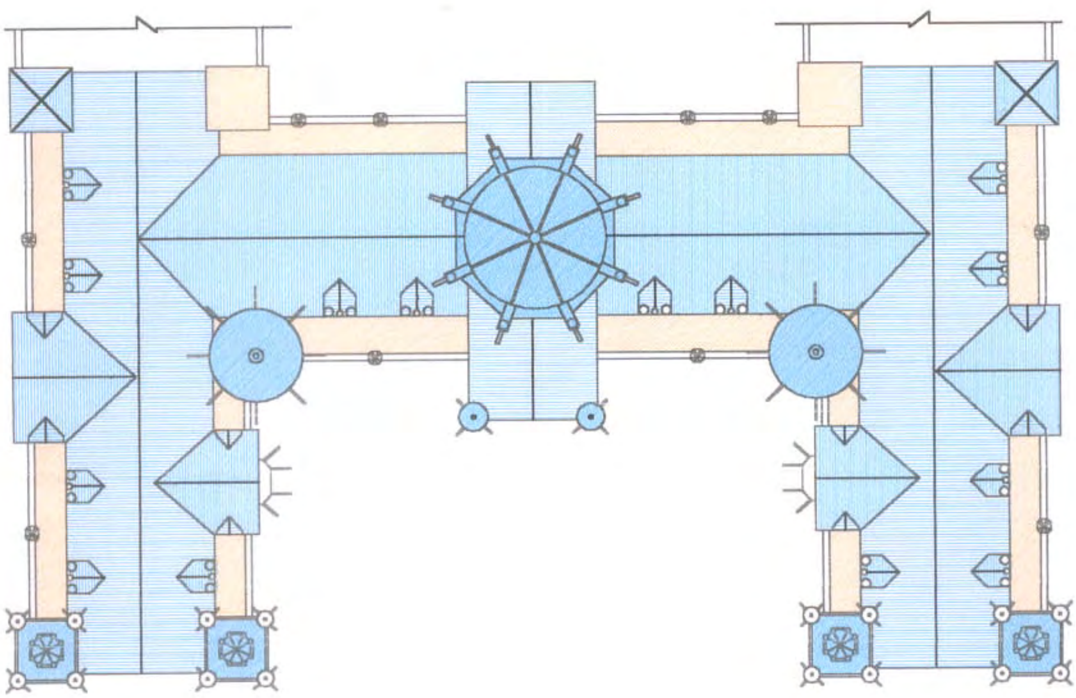
* Corridors converted to cabins show alterations in authenticity. The open plan work areas show only minor alterations.



LEGEND :			⊗ NORTH
RANGE OF AUTHENTICITY SURVEY	AUTHENCITY INTACT TO MINOR ALTERATIONS	MODERATE TO MAJOR ALTERATIONS	AUTHENCITY LOST COMPLETELY
PERCENTAGE	83.3%	16.7%	———

NOTES:

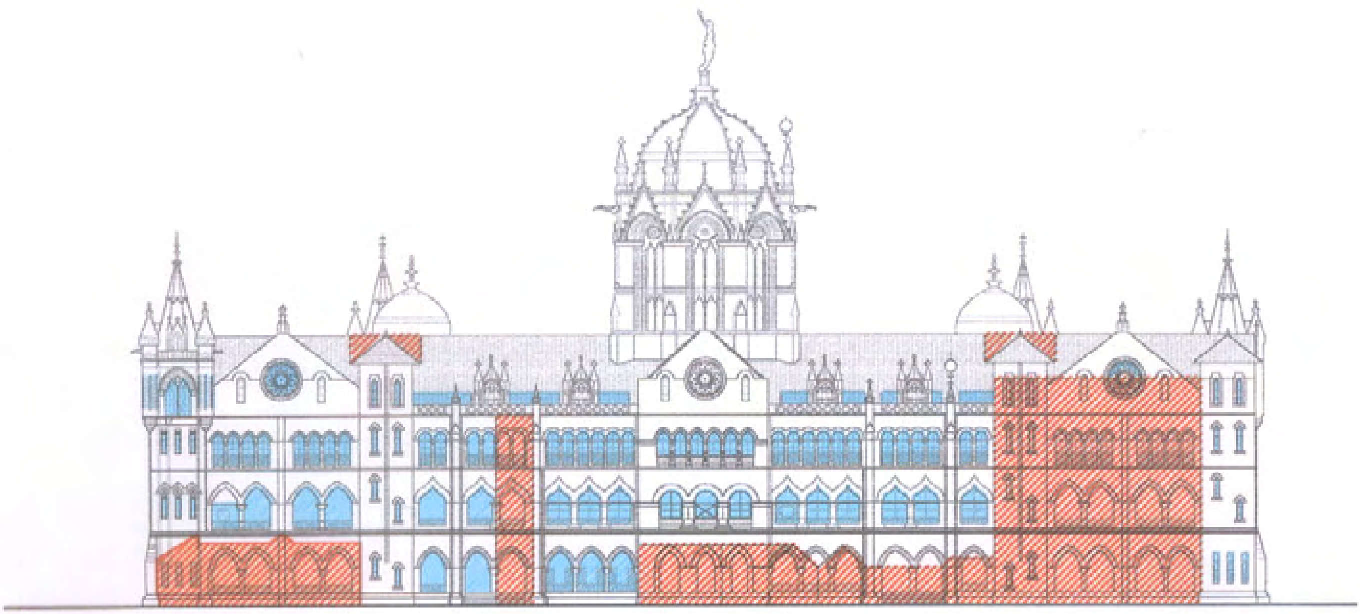
* Attic areas that are largely used for storage,show minor alterations to authenticity.
* Sensitive adaptive re-use to accomodate expansion of users will help restore authenticity.



LEGEND :			NORTH
RANGE OF AUTHENTICITY SURVEY	AUTHENCITY INTACT TO MINOR ALTERATIONS	MODERATE TO MAJOR ALTERATIONS	AUTHENCITY LOST COMPLETELY
PERCENTAGE	35 %	65%	———

NOTES :

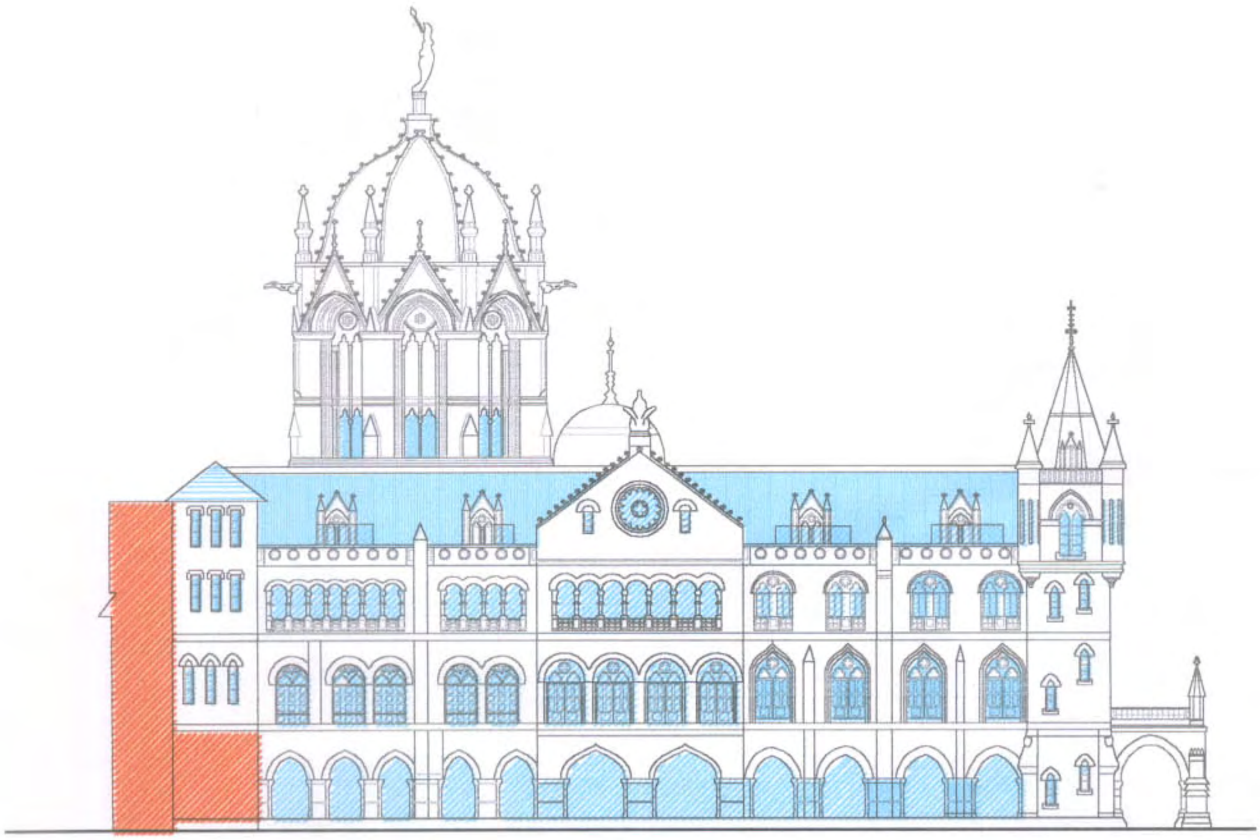
* Roofs show minor alterations.Maintenance,repair and up-gradation of services required to restore authenticity.



LEGEND :			NORTH
RANGE OF AUTHENTICITY SURVEY	AUTHENCITY INTACT TO MINOR ALTERATIONS	MODERATE TO MAJOR ALTERATIONS	AUTHENCITY LOST COMPLETELY
PERCENTAGE	48.8 %	22.2 %	29 %

ANALYSIS :

* This elevation being the nearest,shows maximum loss of authenticity, with several additions and alterations

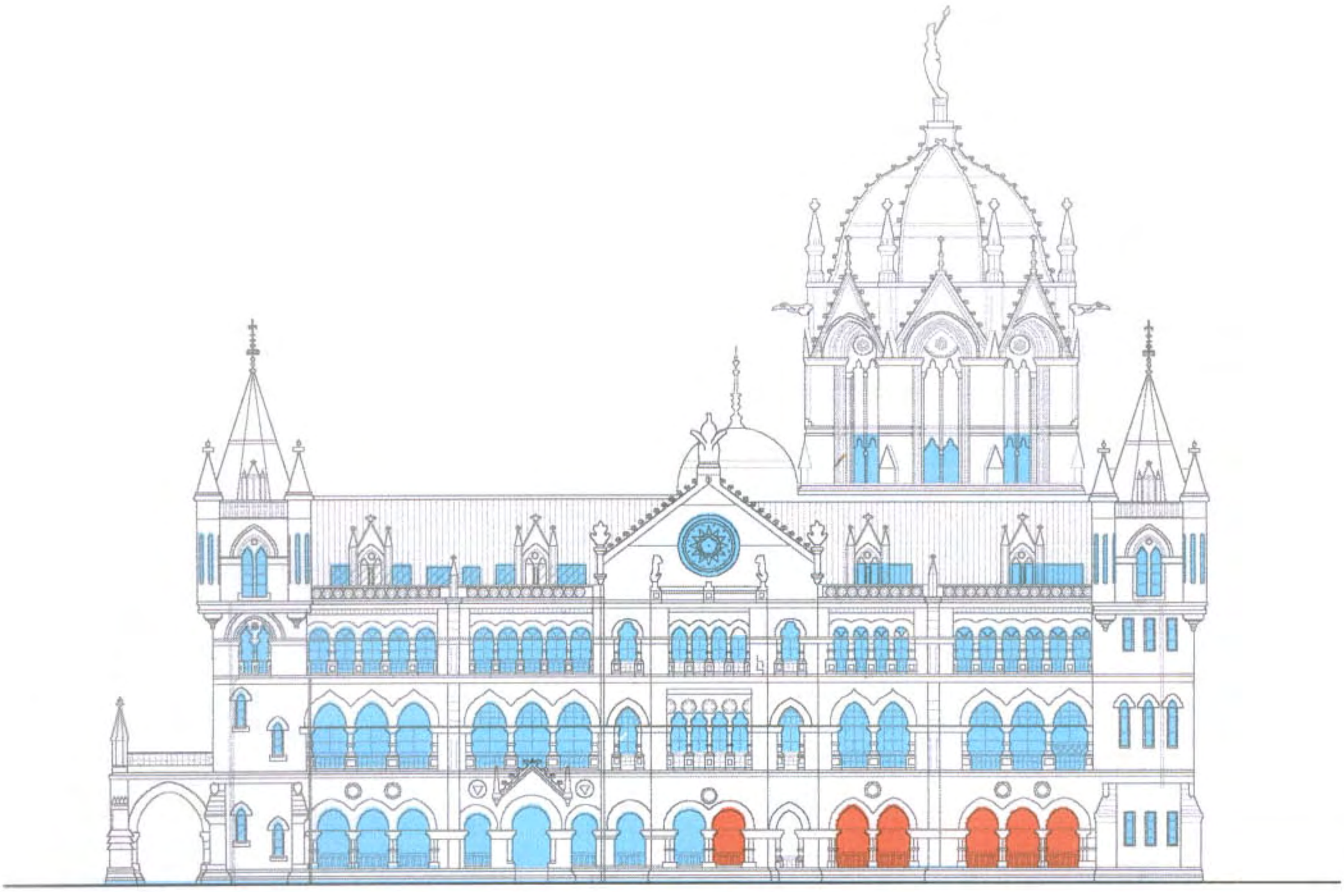


LEGEND :			NORTH
RANGE OF AUTHENTICITY SURVEY	AUTHENCITY INTACT TO MINOR ALTERATIONS	MODERATE TO MAJOR ALTERATIONS	AUTHENCITY LOST COMPLETELY
PERCENTAGE	62 %	36%	2 %

ANALYSIS :

* This elevation can be viewed only from a distance, as it abuts onto the concourse.

* Minor alterations that are reversible, are seen on this elevation

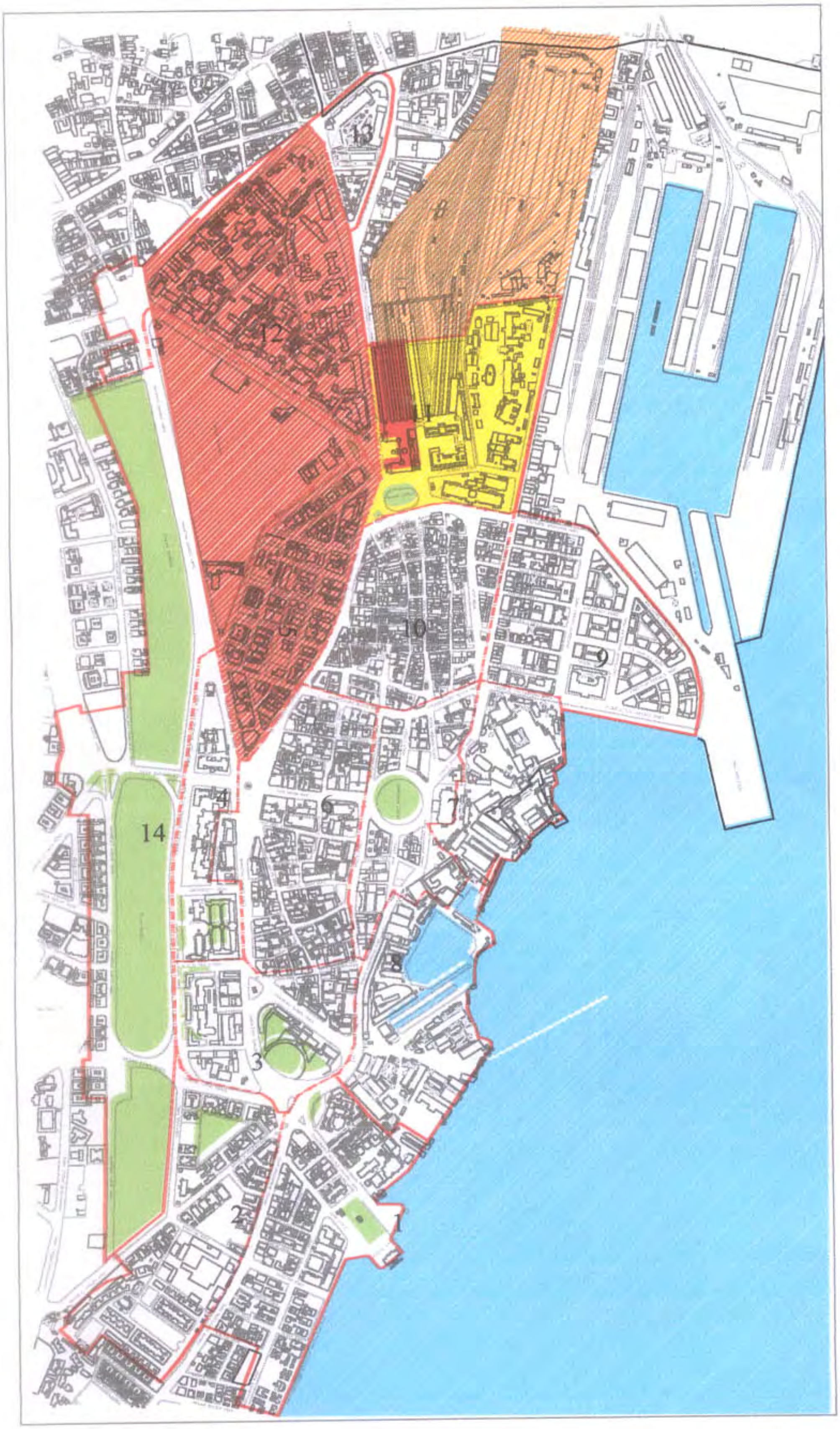


LEGEND :			NORTH
RANGE OF AUTHENTICITY SURVEY	AUTHENCITY INTACT TO MINOR ALTERATIONS	MODERATE TO MAJOR ALTERATIONS	AUTHENCITY LOST COMPLETELY
PERCENTAGE	67 %	33 %	0 %

ANALYSIS :

* This elevation can be viewed only from a distance, as it abuts onto the concourse.

* Minor alterations that are reversible, are seen on this elevation



Legend:

01. Gateway Precinct
02. Majestic Precinct
03. Museum Precinct
04. University Precinct
05. Esplanade Precinct
06. Fountain Precinct
07. Horniman Precinct
08. Naval Dock Precinct
09. Ballard Pier Precinct
10. BazarGate Precinct
11. C.S.T Precinct
12. B.M.C.Precinct
13. Crawford Market Precinct
14. Oval Precinct.

Precinct Boundary
Sub- Precinct Boundary
Open Spaces
Chattrapati Shivaji Terminus
Buffer Zone 1
Buffer Zone 2
Buffer Zone 3

In this proposal, sub-precinct 1, within which the proposed inscribed site is located, is proposed as Buffer Zone 1. Surrounding this zone, two additional sub-precincts, nos. 5 and 12, and part of sub-precinct 14 have been proposed as additional buffer zones.

Source : Plan - Megavision Technologies (P) Ltd. ,Fort Precinct & Sub Precinct boundaries : Heritage Regulations for Greater Bombay 1995 ,Sr.no 633

PROPOSAL 1 FOR BUFFER ZONE

North

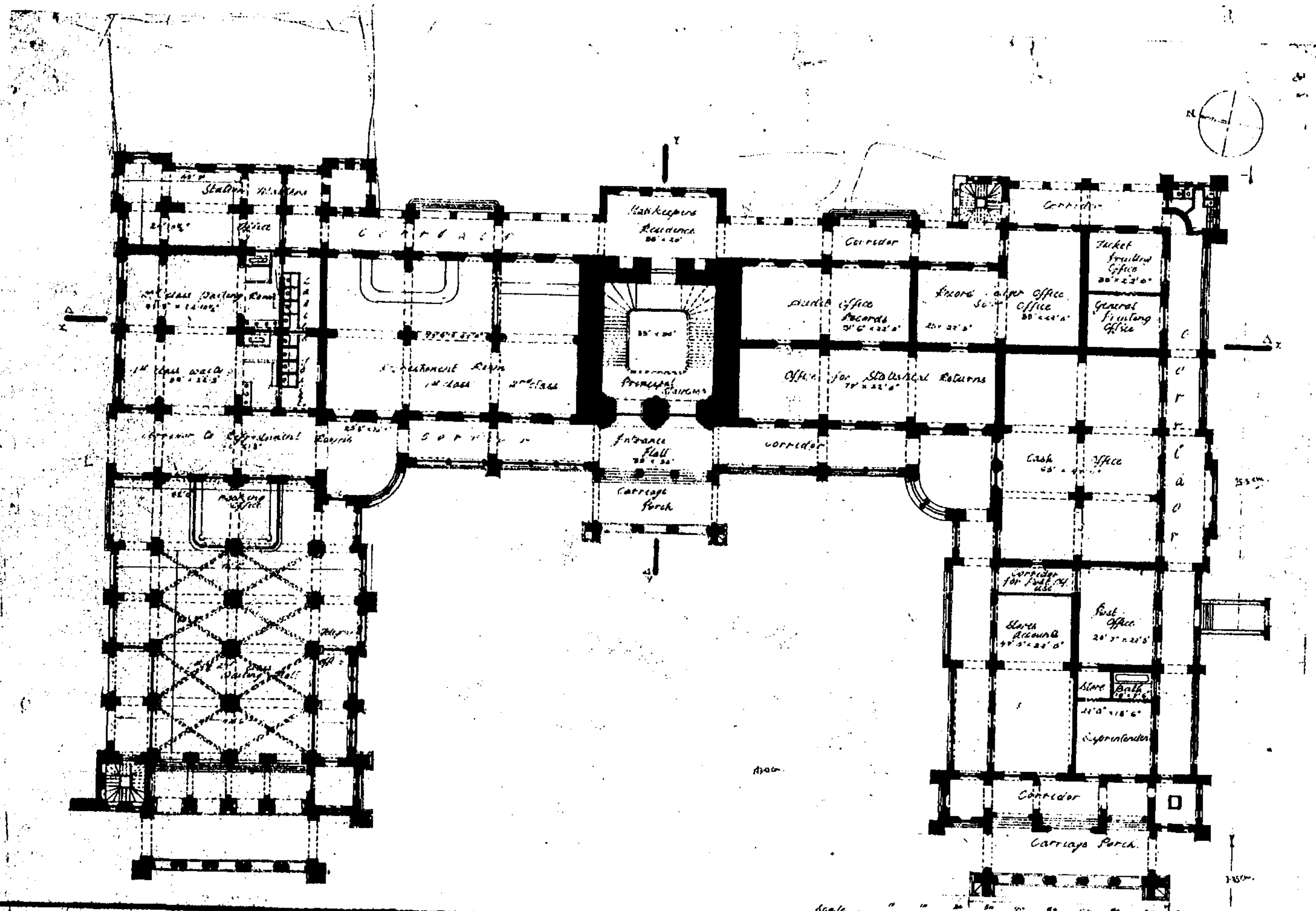
Legend

- Significant Public Bldgs
- Chattrapati Shivaji Terminus
- Boundary of Area Delineated For World Heritage Inscription
- Boundary of Fort Precinct which acts as a buffer zone to inscripted site.

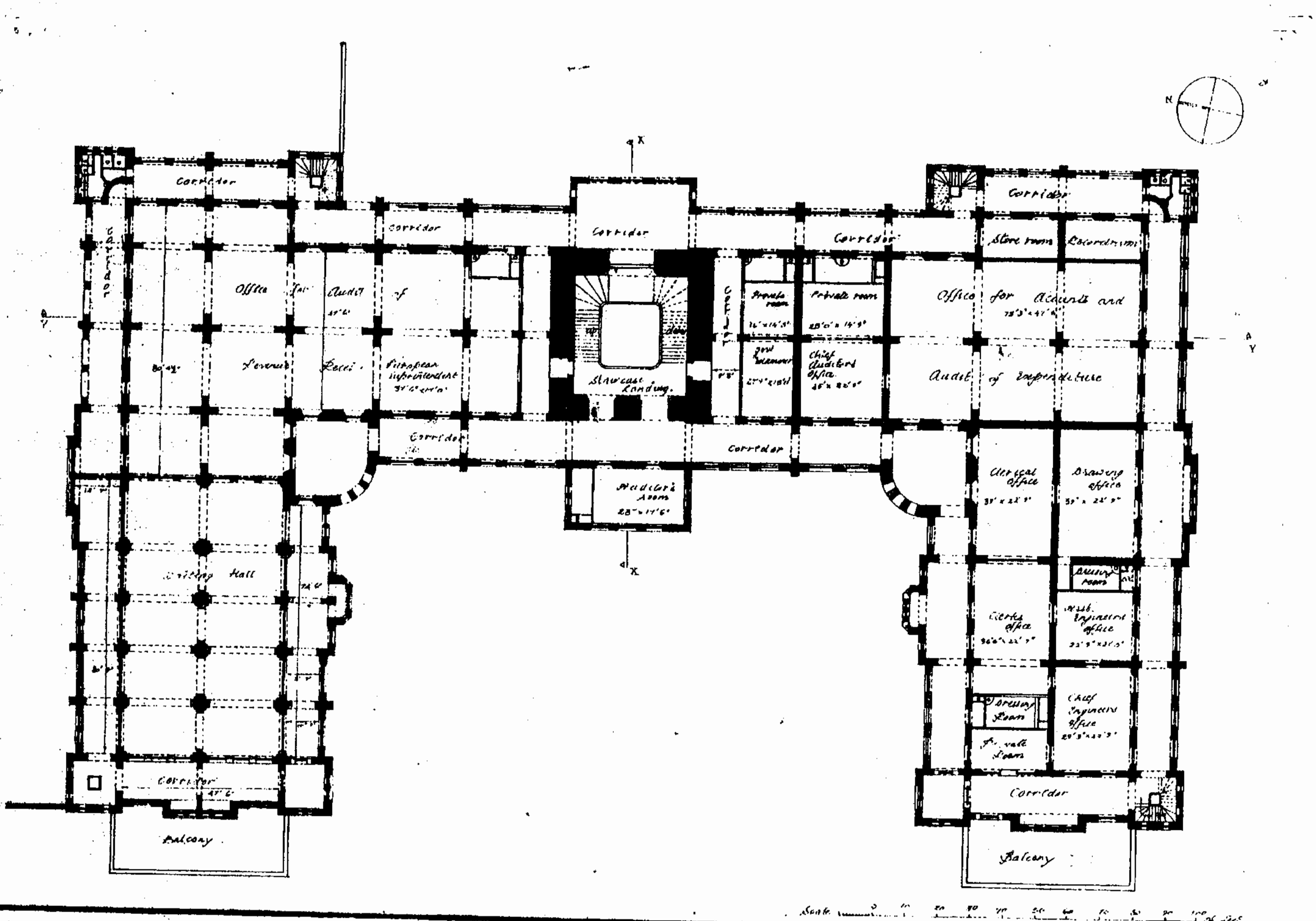
Source : Plan - Megavision Technologies (P) Ltd. ,Fort Precinct & Sub Precinct boundaries : Heritage Regulations for Greater Bombay 1995 ,Sr.no 633

POTENTIAL CLUSTER NOMINATION FOR WORLD HERITAGE SITE STATUS

North

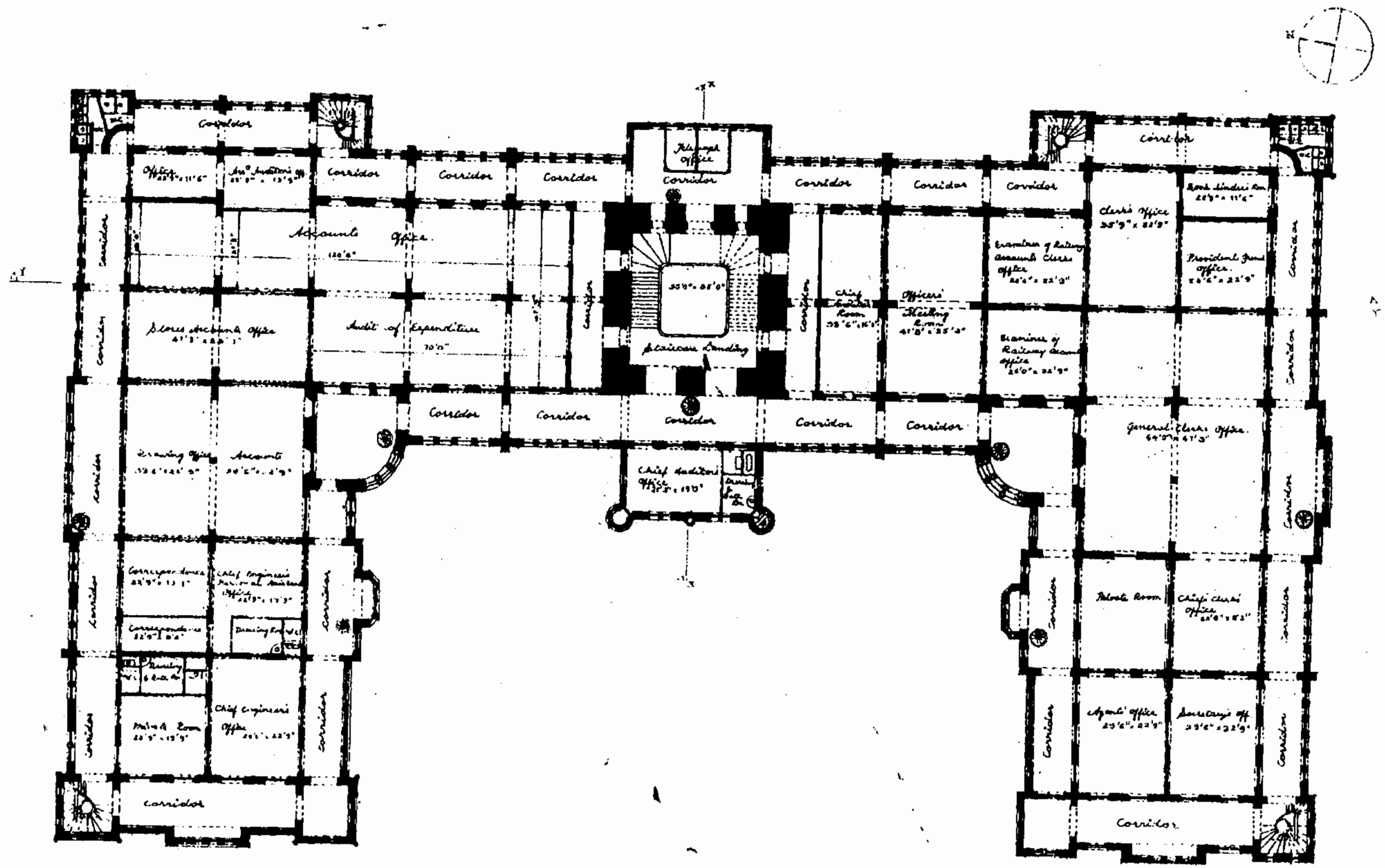


Ground Floor Plan



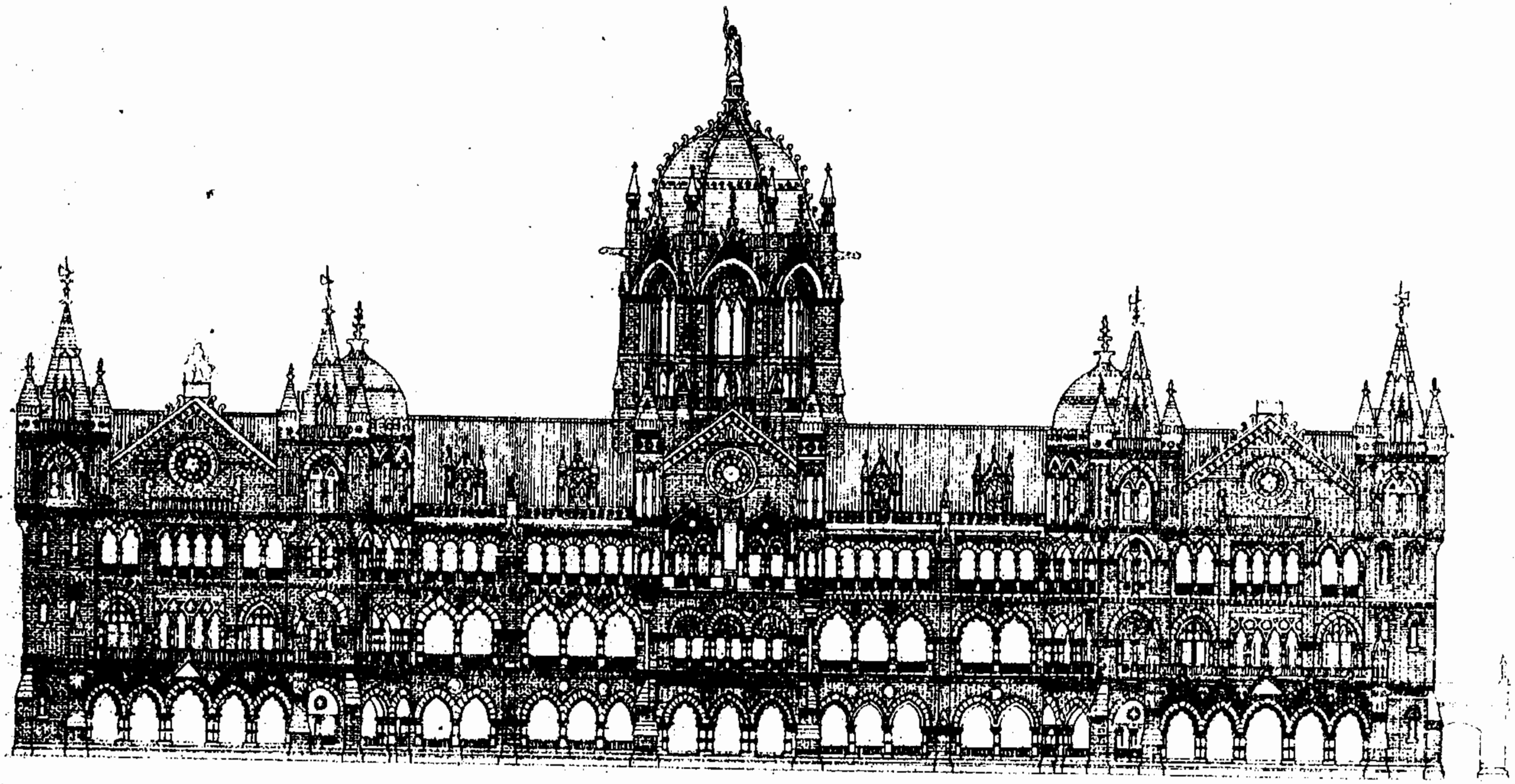
First Floor Plan

C4

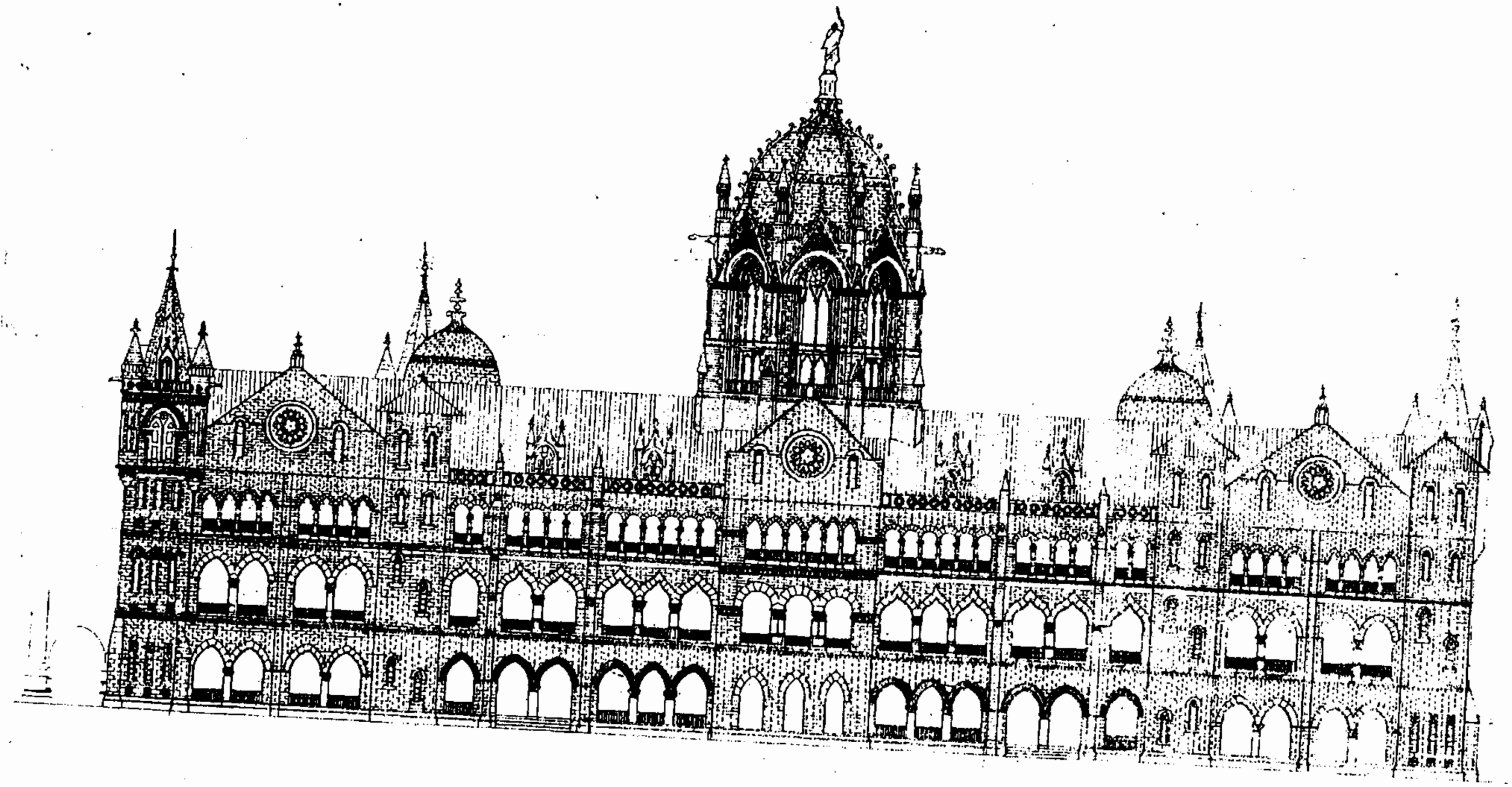


Scale: 0 10' 20' 30' 40' 50' 60' 70' 80' 90' 100' of feet

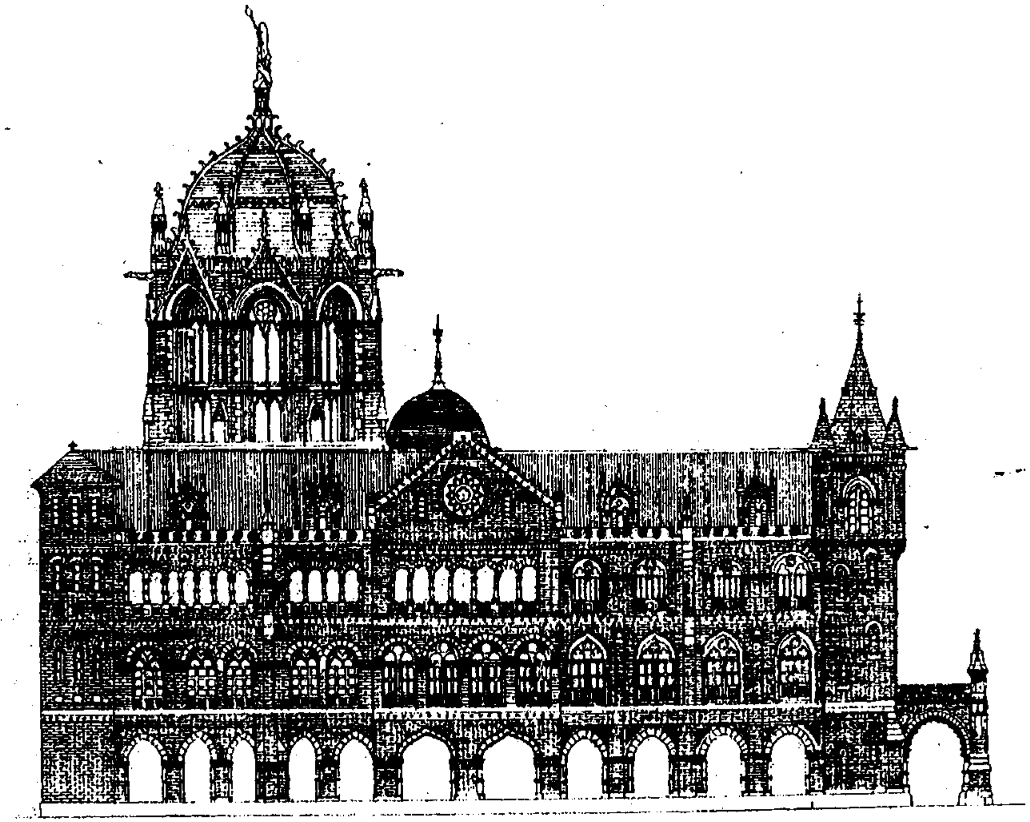
Second Floor Plan



West Elevation

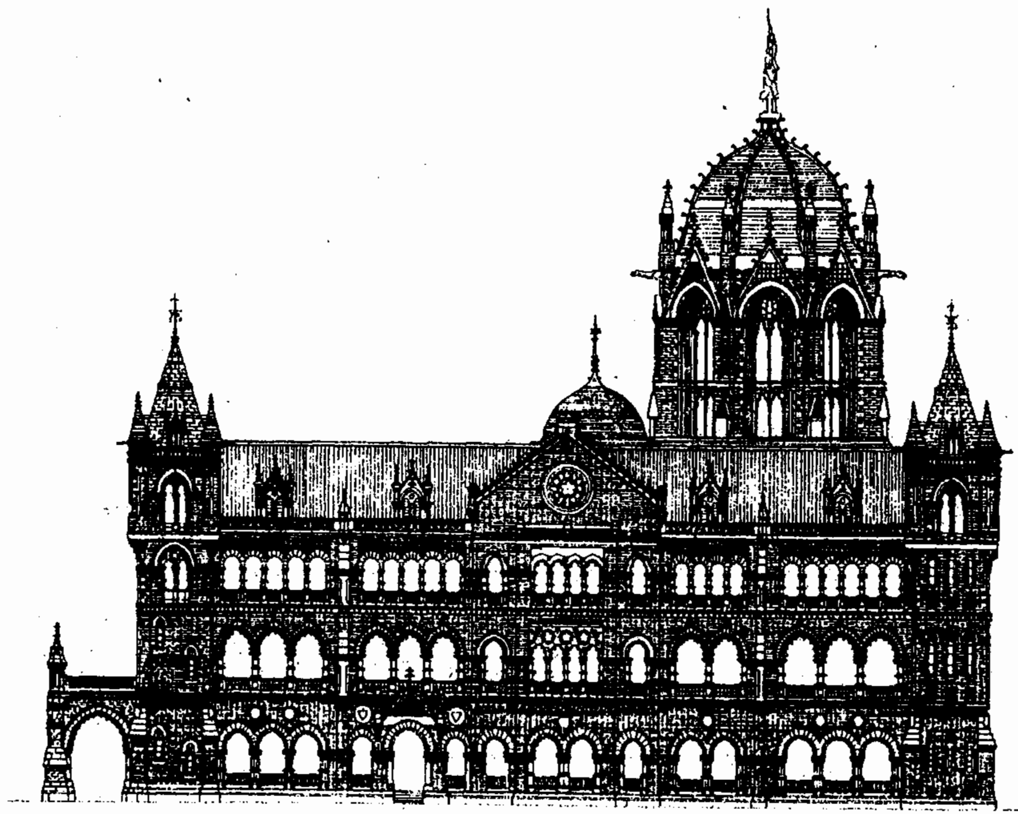


East Elevation



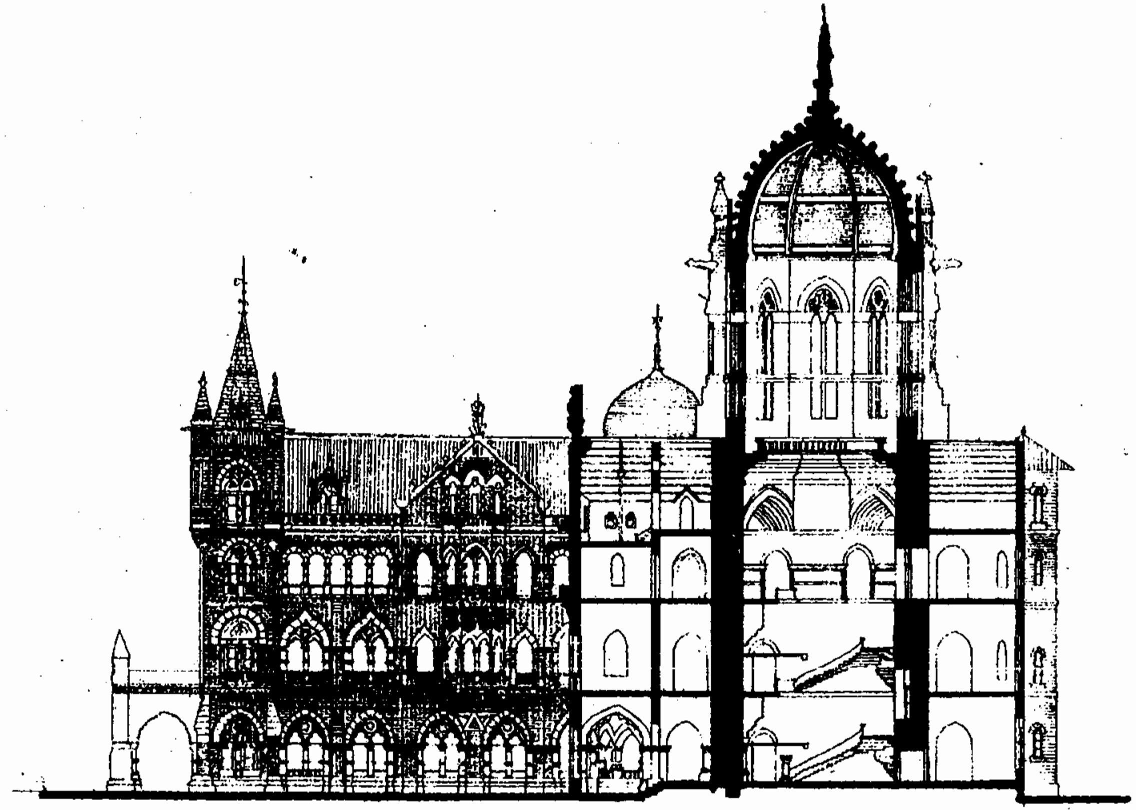
Scale 0 10' 20' 30' 40' 50' 60' 70' 80' 90' 100' of feet

North Elevation

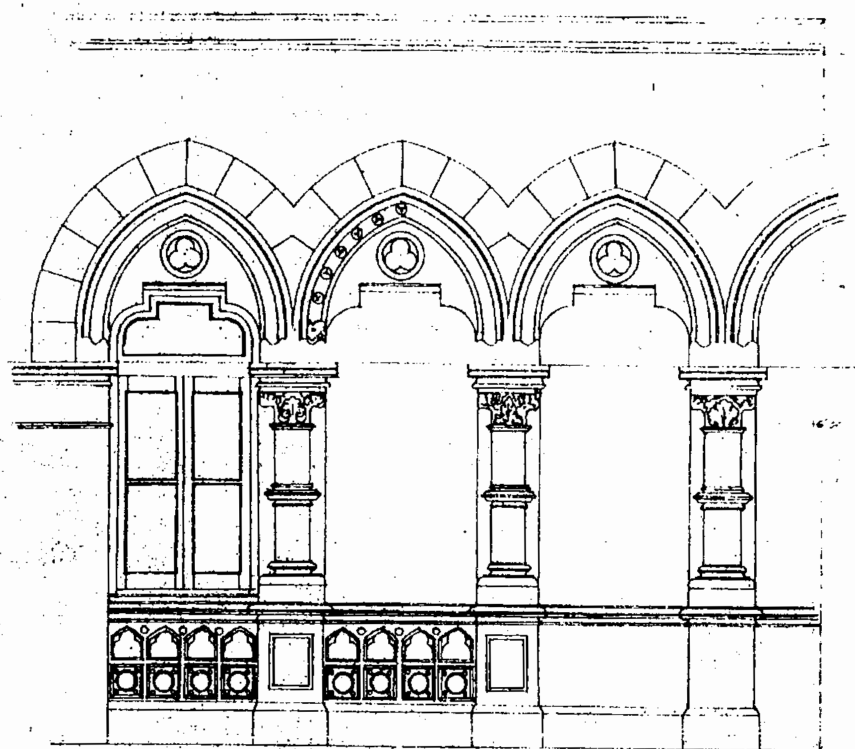


Scale 0 10 20 30 40 50 60 70 80 90 100 feet

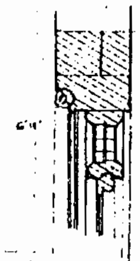
South Elevation



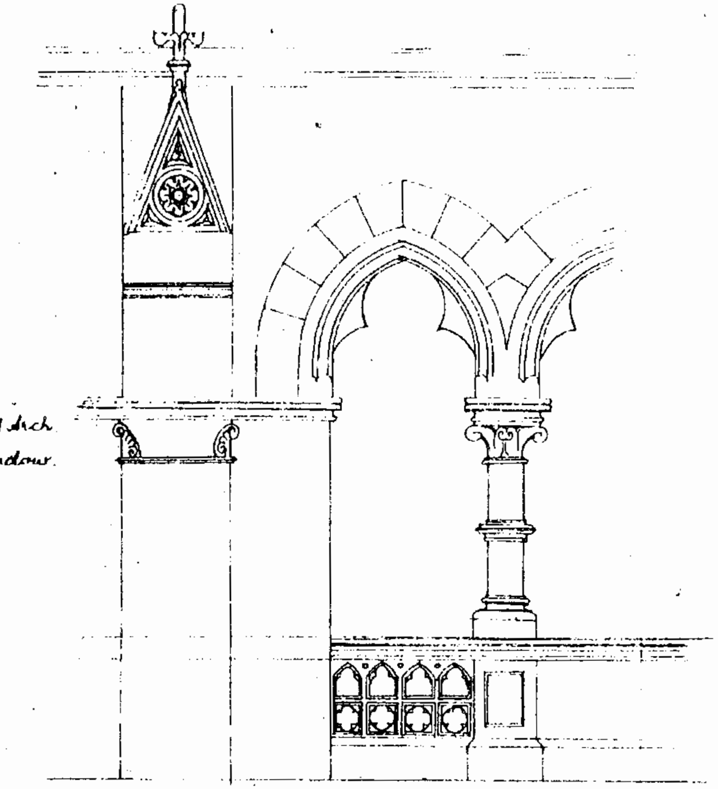
Section X-X



Elevation of Windows to Central Gable on East Side.

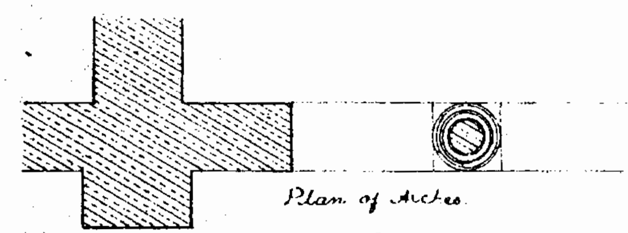


Section of Arch over window.



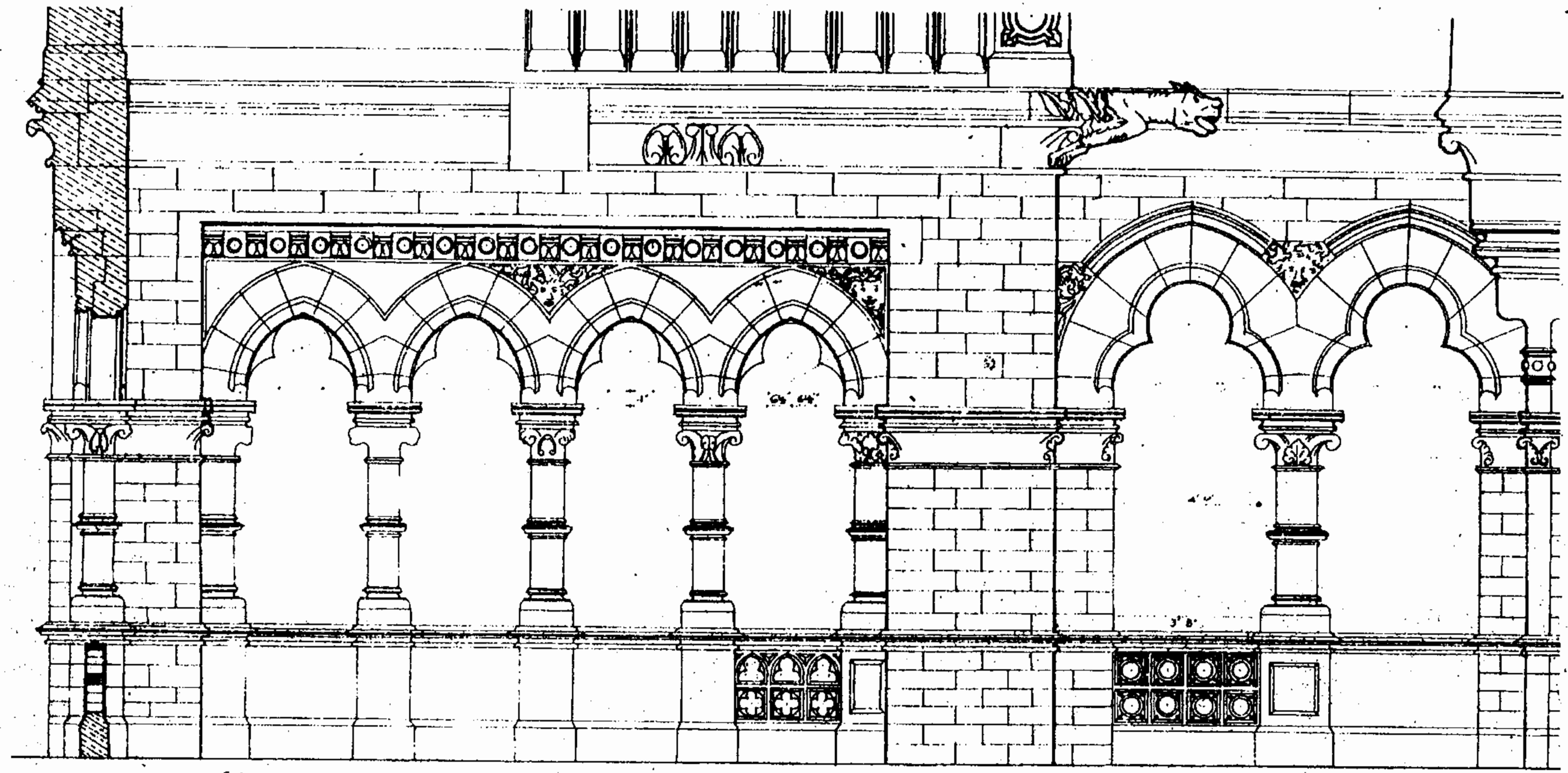
Elevation of Arches to Corridor of End Gables on East Side.

Plan of Windows.

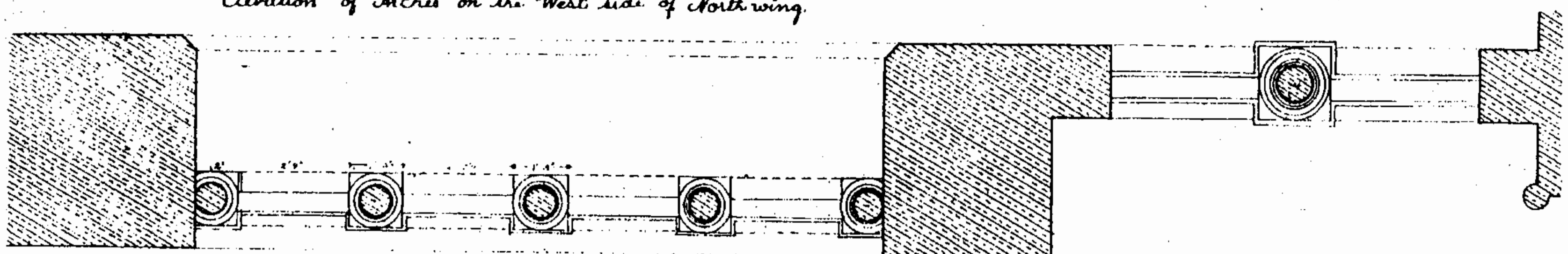


Plan of Arches.

Windows of the Second Floor



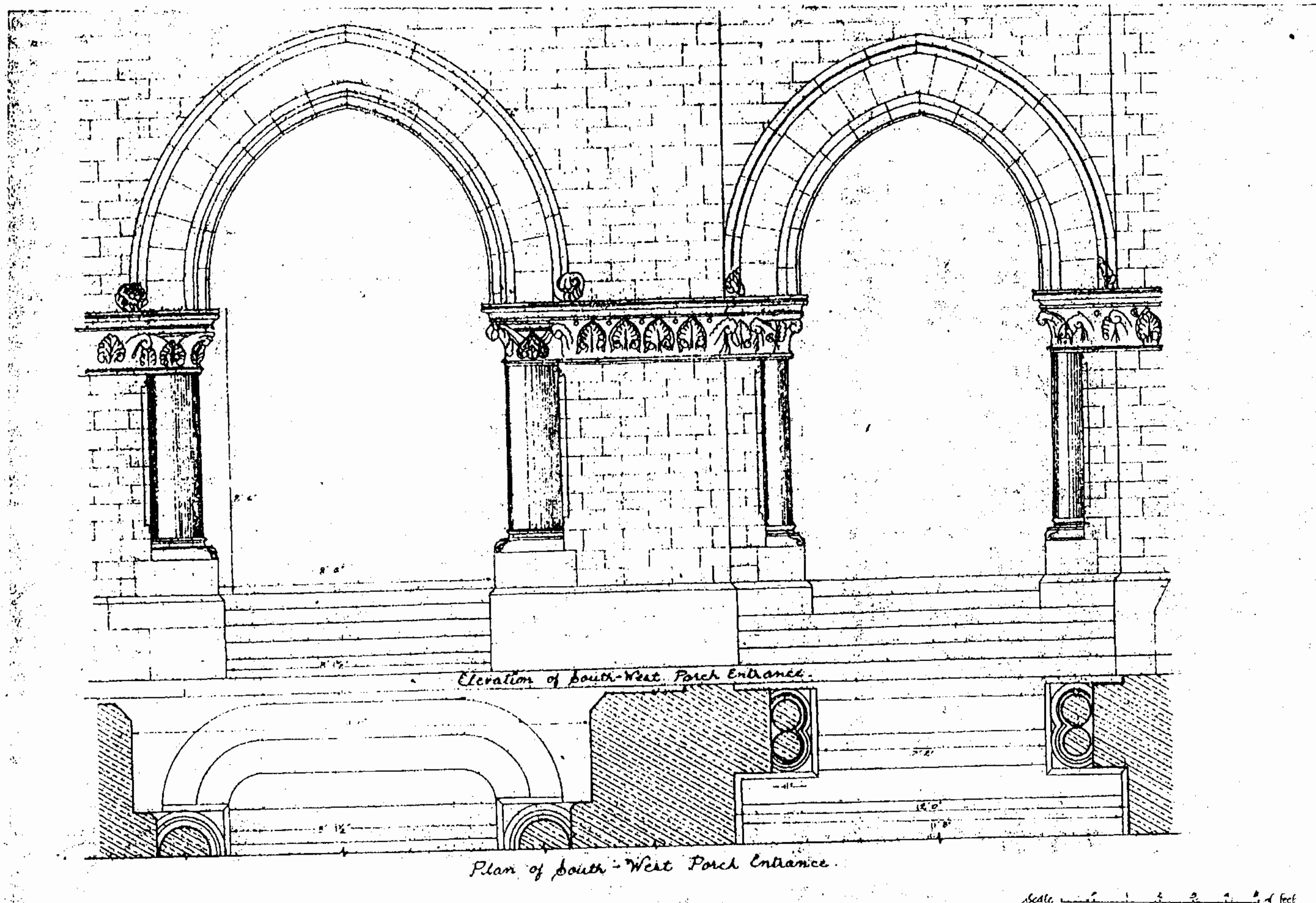
Elevation of Arches on the West side of North wing.



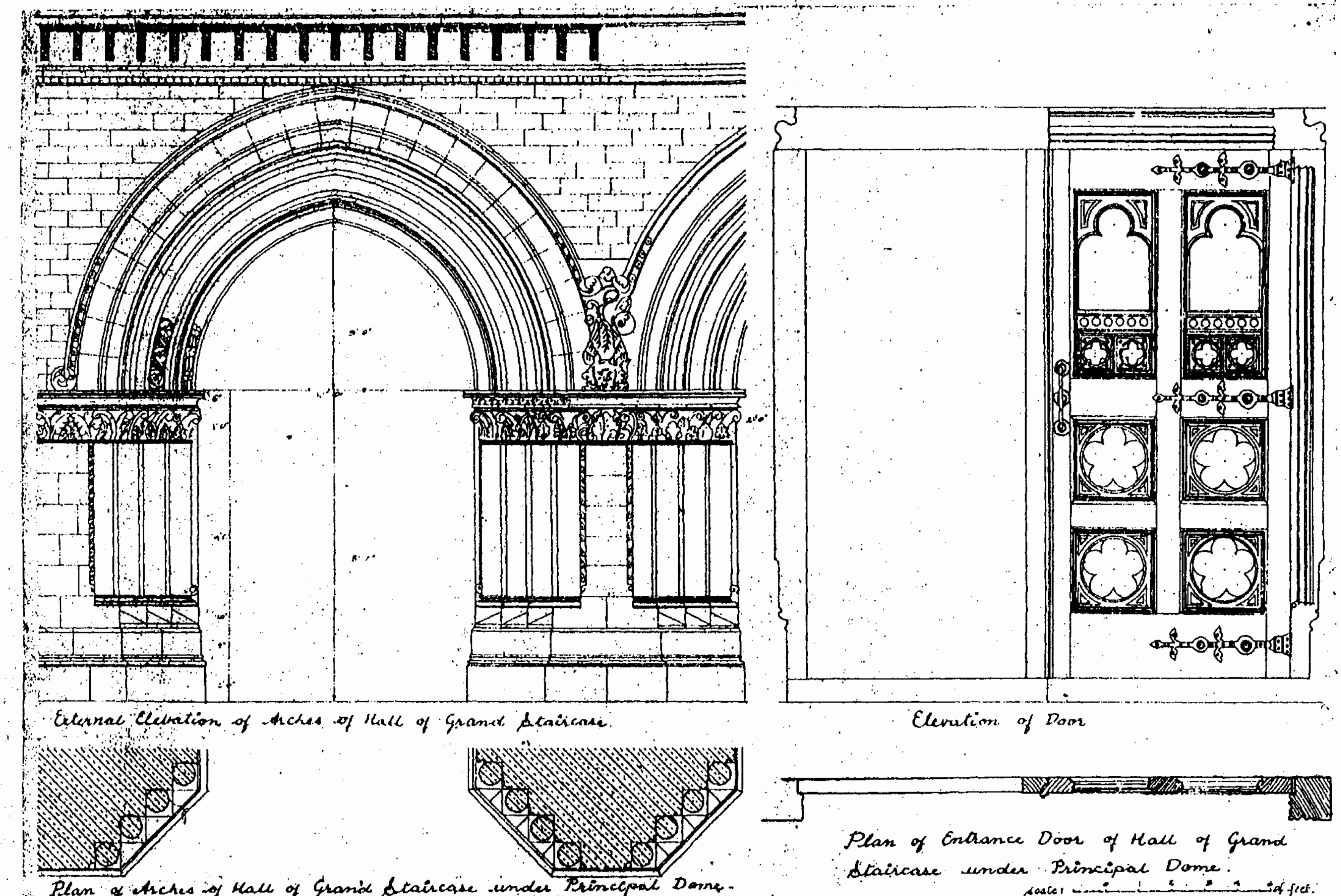
Plan of Windows on the West corridor of the North wing.

Scale of feet.

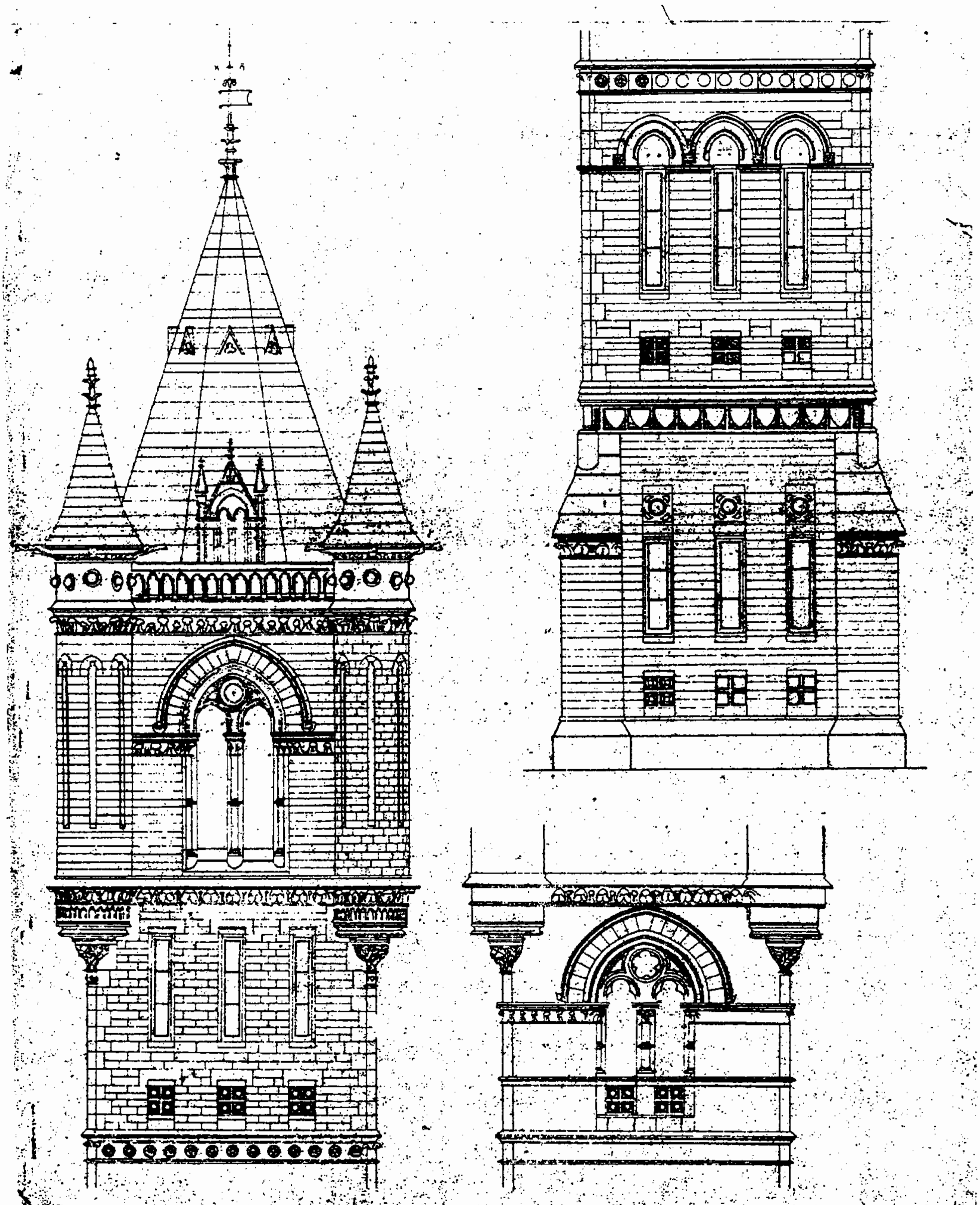
Windows of the Second Floor



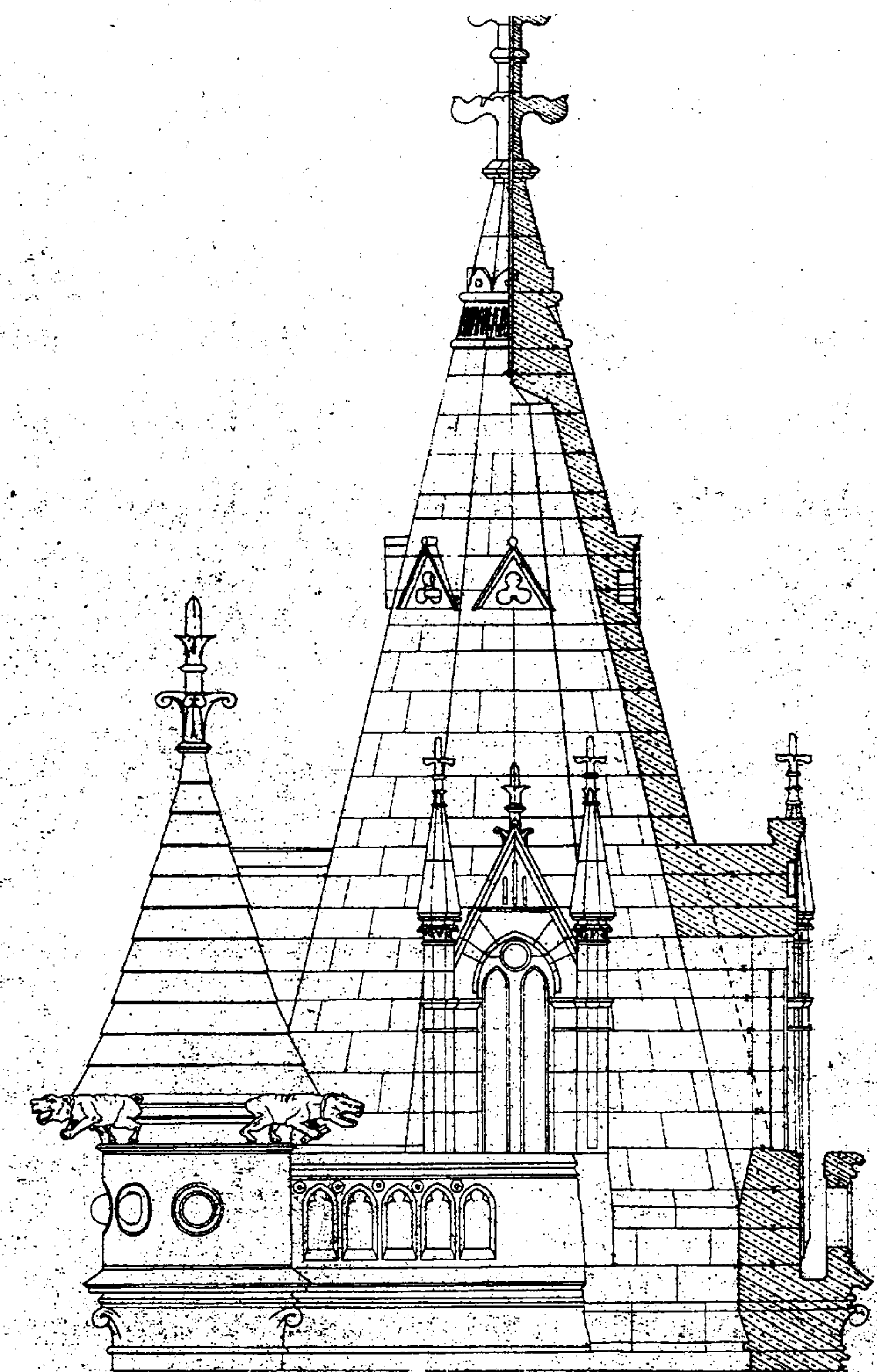
Arches of the Ground Floor



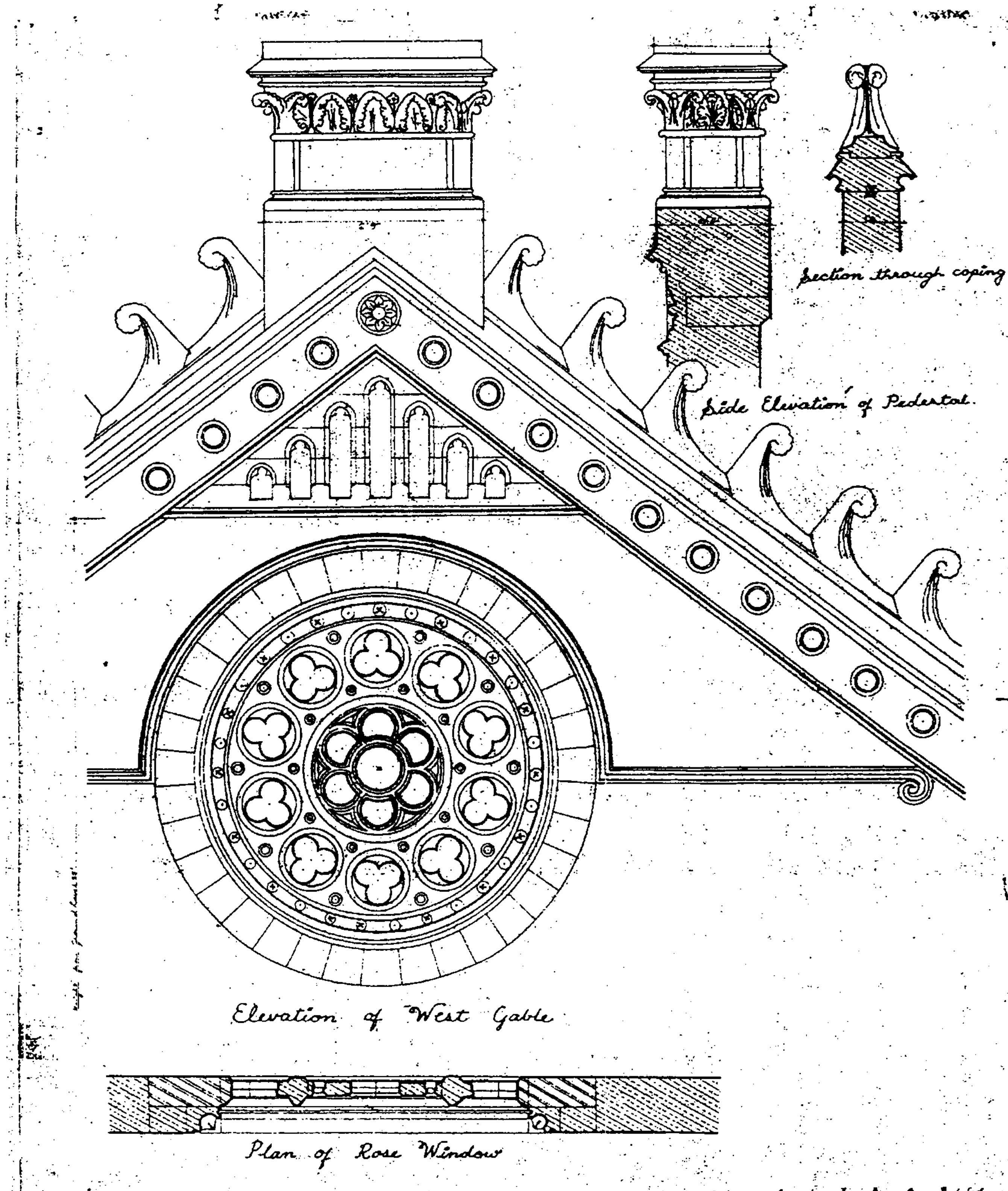
Arches of the Ground Floor



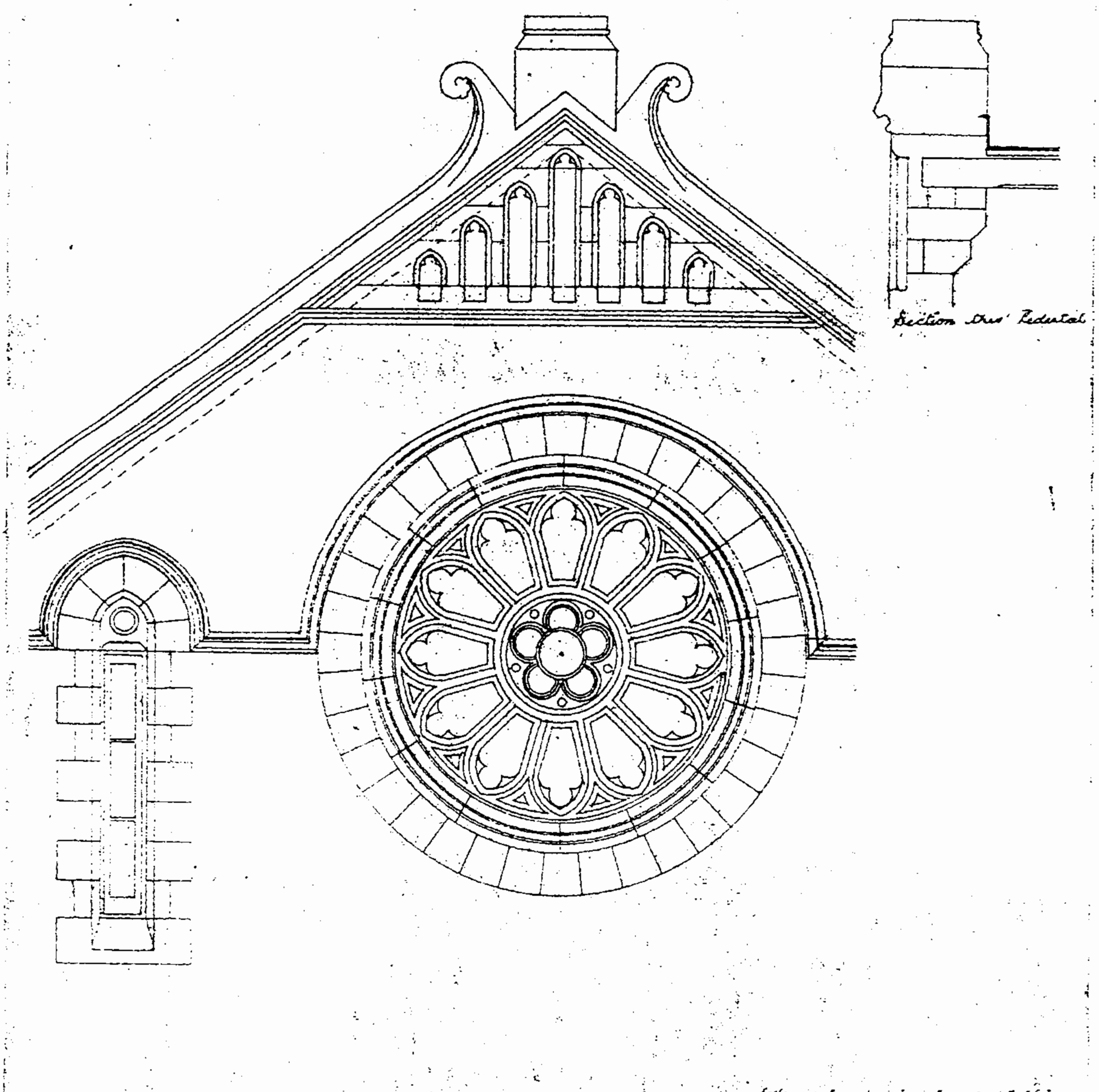
Tower Details



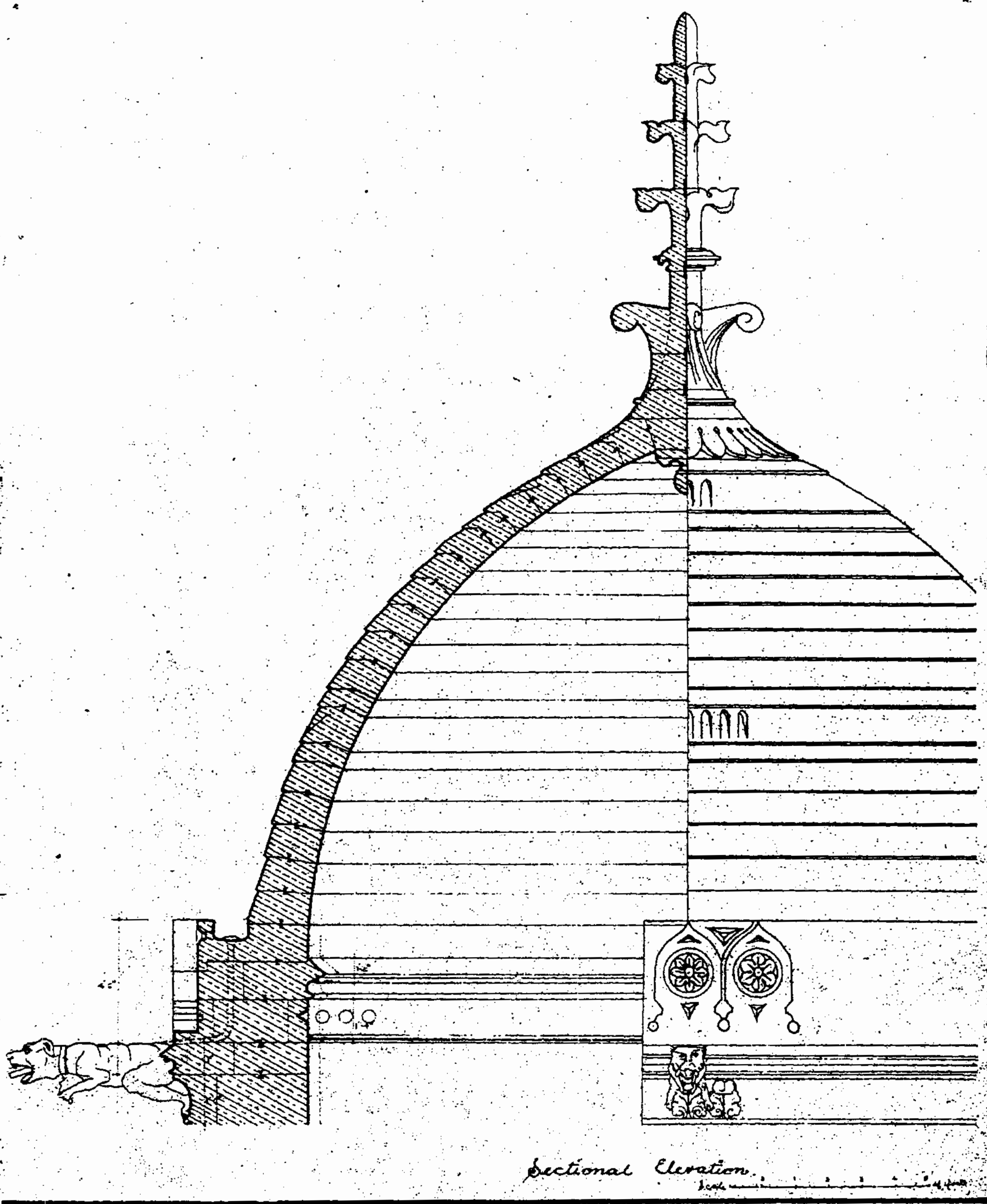
Tower Details



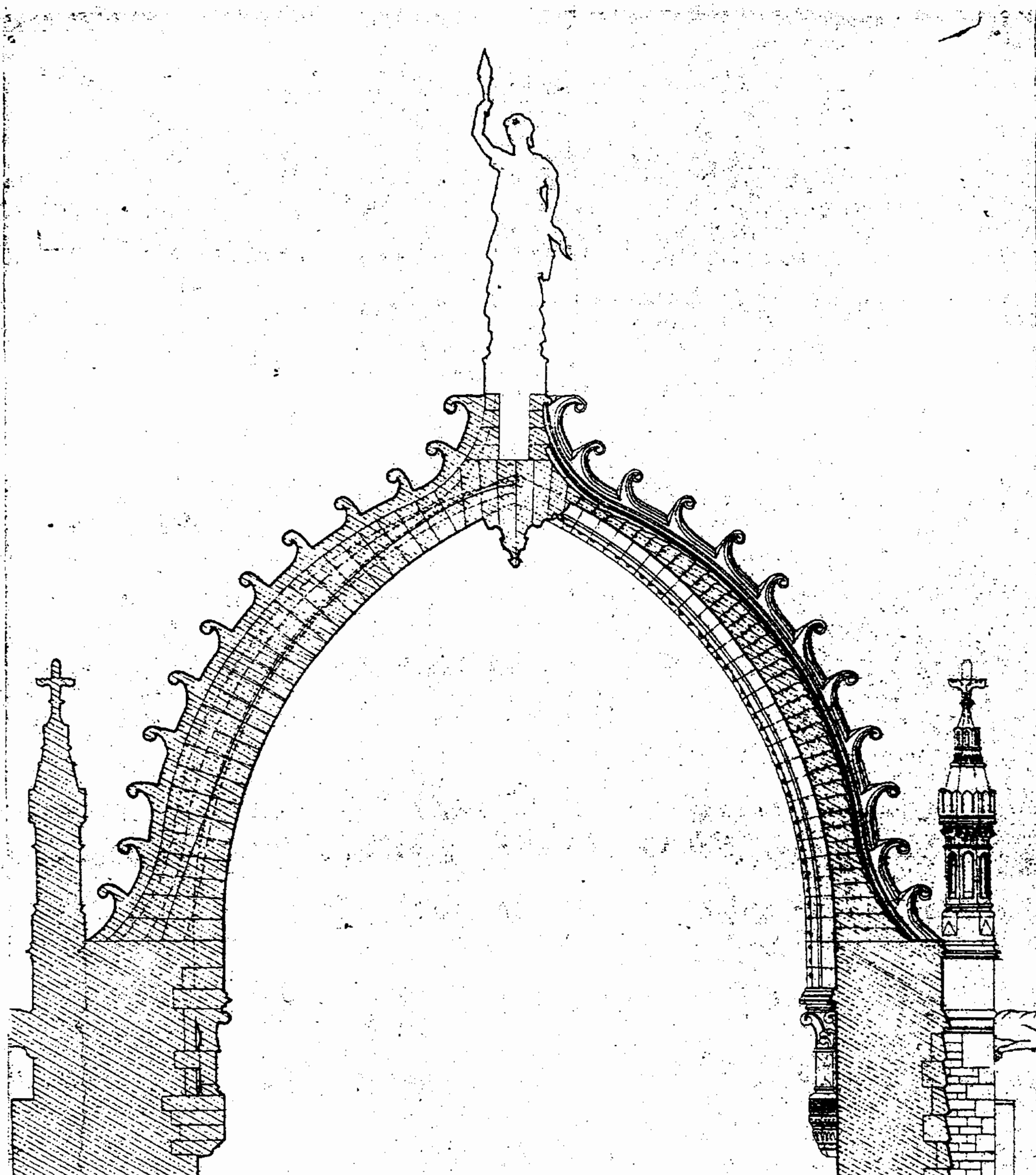
Details of Gable



Gable Detail

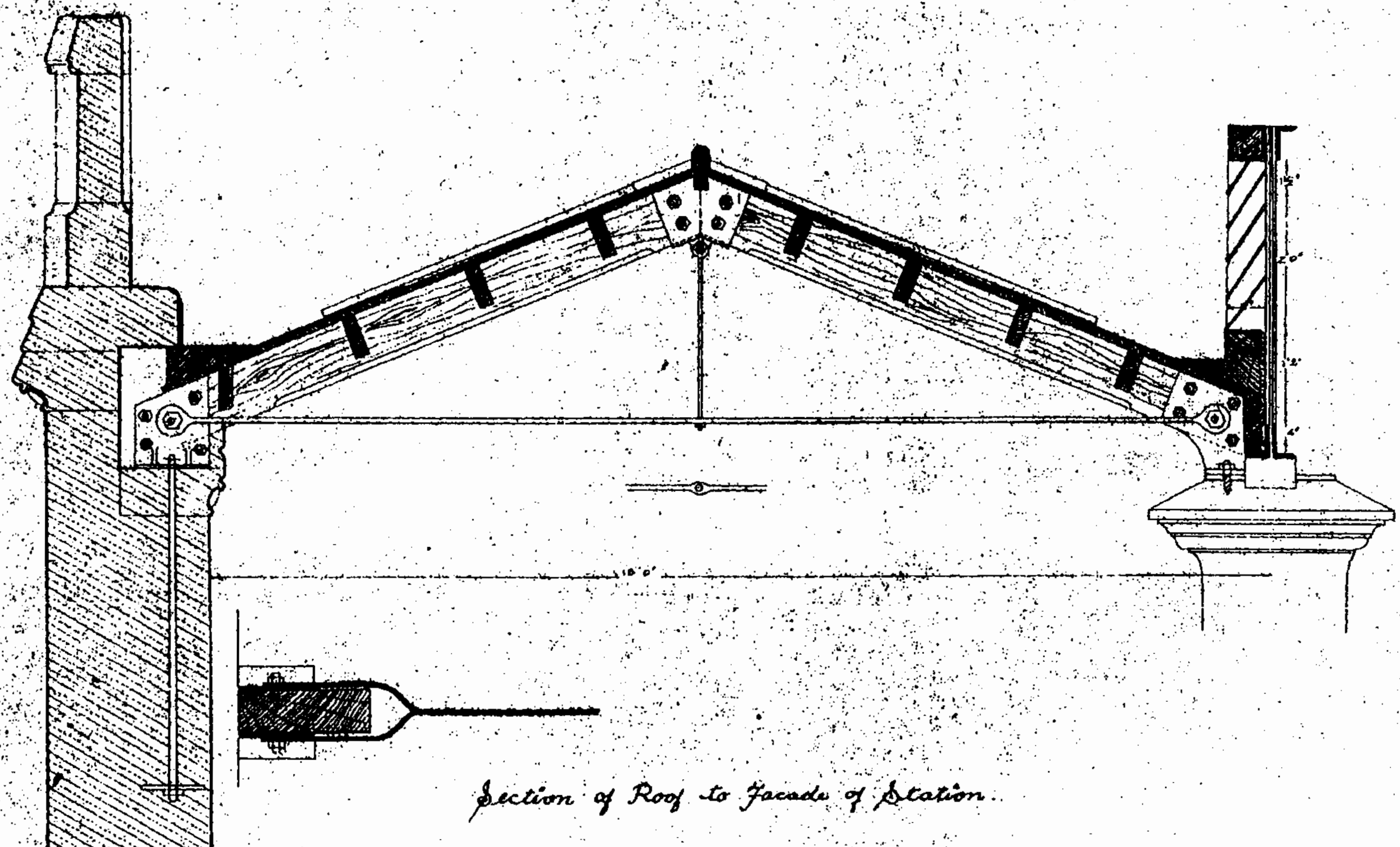


Sectional Elevation: Side Dome



Details of the Principal Dome

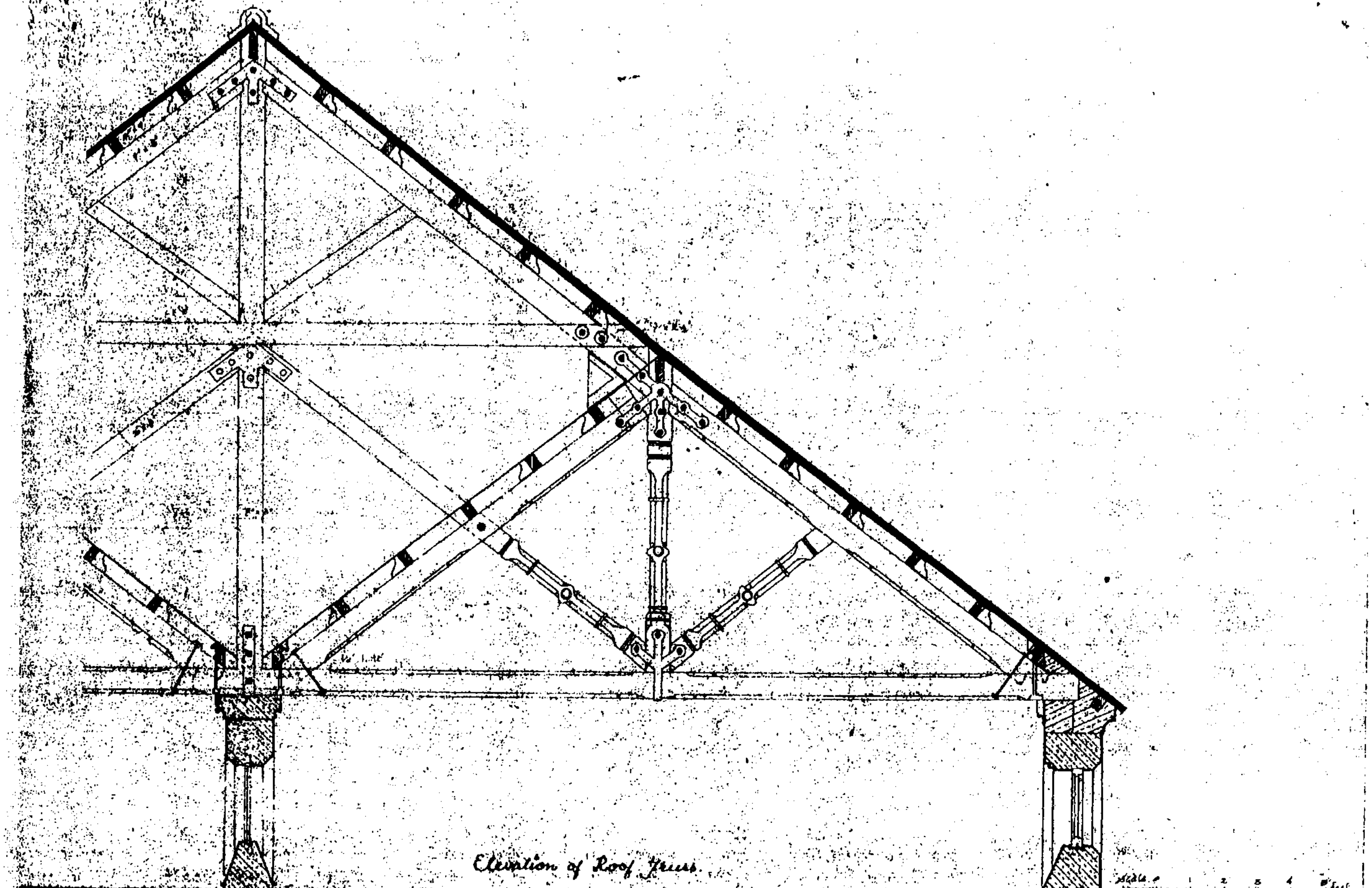
Section of Principal Dome



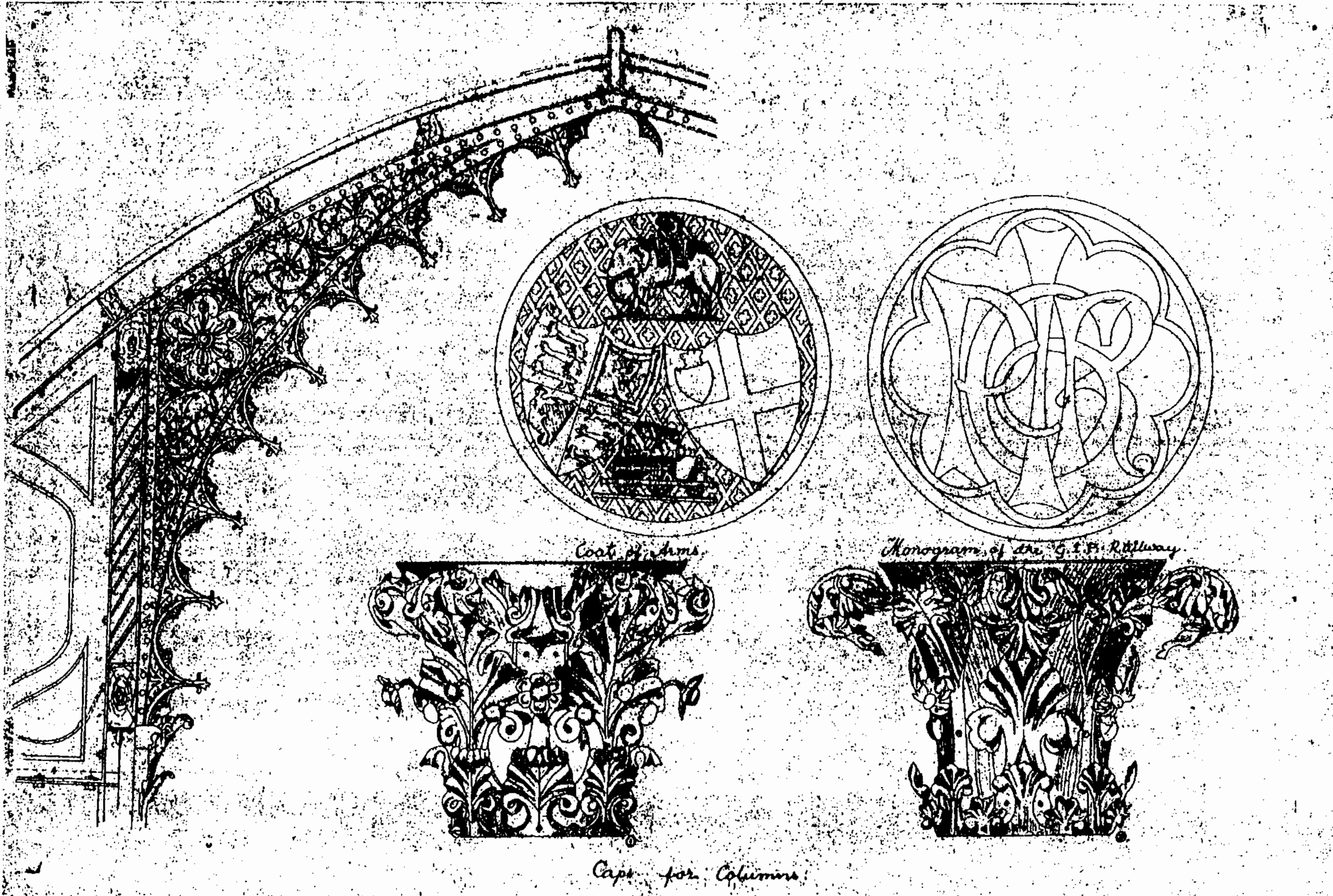
Section of Roof to Facade of Station.

Scale: 0 1 2 3 4 of feet

Roof over Station



Roof Truss on the Second Floor

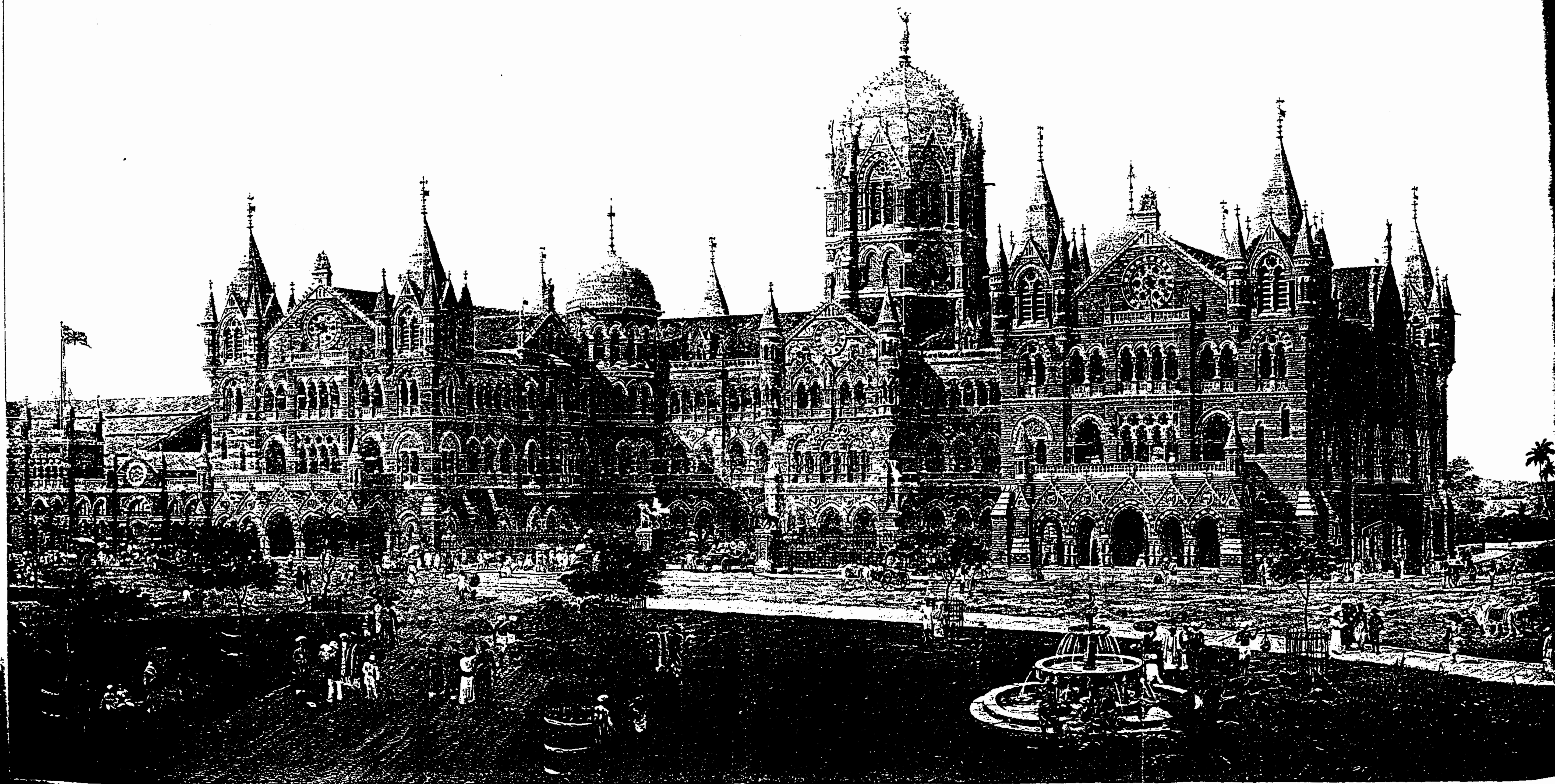


Wrought Iron Details

S.K. PHOTO., SPRAGUE & CO., 22, MARTINS LANE, CANNON ST. LONDON, E.C.

ENTRANCE CORRIDOR TO THE WAITING HALL, GREAT INDIAN PENINSULAR RAILWAY TERMINUS, BOMBAY.

MR. F. W. STEVENS, F.R.I.B.A., A.M.I.C.E., ARCHITECT.



"Photo-Tint," by James Akerman, 6 Queen Square, Londo.

GREAT INDIAN PENINSULAR RAILWAY TERMINUS AND ADMINISTRATIVE OFFICES, BOMBAY.
F. W. STEVENS, F.R.I.B.A., ARCHITECT.

सत्यमेव जयते

GOVERNMENT OF MAHARASHTRA

URBAN DEVELOPMENT DEPARTMENT

MANTRALAYA, BOMBAY 400 032

HERITAGE REGULATIONS FOR GREATER BOMBAY 1995

[*Price* :Rs. 13.00]

INDEX

TA 650—1

Heritage Regulations for Greater Bombay 1995

Regulation No. 67 regarding conservation of listed buildings, areas, artefacts, structures and precincts of historical, aesthetical, architectural and cultural value Final sanction to the........

GOVERNMENT OF MAHARASHTRA

URBAN DEVELOPMENT DEPARTMENT

Mantralaya, Bombay 400 032,

Resolution No. DCR. 1090/3197/RDP/UD-11, Dated 21st April 1995

RESOLUTION

MAHARASHTRA REGIONAL AND TOWN PLANNING ACT, 1966.

Whereas, the Municipal Corporation of Greater Bombay (hereinafter referred to as "the said Municipal Corporation") being the Planning Authority for the areas under its jurisdiction under clause (19) of section 2 of the Maharashtra Regional and Town Planning Act, 1966 (Mah. XXXVII of 1966) (hereinafter referred to as "the said Act") has, by a declaration under sub-section (*1*) of section 23, read with section 38 of the said Act, given notice of its intention to prepare a Revised Development Plan for Greater Bombay, which has been published in the *Maharashtra Government Gazette*, Bombay Divisional Supplement of 13th January, 1977;

And whereas, the Municipal Corporation after following the legal formalities stipulated under the said Act has submitted under sub-section (1) of section 30 of the said Act, the Revised Draft Building Bye-Laws and Development Control Rules for Greater Bombay to the State Government on 30th April 1985 for sanction;

And whereas, by Government Notice, Urban Development Department, No. DCR. 1089/3814/RDP/Ud-11, dated 14th December 1989, published in the *Maharashtra Government Gazette*, Part I, Konkan Divisional Supplement, the draft Development Control Rules for Greater Bombay, 1989 (hereinafter called "said draft Development Control Rules") were published for public objections and suggestions;

And whereas, it was considered expedient to modify the said draft Development Control Rules by the addition of two Regulations No. 67 and 68 as specified in the Schedule appended thereto;

And whereas, by Government Notification, Urban Development Department, No. DCR-1090/3197(*a*)/RDP/UD-11, dated 20th February 1991, published in the *Maharashtra Government Gazette*, Part I, Konkan Divisional Supplement, the Draft Development Control Regulation No. 67 for Greater Bombay, 1991 was published for inviting suggestions and objections.

And whereas, by the notification No. DCR-1090/3197(*b*) RDP/UD-11, dated 20th February 1991 a list of such buildings and precincts of historical, aesthetical, architectural or cultural value was also published and objections and suggestions on the said list were also invited;

And whereas, Government had appointed Shri G. S. Pantbalekundri, Deputy Director of Town Planning and *Ex-Officio* Deputy Secretary to Government, Urban Development Department to be the officer for the purpose of hearing objections/suggestions from any person in respect of the said Draft Regulation No. 67 and to submit his report thereon for the consideration of Government ;

And whereas, on September 27, 1991, Government had published a subsequent notification setting out the classification of the buildings/precincts in certain grades and indicating the effect of the Draft Regulation No. 67 on the different grades of the said buildings and precincts and called for suggestions on the said notification;

And whereas, the said officer had submitted his report after giving due hearing to the persons who have raised objections and given suggestions on the said Draft Regulation No. 67 and the said classification;

And whereas, in accordance with sub-section (*3*) of section 31 of the said Act, Government has taken into consideration the objections and suggestions received and report of the said officer;

And whereas, in accordance with first proviso to sub-section (*1*) of section 31 of the said Act the Government has by its notification No. TPB-4387/716/UD-11 (RDP), dated 23rd February 1995 extended the period for sanctioning the said Development Plan and draft Development Control Regulations up to and inclusive of 31st October 1995;

Now therefore, in exercise of powers conferred by sub-section (*1*) of section 31 of the said Act and all other powers enabling it in that behalf, the Government hereby—

(*a*) Sanctions the Development Control Regulation No. 67 alongwith Appendix VIIA as specified in the Schedule appended hereto and;

(*b*) Fixes 1st June 1995 to be the date on which the said Regulation No. 67 as specified in the Schedule to this notification shall come in to force.

SCHEDULE

Regulation No. 67.—Conservation of listed buildings, areas, artefacts, structures and precincts of historical and/or aesthetical and/or architectural and/or cultural value (heritage buildings and heritage precincts).

1. *Applicability.*—This regulation will apply to those builings, artefacts, structures and/or precincts of historical and/or aesthetical and/or architectural and/or cultural value (hereinafter referred to as Listed Buildings/Heritage Buildings and Listed precincts/Heritage precincts) which will be listed in notifications(s) to be issued by the Government.

2. *Restriction on Development/Redevelopment/Repairs, etc.*—(*i*) No development or redevelopment or engineering operation or additions, alterations, repairs, renovation including the painting of buildings, replacement of special features or demolition of the whole or any part thereof or plastering of said listed/heritage buildings or listed/Heritage precincts shall be allowed except with the prior written permission of the Commissioner. The Commissioner shall act on the advice of/in consultation with the Heritage Conservation Committee to be appointed by Government (hereinafter called "the said Heritage Conservation Committee"):

Provided that in exceptional cases for reasons to be recorded in writing the Commissioner may overrule the recommendation of the Heritage Conservation Committee:

Provided that the power to overrule the recommendations of the Heritage Conservation Committee shall not be delegated by the Commissioner to any other officer.

(*ii*) In relation to religious buildings in the said list, the changes, repairs, additions, alterations and renovations required on religious grounds mentioned in sacred texts, or as a part of holy practices laid down in religious codes shall be treated as permissible, subject to their being in accordance and consonance with the original structure and architecture, designs, aesthetics and other special features thereof. Provided that before arriving at his decision, the Commissioner shall take into consideration the recommendations of the Heritage Conservation Committee.

3. *Preparation of list of Heritage Buildings and Heritage Precincts.*—The said list of buildings, artefacts, structures and precincts of historical, and/or aesthetical, and/or architectural and/or cultural value to which this regualtions applies shall not form part of this Regulation for the purpose of Section 37 of the Maharashtra Regional and Town Planning Act, 1966. This list may be supplimented, altered, deleted or modified from time to time by Government on receipt of proposals from the Commissioner or from the said Heritage Conservation Committee, or by Government *suo motu*, provided that before the list is supplimented, altered, deleted or modified, objections and suggestions from the public be invited and duly considered by the Commissioner and/or by Government.

4. *Power to Alter, Modify or Relax Regulations.*—With the approal of Government and after consultation with the said Heritage Conservation Committee, the Commissioner shall have the power to alter, modify or relax the provisions of other Regulations of the Development Control Regulations of Greater Bombay, 1991 (hereinafter referred to as "the said Regulations") if it is needed for the conservation, preservation or retention of historical, aesthetical, cultural or architectural quality of any listed Buildings/heritage building or listed Precincts/heritage precinct.

5. *Hearing etc. to persons likely to be affected.*—Provided that in case any alterations, modifications or relaxations of any of the provisions of the Development Control Regulation, 1991 will cause undue loss to the owners/lessees of Heritage Buildings/Heritage Precincts, the Commissioner shall give an opportunity of hearing to the said owner/lessee and to the public.

Grade-I	Grade-II	Grade-III
would be allowed and they must be in accordance with the original.	Grade-II-B)— In addition to above extension or additional buildings in the same plot or compound could, in certain circumstances, be allowed provided that the extension/additional building is in harmony with (and does not detract from) existing heritage building(s) or precincts especially in terms of height and facade.	building/precinct especially in terms of height and/or facade. Reconstruction may be allowed when the building is structurally weak or unsafe or when it has been affected by accidental fire or any other calamity or if reconstruction is required to consume the permissible FSI and no option other than reconstruction is available. Reconstruction may also be allowed in case of those buildings which attract the provisions of Regulations 33(6), 33(7) 33(9) and Appendix II and Appendix III of Development Control Regulations, 1991. Reconstruction may be alllowed in those buildings being repaired/reconstructed by MHADA. However, unless absolutely essentia, nothing should spoil or destroy any special features or attributes for which it is placed in the Heritage List.
. Procedure.—		
Development permission for the changes would be given by the Planning Authority on the advice of the Heritage Conservation Committee to be appointed by State Government.	Development permission for the changes would be given by the Planning Authority in consultation with a sub-committee of the Heritage Conservation Committee.	Development permission would be given for changes by the Planning Authority itself but in consonance with guidelines, which are to be laid down by Government in Consultation with the Heritage Conservation Committee.
. Vistas/Surrounding Development—		
All development in areas surrounding Heritage Grade-I Shall be regulated and controlled, ensuring that it does not mar the grandeur of or views from, Heritage Grade-I.		

By order and in the name of the Governor of Maharashtra,

D. T. JOSEPH,
Secretary to Government.

APPENDIX VIIA

(Regulation No. 67)]

REGULATIONS FOR THE GRANT OF TRANSFERABLE DEVELOPMENT RIGHT TO OWNERS/LESSEES OF HERITAGE BUILDINGS/HERITAGE PRECINCTS AND CONDITIONS FOR GRANT OF SUCH RIGHTS.

1. As provided in Regulation 67 (6) Development Rights of the owner/lessee of any Heritage buildings who suffers loss of Development Rights due to any restrictions imposed by the Commissioner or Government under Regulation 67 shall be eligible for award of Transferable Development Rights (TDR) in the form of Floor Space Index (FSI) to the extent and on the conditions set out below. Such award will entitle the owner of the Heritage Building to FSI in the form of a Development Rights Certificate (DRC) which he may use himself or transfer to any other person.

2. A DRC will be issued only on the satisfactory compliance with the conditions prescribed in this Appendix.

6. *Grant of Transferable Development Rights in cases of loss of Development Rights.*—If any application for development is refused under this Regulation or conditions are imposed while permitting such development which deprive the owner/lessee of any unconsumed FSI the said owner/lessee shall be compensated by grant of Development Rights Certificate (hereinafter referred to as "TDR") of the nature set out in Development Control Regulation No. 34 and Appendix VIIA and as may be prescribed by Government from time to time. The TDR from heritage buildings in the island city may also be consumed in the same ward from which it originated. The extent of TDR Certificates to be granted may be determined by the Commissioner, if required in consultation with the Heritage Conservation Committee and will not be awarded unless sanctioned by Government.

7. *Maintaining Sky Line.*—Buildings included in Listed Heritage Precincts shall maintain the sky line in the precinct (without any highrise development) as may be existing in the surrounding area, so as not to diminish or destroy the value and beauty of the said listed Heritage buildings/Heritage precincts. The development within the precinct shall be in accordance with the guildelines framed by Commissioner in consultation with Heritage Conservation Committee.

8. *Restrictive Convenants.*—Restrictions existing as on date of this notification imposed under convenants, terms and conditions on the leasehold plots either by State Government or by Bombay Port Trust or by Bombay Municipal Corporation shall continue to be imposed in addition to Development Control Regulations. However in case of any conflict with the heritage preservation interest, the said Regulations shall prevail.

9. *Repair Fund.*—Non-cessed buildings included in the said list shall be repaired by the owners/lessees of the said buildings themselves or if they are cessed buildings, those can be repaired by MHADA or by the owner or by the Co-operative Society of the owners and/or occupiers of the old building. With a view to give monetary help for such repairs a separate fund may be created, which would be kept at the disposal of Municipal Commissioner, Bombay Municipal Corporation, who will make disbursement from the funds in consultation with Heritage Conservation Committee. Provision for such a fund may be made through District Planning and Development Council Budget.

10. *Grading of the Listed Buildings/Listed Precincts.*—In the last column of the said list of Heritage buildings Heritage precincts, " Grades " such as I, II or III have been indicated. The meaning of these Grades and basic guidelines for development permissions are as follows :—

Listing does not prevent change of ownership or usage. However such usage should be in harmony with the said listed precinct/building. Care will be taken to ensure that the development permission relating to these buildings is given without delay.

" WHAT POSTERITY WOULD NOT WILLINGLY LET DIE "

Grade-I	Grade-II	Grade-III
A. Definition—		
Heritage Grade-I comprises of buildings, and precincts of national or historical importance, embodying excellence in architectural style, design, technology and material usage; they may be associated with a great historical event, personality, movement or institution. They have been and are, the prime landmarks of the City.	Heritage Grade-II (A & B) comprises of buildings, of regional or local importance, possessing special architectural or aesthetical merit, cultural or historical value, though of a lower scale than in Heritage Grade. They are local landmarks, contributing to the image and identity of the City. They may be the work of master craftsmen, or may be models of proportion and ornamentation, or designed to suit particular climate.	Heritage Grade-III comprises of buildings, and precints of importance for town scape; they evoke architectural aesthetic or sociological interest though not as much as in Heritage Grade-II. These contribute to determine the character of the locality, and can be representative of life style of a particular community or region and, may also be distinguished by setting on a street-line, or special character of the facade and uniformity of height, width and scale.
B. Objective—		
Heritage Grade-I richly deserves careful preservation.	Heritage grade-II deserves intelligent Conservation.	Heritage Grade-III deserves protection of unique features and attributes.
C. Scope for Changes—		
No interventions would be permitted either on the exterior or interior unless it is necessary in the interest of strengthening, and prolonging, the life of the buildings or precincts or any part or features thereof. For this purpose, absolutely essential and minimal changes	Grade-II (A) Internal changes, and adaptive reuse will be generally allowed, but external changes will be subject to scrutiny. Care would be taken to ensure the conservation of all special aspects for which it is included in Heritage Grade-II.	External and internal changes and adaptive reuse would generally be allowed. Changes can includes extensions, additional buildings in the same plot or compound provided that extension/additional building is in harmony with and does not detract from the existing heritage

3. If a holder of a DRC intends to transfer it to any other person, he will submit the DRC to the Commissioner with an appropriate application for an endorsement of the new holders name, i.e. transferee on the said Certificate. Without such an endorsement by the Commissioner himself, the transfer shall not be valid and the Certificate will be available for use only by the earlier original holder.

4. A holder of a DRC who desires to use the FSI credit certified therein on a particular plot of land shall attach to his application for development permission valid DRC's to the extent required.

5. DRC s may be used—

On any plot in the same ward as that in which they have originated or in any ward in the suburbs except as specified in clasue (6) below.

6. A DRC shall not be valid for use on receivable plots in the areas listed below :—

(*a*) On plots falling within 50 m. on roads on which no new shops are permitted as specified in sub-regulation (2) of Regulation 52.

(*b*) Coastal areas and areas in No Development Zones, Tourism Development Zones, and areas for which the Bombay Metropolitan Region Development Authority or Maharashtra Housing and Area Development Authority is the Special Planning Authority ;

(*c*) On plots for housing schemes of slum dwellers for which additional FSI is permissible under sub-regulation (10) of Regulation 33 ;

(*d*) Any heritage building.

(*e*) Any heritage Precinct except with the prior approval of the Heritage Conservation Committee and subject to compliance with the regulations of the particular precinct.

7. The user that will be permitted for utilisation of the DRCs on account of transfer of development rights will be as under :—

Zone in which designated/reserved plot is situated	User to be permitted in receiving areas
1. Residential	Only residential users and in Residential Zones only.
2. Commercial (C-2)	Commercial (C-2) users if the plot where the FSI is to be utilised is situated in C-2 Zone.
	Commercial (C-1) if the plot where the FSI is to be utilised is situated in C-1 zone.
	Residential only in Residential zones.
3. Commercial (C-1)	Commercial (C-1) if the plot where the FSI is to be utilised is situated in C-1 zone.
	Residential in Residential Zones.
4. Industrial (I-1), (I-2), (I-3) ..	Residential only in Residential Zones.

8. DRCs may be used on one or more plots of lands whether vacant or already developed or by the erection of additional storeys, or in any other manner consistent with these Regulations, but not so as to exceed in any plot a total built-up FSI higher than that prescribed in clause 9 below in this Appendix.

9. The FSI of a receiving plot shall be allowed to be exceeded by not more than 0.4 in respect of a DR available in respect of a Heritage Building and upto a further 0.4 in respect of a DR available in respect of land surrendered for road-widening or construction of new roads [according to sub-regulation (1) of Regulation 33], where the said road as shown as passing through the receiving plot itself.

10. With an application for development permission, where an owner/lessee seeks utilisation of DRs, he shall submit the DRC to the Commissioner who shall endorse thereon in writing in figures and words, the quantum of the DRC proposed to be utilised, before granting development permission, and when the development is complete, the Commissioner shall endorse on the DRC in writing, in figures and words, the quantum of DRs actually utilised and the balance remaining thereafter, if any, before issue of occupation certificate.

11. A DRC shall be issued by the Commissioner himself as a certificate printed on bond paper in an appropriate form prescribed by Commissioner. Such a certificate will be a transferable " negotiable instrument " after due authentication by the Commissioner. The Commissioner shall maintain a register in a form considered appropriate by him of all transactions, etc. relating to grant of utilisation of DRS.

Regulation No. 67 regarding conservation of listed buildings, areas, artefacts, structures and precincts of historical, aesthetical, architectural or cultural value.

Final sanction to the list of heritage buildings and heritage precincts.

GOVERNMENT OF MAHARASHTRA

URBAN DEVELOPMENT DEPARTMENT

Mantralaya, Bombay 400 032

Resolution No. DCR. 1090/3197/RDP/UD-11
Dated 24th April 1995

RESOLUTION

MAHARASHTRA REGIONAL AND TOWN PLANNING ACT, 1966.

Whereas, the Municipal Corporation of Greater Bombay (hereinafter referred to as " the said Municipal Corporation ") being the Planning Authority for the areas under its jurisdiction under clause (*19*) of section 2 of the Maharashtra Regional and Town Planning Act, 1966 (Mah. XXXVII of 1966) (hereinafter referred to as " the said Act ") has, by a declaration under sub-section (*1*) of section 23, read with section 38 of the said Act, given notice of its intention to prepare a Revised Development Plan for Greater Bombay, which has been published in the *Maharashtra Government Gazette*, Bombay Divisional Supplement of 13th January 1977 ;

And whereas, the Municipal Corporation, after following the legal formalities, stipulated under the said Act, has submitted under sub-section (*1*) of section 30 of the said Act, the Revised Draft Building Bye-Laws and Development Control Rules for Greater Bombay to the State Government on 30th April 1985 for sanction ;

And whereas, by Government Notice, Urban Development Department, No. DCR. 1089/3814/RDP/UD-11, dated 14th December 1989, published in the *Maharashtra Government Gazette*, Part I, Konkan Divisional Supplement, the draft Development Control Rules for Greater Bombay, 1989 (hereinafter called " said draft Development Control Rules ") were published for public objections and suggestions ;

And whereas, it was considered expedient to modify the said draft Development Control Rules by the addition of two regulations No. 67 and 68 as specified in the Schedule appended hereto ;

And whereas, by Government Notification, Urban Development Department, No. DCR. 1090/3197(a)/RDP/UD-11, dated 20th February 1991, published in the *Maharashtra Government Gazette*, Part I, Konkan Divisional Supplement, the Draft Development Control Regulation No. 67 was published for inviting suggestions and objections.

And whereas, by Government Notification No. DCR. 1090/3197(b)/RDP/UD-11, dated 20th February 1991 a list of buildings and precincts of historical, aesthetical, architectural or cultural value (hereinafter referred to as the said list) was also published and objections and suggestions on the said list were also invited.

And whereas, Shri G. S. Pantbalekundri, Deputy Director of Town Planning and *Ex-Officio* Deputy Secretary to Government, Urban Development Department who was appointed to be the officer for the purpose of hearing objections/suggestions from any person in respect of the said list gave hearing to the persons who have raised suggestions and objections to the said list;

And whereas, on 27th September 1991, Government had published a subsequent notification setting out the classification of the buildings/precincts in certain grades and indicating the effect of the regulation on the different grades of the said buildings and precincts and called for suggestions on the said notification ;

And whereas, the said officer had submitted his report on the said list and the said classification ;

And whereas, Government has taken into consideration the objections and suggestions received on the said list and report of the said officer ;

And whereas, in accordance with first proviso to sub-section(*1*) of section 31 of the said Act the Government has by its notification No. TPB. 4387/716/UD-11 (RDP), dated 23rd February 1995 extended the period for sanctioning the said Development Plan and draft Development Control Regulations up to and inclusive of 31st October 1995;

And whereas, in exercise of powers conferred by sub-section(*1*) of section 31 of the said Act and all other powers enabling it in that behalf, the Government has *vide* Notification No. DCR. 1090/3197/RDP/UD-11, dated 21st April 1995 already—

(*a*) Sanctioned the Development Control Regulation No. 67.

(*b*) Fixed 1st June 1995 to be the date on which Regulation No. 67 shall come into force.

Now, therefore, Government hereby sanctions the list of buildings and precincts of historical, aesthetical, architectural or cultural value as per scheduled annexed.

Conservation of Buildings/Precincts Areas, artefacts of historical, architectural, aesthetical and cultural value in Greater Bombay.

Constitution of the Committee to advise the Commissioner on development/redevelopment of Heritage Building, Precincts etc. preparation of additional list Heritage buildings, precincts by way of altering, deleting, modifying or adding buildings in the list etc. in Greater Bombay.

GOVERNMENT OF MAHARASHTRA

URBAN DEVELOPMENT DEPARTMENT

Resolution No. TPB 4385/2680/UD-11

Mantralaya, Bombay 400 032, dated 25th April 1995.

RESOLUTION

MAHARASHTRA REGIONAL AND TOWN PLANNING ACT, 1966.

Government *vide* Resolution No. DCR-.1090/3197(RDP)/UD-11, dated 21st April 1995, have sanctioned the Development Control Regulation No. 67 for Greater Bombay dealing with conservation of listed buildings, areas artefacts, structures and precincts of historical, aesthetical; architectural and cultural significance, and *vide* Resolution No. DCR. 1090/3197(RDP)/UD-11, dated 24 Apirl 1995 have sanctioned the list of heritage buildings and heritage precincts.

2. This Regulation brings contro *inter alia* on development/Redevelopment, Repairs of listed/ heritage buildings and heritage precincts. The Municipal Commissioner, Municipal Corporation of Greater Bombay is to grant/refuse the development permission in case of listed heritage buildings and heritage precincts in accordance with the provisions of Maharashtra Regional and Town Planning Act, 1966 and of D. C. Regulation No. 67. The Regulation contemplates appointment by Government of a Heritage Conservation Committee to advise the Municipal Commissioner.

3. With a view to discharge its duties and functions under the said Regulation Government is pleased to lay down the qualifications for membership of the Heritage Conservation Committee. The qualification/ composition of the Committee shall be as follows :—

(1) Retired Municipal Commissioner of Bombay Municipal Corporation or a retired Secretary to Government of Maharashtra with relevant experience. — Chairman.

(2) Structural Engineers having experience of 10 years in the field and membership of the Institute of Engineers. — 2 Members.

(3) Architects having 10 years experience and membership of the Council of Architecture. — 2 Members.

(*i*) Urban Designer.

(*ii*) Heritage Conservation Architect.

Architects shall be urban design specialists or having experience in conservation architecture.

(4) Director Prince of Wales Museum .. .. Member

(5) An environmentalist having indepth knowledge and experience of 10 years of the subject matter. — Member

(6) A City historian having 10 years experience in the field. .. ... Member

(7) Director of Municipal Engg. and Services, Bombay Municipal Corporation. — Member Secretary

(*a*) The Committee shall have the powers to co-opt. upto five additional members who may have lesser experience, but who have special knowledge of the subject matter.

(*b*) The tenure of the Members of category 1,2 3, 5 and 6 above shall change after every 3 years, provided however that the same person shall be eligible for reappointment as Member.

(*c*) Vice-Chairman and Chief Executive Officer, BHADA, MHADA or his representative shall be associated at the time of scrutiny of proposals of cessed buildings.

4. The terms of reference of the Committee shall be, *inter alia*,

4.1. to recommend to the Municipal Commissioner whether development permission should be granted under regulation no. 67 and the conditions thereof.

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4.2. to prepare a supplementary list of buildings, precincts, areas, artefacts structures, of historical, asthetical architectural, or cultural value to which this Regulation No. 67 would apply.

4.3. to advise whether any relaxation, modification, alteration, or variance of any of the Development Control Regulations of Greater Bombay, 1991, is called for under Regulation No. 67(4).

4.4. to advise the Municipal Commissioner in the operation of Regulation No. 48 to regulate or eliminate/erection of outside advertisement/billboard on the facade and to recommend to the Municipal Commissioner guidelines to be adopted by the private parties who sponsor beautification schemes at public intersections.

4.5. to adivse whether to allow office user in the island city and when to terminate the same.

4.6. to advise whether Development Right Certificate may be allowed to be consumed in a heritage precinct.

4.7. to advise the Municipal Commissioner to evaluate the cost of repairs required to be given to the owners to bring the existing buildings in the original shape. For this purpose the committee may also try to help the Municipal Commissioner to raise funds through private resources.

4.8. to prepare special designs and guidelines for listed/cessed buildings and non-cessed buildings, control of height and essential facade characteristics such as maintenance of special type of balconies and other heritage items of the buildings and suggest suitable designs adopting new materials for replacements keeping the old form intact to the extent possible.

4.9. to prepare guidelines relating to design elements and conservation principles to be adhered to and to prepare other guidelines for the purposes of Regulation 67.

4.10. to frame special Regulations for Heritage precincts and to advise the Municipal Commissioner regarding the same.

4.11. to advise Municipal Commissioner on any other issues as may be required from time to time during course of scrutiny and in overall interest of heritage conservation.

4.12. to appear before Government either independently or through or on behalf of the Municipal Commissioner in cases of appeals u/s 47 of MR & TP Act, 1966 in cases of listed buildings/heritage buildings and listed precincts/heritage precincts.

By order and in the name of Governor of Maharashtra,

D. T. JOSEPH,
Secretary to Government.

Serial No.	Nature of monuments, bldgs., precints etc.,	Location	Ownership	Usage	Special features	Date	Classification	State of Preservation	Grade
115	Eruchshaw building	Dr. D. N. Road	Private	Office	Cast iron structure and detailing glazed tilling, engraved glass, period lift-cage and sacred well in interior courtyard.	1817	A(arc), E, F, I(sce), B(per), G(grp), B(des), H(tec).	Good	II A
116	Standard buildings	Dr. D. N. Road	Private	Commercial	Shares group value as part of arcaded street front.	1900's	G(grp), F, I(sce).	Good	II A
117	Watcha Agiary	Dr. D. N. Road	Trust	Worship	Assyrian stone facade	1910's	A(his), C(seh)	Good	II A
118	Whiteway Laidlaw building (Khadi Emporium),	Dr. D. N. Road	Private	Commercial	Colonial style	19th cent.	A(arc), B(des), F, B(per), E, G(grp), I(sce).	Good	II A
119	Badri Mahal	Dr. D. N. Road	Private	Residential	Haveli style	1930's	A(arc), E, G(grp), B(des), B(per), F, I(sec)	Good	II A
120	Capital Cinema	Dr. D. N. Road	Private	Cinema	Grey stone building with decorative mouldings. First western style theatre in the Fort since demolition of Bombay Green Theatre.	1879	A(arc), B(des), A(his), C (seh), B(per), A(cul), E, F, I(sec).	Good	II B
121	Victoria Terminus (Bori Bunder)	Dr. D. N. Road	Central Govt.	Railway Terminus and Central Rly. H. Q.	Italian Gothic	1888	A(arc), A(his), B(des), I(sce), B(per), C(seh), E, V, H(tec).	Good	I
122	Anjuman-e-Islam High School	Dr. D. N. Road	Trust	Educational	Indo-Islamic style	1893	A(arc), I(sce), J, B(per), B(des), E, F, G(grp).	Good	II B
123	Times of India	Dr. D. N. Road	Private	Commercial					II A
124	Akbar Peerbhoy Polytechnic	Dr. D. N. Road	Trust	Educational	Indo-Islamic style	1860	A(arc), E, I(sce) B(per), B(des), G(grp).	Good	II B
125	J. J. Institute of Art Complex.	Dr. D. N. Road	Bombay	Educational	Plaque commemorates Rudy and Kipling was born at this site.	1878 to 1907	A(arc), D(bio), E, F, B(des), B(per, I(sce), C(seh), J, A(his)	Good	II B.
126	Mahatma Phule Market (Crawford Market).	Dr. D. N. Road	B. M. C.	Market	Clock Tower and has relief over entrance and fountain in the outdoor wholesale fruit vendors courtyard. Decorative tutelary animal and river goddesses sculpted by Lockwood Kipling.	1869	A(arc), B(uu), A(his), C(seh), B(per), D(bio), B(des), F, H(tec), I(sce).	Good	I
127	Fountains in Mahatma Phule Market.	Dr. D. N. Road	B. M. C.	Fountain	Donated by Cawasji Jehangir	1865-71	B(per), E, F, B(des), G(grp), D(bio), A(his).	Good	I
128	No. 21 Building	Deleted							Deleted

GOVERNMENT OF MAHARASHTRA

GOVT. DIRECTIVES

No. DCR.1090/3197(RDP)UD-11
Urban Development Department,
Mantralaya, Bombay-400 032.

Dated 25 April 1995.

To
The Municipal Commissioner,
Municipal Corporation of Gr. Bombay,
Mahapalika Marg,
BOMBAY-400 001.

Subject: Development Control Regulation 1991 for Greater Bombay.

Sir,

Govt. vide Notification No. DCR-1090/3197/(RDP) UD-11, dated 21 April 1995 have sanctioned abovementioned D.C. Regulation, copies of which alongwith its accompaniments have been sent to you separately. While finalising this D.C. Regulation, Government have observed that it would be necessary to impose certain additional restrictions. I am, therefore, directed to convey following restrictions which shall have the force of additional D.C. Regulations:-

1. Height of Buildings in "A" Ward.

Notwithstanding anything contained in the Development Control Regulations 1991, for Greater Bombay, in 'A' Ward (exclusive of Backbay Reclamation Blocks where BMRDA is the Special Planning Authority) the height of the buildings after reconstruction shall be limited to the existing height of the buildings of similar age in the surrounding area.

Similarly any new buildings shall conform to the general height pattern of the surrounding locality.

In the case of listed heritage buildings and in the case of all buildings within the Fort Precinct (whether or not they are listed buildings) due clearance from Heritage Conservation Committee would be obtained.

All other development permission cases from "A" Ward (except the Backbay Reclamation Area (BBR) Blocks where the Municipal Corporation of Greater Bombay is not the Planning Authority) shall be referred to the Heritage Conservation Committee, whenever question of permission of height of the building is involved.

2. Special Regulations for Precincts.

(i) In cases of listed heritage buildings and Precincts notified as per the provisions of the heritage conservation regulation No.67, the development permissions shall be granted in accordance with the special separate regulations prescribed for respective precincts which shall be drafted by Commissioner in consultation with the Heritage Conservation Committee and got approved from the Government from time to time.

(ii) Road widening line shall be so prescribed under the Bombay Municipal Corporation Act, 1888 as to preserve and not detract from the said Heritage precincts and

(iii) If there are any new roads or road widening lines proposed in the Revised sanctioned Development Plan of Greater Bombay, the Commissioner shall consider the heritage provisions while considering applications for development permissions in these precincts. Necessary [illegible] may be taken to modify the Development Plan accordingly. Pending this action, the widening shall not be carried out.

(iv) If there are any sanctioned Revised Development Plan reservations shown on listed heritage buildings, the same shall not be implemented unless they are absolutely necessary. If required, Commissioner may in consultation with the Heritage Conservation Committee move Govt. to get them deleted/modified as need be. However for this purpose required procedure under law needs to be followed.

(v) No road widening of the existing road shall be allowed under the Bombay Municipal Corporation Act or in Revised Development Plan for Gr. Bombay in such a manner so as to affect the existing heritage building as per the list sanctioned by the Government even though they are not included in the Precinct.

3. <u>Recycling the use.</u>

The Development Control Regulation No.52(4) bans office user in Island City of Bombay. However in cases of buildings included in the Heritage Conservation List, if the owner/owners agree to maintain the listed heritage building as it is in [illegible] state and to preserve its heritage state with due repairs and the owner/owners give a written undertaking to that effect, the owner/owners may be allowed with the approval of the Heritage Conservation Committee to convert part thereof or the entire non-commercial area within such a listed heritage building for the commercial/office user, provided that if the heritage building is not maintained suitably or if the heritage value of the building is allowed to be spoiled in any manner, the commercial/office user shall be disallowed.

4. Mhatar Pakhadi Precinct/Khotachiwadi Precinct Bandra Village Precincts

In case of above precincts, following additional Regulations shall prevail:

(i) No internal roads shall be allowed to be converted into through traffic roads and no widening of small lanes/gullis within the precinct shall be allowed.

(ii) The ground floor buildings wherever existing may be allowed to have ground and two upper floors as per the permissible FSI. However no building within this precinct shall be allowed to be constructed more than ground and two upper floors. No building shall exceed surrounding heights.

Whereas Govt. has given careful consideration to the importance of heritage features of areas, precincts, buildings etc. and is convinced that the foregoing restrictions/provisions are necessary for the efficient implementation of the provisions of the Act, as envisaged in the clause-i of section 22 of that Act, Now therefore in exercise of the powers under section 37(1) of the Maharashtra Regional and Town Planning Act, 1966, Govt. directs the Municipal Corporation of Gr. Bombay to take steps to modify the said Regulations and the Development Plan to incorporate the points in the foregoing paragraphs No. 1 to 4.

I am also directed to enclose lists of additional buildings and precincts received by the officer who conducted hearing on suggestions and objections received on the draft regulation. The Commissioner, in consultation with Heritage Conservation Committee, shall consider whether to include these above buildings or precincts (as well as others which were published by Govt. on 20.2.1991 but not included in the final list), in the Heritage list after following due procedure of inviting objections and suggestions by publishing a notice in the local newspapers having wide circulation. The procedure u/s 37 of MR&TP Act, 1966 need not be followed. Similarly, I am also directed to inform you that the Commissioner in consultation with the Heritage Conservation Committee shall also examine define their boundaries and recommend suitably for inclusion of the following areas as heritage precincts:-

1: Marine Drive Precinct,

2. Nepean Sea Road Precinct,

3. Old Cuffe Parade Precinct,

4. Cooperage Development,

5. Khodadad Circle Precinct,

6. Area to the south of Gamdevi Precinct.

7. Five Gardens Precinct, Matunga."

Yours faithfully,

(G.S. Pantbalekundri)
Deputy Secretary to Government.

Copy forwarded for information and necessary action to:

The Director (Municipal Engineering & Services),
Municipal Corporation of Gr. Bombay,

The Dy. Director of Town Planning, Bombay Division,
Bombay.

1. FOR OWNERS OF GRADE - I LISTED BUILDINGS

Owners of Grade-I buildings should submit an Inspection Report prepared by a qualified architect or structural consultant preferably with some experience in restoration and conservation work.

The Inspection Report should include the following:

- a brief note on the history and significance of the structure as well as summary of the conservation tasks and approach proposed;
- drawings (preferably recently measured drawings mapping the existing state of the building) showing the following:
    a. plans of all floors of the building including the terrace and roof levels.
    b. elevations and typical sections showing levels, profile and details of floor slabs and roof.
    c. typical wall section.
    d. enlarged typical architectural details that might need protection or restoration. (viz. cornices, doors and windows, roof trusses, railings, staircase, balconies, floor finishes etc.)
    e. block plan showing location of building as well as open spaces around the structure and widths of roads adjoining the building.
- identification of areas in need of conservation and restoration as well as the tasks to be carried out together with brief material specifications for these works. The areas in need of work should be identified clearly on the above listed drawings.
- schematic drawings showing electrical, plumbing, air-conditioning and any other interventions being suggested. (Detail drawings could be requested by the Heritage Committee if found necessary).
- photographs documenting present state of the building (interior as well as exterior) and key features specially those that are going to be subjected to restoration and conservation.
- site plan showing the existing elements (composed wall, gates, etc.) in the compound as well as proposed elements or additions like substations, underground water tanks, lighting fixtures, cables or any other paraphernalia that might be required to be introduced.

2. FOR OWNERS OF GRADE - II A + IIB LISTED BUILDINGS

GRADE - II A

- Owners of Grade II A buildings should submit architectural drawings (site plans, floor plans, roof plans, sections, elevations) showing the proposed work to be carried out in the interior as well as exterior of the structure. These drawings should include the following:

    a detail wall section showing how the interior works relate to the external features. For example, if mezzanine or new floors are being inserted, the drawing should make explicit how these relate to the external window lines.

    drawings of the exterior showing what restoration work would be carried out on the facades. Even if no alterations are being proposed on the exterior, these drawings should be submitted as a record and commitment towards the conservation of the facade.

- A location/ site plan showing the existing elements (compound wall, gates, etc.) in the compound as well as proposed elements or additions like substations.

- Photographs showing the existing condition of the building as well as important architectural features of the building.

- A brief note on the historical and architectural significance of the structure as well as summarizing the conservation approach and tasks to be undertaken together with brief specifications of the materials and processes to be used.

GRADE - II B

- Owners of Grade II B buildings should submit drawings (site plans, floor plans, roof plans, sections, elevations) showing the proposed work to be carried out in the interiors, exterior as well as compound in the form of extensions additions etc.

- A photomontage of the street and adjacent areas should be presented.

- In case the owner is proposing to develop the compound, a block model at 1:500 or 1:250 showing the proposed additions together with the listed building as well as adjoining structures should be presented. The proposals in the I I B cases will be scrutinized with an emphasis on the mass and volume of the building thus the model is an important component of the presentation.

- Drawings showing details of elevation treatments of the proposed structure should also be submitted. This drawing should indicate materials proposed and any special details that are to be incorporated.

- A location/Site plan showing the existing elements (compound wall, gates, etc.) in the compound as well as proposed elements or additions like subtations underground tanks, lighting fixtures, cables, or any other paraphernalia that might be required to be introduced.

- A brief note which outlines the historic and architectural significance of the buildings as well as the conservation approach and tasks to be undertaken together with brief specifications should be submitted.

3. FOR OWNERS OF GRADE - III LISTED BUILDINGS

GRADE III

Owners of Grade III buildings should submit architectural drawings (site plans, floor plans roof plans, elevations and sections of the structure). The proposed repair/ restorations/ conservation to be carried out on the building must be clearly highlighted in the drawings.

In case the owner is proposing to only restore the building: architectural drawings (plans, sections, elevations) showing the proposed work to be carried out in the interior as well as exterior should be presented. These drawings should include the following:

- a detail wall section showing how the Interior works relate to the external features. For example, if mezzanine or new floors are being inserted, the drawing should make explicit how these relate to the external window lines.
- drawings of the exterior showing what restoration work would be carried on the facade. Even if no alterations are being proposed on the exterior, these drawings should be submitted as a record and commitment toward the conservation of the facade.
- a location/site plan showing the existing elements (compound wall, gates, etc.) in the compound as well as proposed elements or additions like substations underground tanks, lighting fixtures, cables, or any other paraphernalia that might be required to be introduced.
- photographs showing the existing condition of the building as well as architectural features of the building.

In case the owner is proposing to substantially alter the building making additions in the compound or reconstruct the building, the following should be presented:

- drawings (site plans, floor plans, sections, elevations) showing the proposed work to be carried out in the interiors, exterior as well as compound in the form of extensions additions etc.
- a photomontage of the street and adjacent areas together with the listed building.
- a block model at 1:500 or 1:250 showing the proposed additions together with the listed building as well as adjoining structures should be presented. Proposals for new additions in Grade III cases will be scrutinized with an emphasis on mass and volume - thus the model is an important component of the presentation.
- the location plan should show the existing elements (compound wall, gates, etc.) in the compound as well as proposed elements or additions like substations, underground water tanks, lighting fixtures, cables, or any other paraphernalia that might be required to be introduced.
- a brief note which outlines the historic and architectural significance of the buildings or street/ precinct that the building is situated in as well as the conservation approach and tasks being undertaken together with brief specifications should be submitted.

4. GENERAL REQUIREMENTS FOR OWNERS OF LISTED BUILDINGS

In addition to the requirements listed under each category of listed building, the following material (where applicable) should be submitted:

a) Area Statement indicating built up areas, and F.S.I. consumption statement of the existing (original) heritage structure.

b) Certificate from the Architect confirming the authenticity of the documents submitted in the form of drawings, reports, photomontages etc.

In proposals where demolition and reconstruction is proposed, the following material should also be submitted:

a) Certificate from a regd. structural engineer confirming the unsafe condition of the structure and its inability to withstand any further repairs or additional structural load if any additional B.U.A. consumption is recommended by the committee.

b) Confirmation from the existing tenants and co-owners, if any, for the proposed redevelopment scheme.

c) F.S.I. statement, stating maximum F.S.I. permissible as per D.C. Regulations in force and applicable to H.R.D. scheme under reference. F.S.I. requirement for rehousing existing tenants/co-owners, balance F.S.I. & its utilization and beneficiaries i.e.. private party/govt. body like MHADA etc. should be clearly tabulated and stated. Where necessary an explanatory note should be included.

d) Justification and eligibility for additional F.S.I. requirement if any claimed by the Architect/ Owner/ Developer.

e) A project report or synopsis for the proposed H.R.D. Scheme covering aspect of Heritage conservation within the scope of Heritage Conservation regulations in force and explaining how this is achieved.

All concessions required in D.C. regulations from the committee should be submitted with proper justification for these wherever possible. These should be illustrated with diagrams for clarity.

NOTE: All plans, elevations, sections and other documents that are submitted to the Heritage Committee should be as per the requirements of the 'Building Proposals' department.

MUMBAI HERITAGE CONSERVATION COMMITTEE
(Constituted by the Government of Maharashtra)
No.

D.M.SUKTHANKAR, I.A.S.(Retd.)
Chairman

Office :
C/o. Chief Engineer (Development Plan)
Municipal Corporation of Greater Mumbai,
4th floor, Annexe Bldg ,Municipal Head Office,
Mahapalika Marg, Mumbai-400001.

To,
Smt. Tasneem Mehta
Convenor – Greater Mumbai Chapter
INTACH,The Anchorage,
P.J.Ramchandani Marg,
Mumbai-400039.

Subject: Nomination of CST as a World Heritage Site and preparation of Special Guidelines for surrounding Sub-Precincts.

Dear Madam ,

We are in receipt of your letter dated 1oth January 2003, informing us of the proposal to nominate CST as a World Heritage Site and the further proposal to declare the surrounding Buffer Zone(s) as one (or more) Sub-Precinct(s) with Special Guidelines to regulate development in the area.

As your letter reached us on the same day of our monthly Heritage Conservation Committee meeting and considering the urgency of the proposal, your letter was tabled at this meeting for the members to consider.

Though the shortage of time did not permit a detailed scrutiny of the proposal, we would like to state the following:

(i) The M.H.C.C. welcomes the decision of the Indian Railways to propose the CST for nomination as a World Heritage Site and would like to convey its " in principle" support to this nomination.

(ii) The M.H.C.C. also conveys its "in principle" support for the framing of Guidelines to regulate development in an appropriately delineated Buffer Zone (or Zones) .

(iii) Once the Guidelines are duly finalised, we shall be pleased to recommend them for publication / notification by the State Government, with a view to providing long term protection to the site.

Yours faithfully,

Sukthankar

Chairman, M.H.C.C.

Resi : ' Priya '(5th floor), 9 ,Khan Abdul Gaffar Khan Road, Worli Sea face, Mumbai 400 025. Tel : 24938522 , 24960807.

The Open University

Faculty of Arts

Department of Art History
The Open University
Walton Hall
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Direct Line (01908) 652479
Fax (01908) 653750

30 : 12 : 2002

Vikas Dilawari
(Conservation Architect)
273 Jawahar Nagar
Goregaon West
Mumbai 400062
India

Dear Mr Dilawari

I was delighted when you told me that the former Victoria Terminus was to be nominated as a World Heritage site. As you know I think it is certainly a building that should be on the list. We have discussed its qualities many times since we first worked together on that BBC film, and my admiration for the building continues to grow.

One quality of the building that is too often overlooked seems to me the planning. The difficult linkage of train shed and terminal building, with their very different functions, seems to me to be handled with a high degree of sophistication. The central domed tower, which is such a landmark, announces the entrance for both passengers and administrative staff alike. But, as the northern half of the building was entirely given over to passenger use, there was a direct and intimate linkage between terminal and train shed. This arrangement is markedly superior to Scott's St Pancras in London, where access to the station through a pair of double height Gothic arches, notoriously interrupts the ground and first floor circulation of the Midland Grand Hotel. He was also much criticized at the time for providing bedrooms in the hotel which looked directly onto the train shed roof, an unfortunate lapse, which Stevens arrangement in Mumbai successfully avoids.

If this observation adds anything to your analysis of the building, please feel free to include it to your submission.

With all good wishes

Dr Colin J.K.Cunningham
Senior Visiting Research Fellow

CHHATRAPATI SHIVAJI TERMINUS

MAIN BUILDING, MUMBAI (1888)

A GRADE I, HERITAGE MONUMENT

ARCHITECTURAL CONSERVATION PLAN

1997-98

ARCHITECTURAL CONSERVATION CELL

ACKNOWLEDGEMENT

We gratefully acknowledge the wisdom and vision of the officials of Central Railway for their vision in preserving this valuable living monument. We, the members of the Architectural Conservation Cell of The Associated Cement Companies, relished every moment of the stimulating sessions of deep commitment and dedication to the cause, with such officers. We salute them for confirming our faith that conservation of heritage property is a viable and a welcome activity in India.

WE THANK THE general Manager of the Central Railway to have facilitated the concept, and who we are sure will pilot and carry on implementation of the action plan, which are just essential.

We place our sincere gratitude to the numerous professionals, scientists, thinkers and others, who have been inspired have given their wholesome contributions. This, we trust, will have a favourable long range impact on the approach to preservation of the heritage, at large.

We would also thanks all others who helped us in the studies and the understanding the problems, through their contributions by way of ideas, suggestions and encouragement.

CONSERVATION PLAN FOR CHHATRAPATHI SHIVAJI TERMINUS

(HERITAGE BUILDING)

ABSTRACT

The significant & vibrantly alive monument, the pride of Mumbai, has been working hard rentlessly for over a century and was in serious need for a health check. A comprehensive and conservation approach vis-a-vis impact of use of the building, state of preservation of the elements and materials of construction, and its immediate as well as the long term requirements has been presented in this document.

A full-scale survey of the building was carried out, the distress mapped, quantified, and the causes of the problems and their curative measures are herein illustrated, keeping in mind the tenets of conservation, requirements.

Restoration (rather pompous , considering the eminent grandeur of the historical building under study) methodology with its principles is provided with suitable aids & annexures.

The concept / strategy for implementation of the plan is included which presupposes a Conservation – Professional interface between the clients and the direct execution of the individual schemes (Project Management Team). Phasing the activities and mobilising the resources as recommended, we envisage a revitalised monument, well serviced, presented & utilised, modern and yet a reminder of the wonders of the bygone era in about 3 – 5 years. The spin-offs will be nothing short of setting highest of standards and attitudes toward care for our heritage, an aspect that comes ever so naturally to the railways.

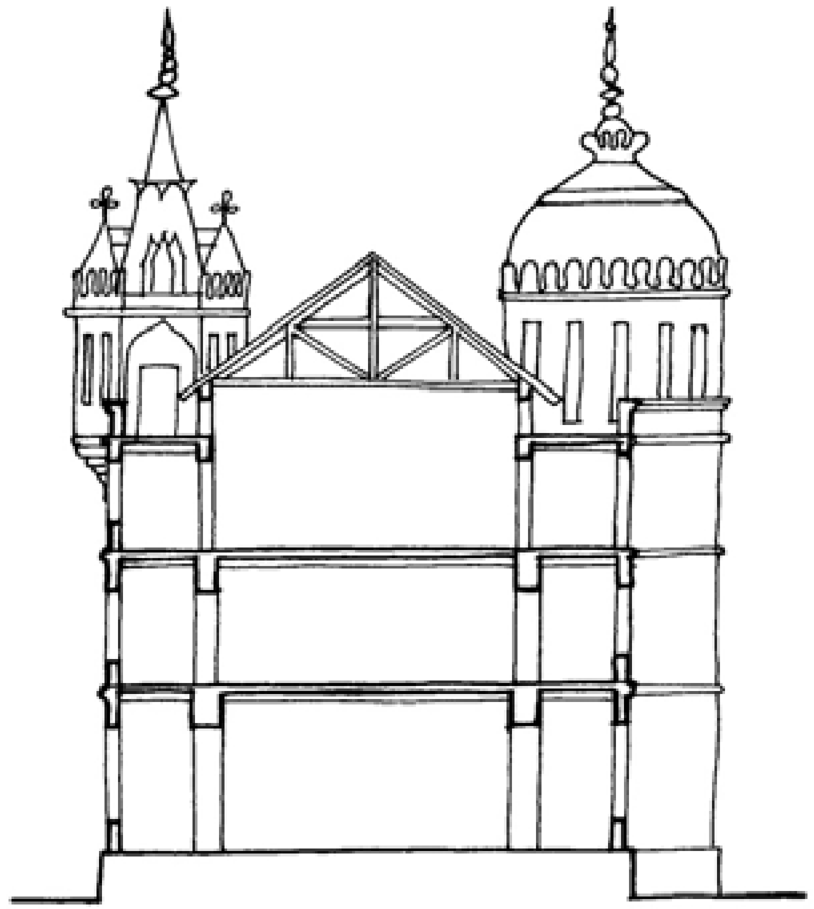
1.1 URBAN SETTING OF C.S.T. ENVIRONS

In 1862, when Bombay Improvement Trust began to demolish the fort walls, a large tract of open land was suddenly available for new buildings. In order to expand the city the authorities planned impressive monumental structures to be built to create magnificent vistas and impress the populace with majestic sights. The Government architects were commissioned to submit designs for an entire collection of building sites, opened up by the removal of the fortifications. The Victoria Terminus was one of these magnificent buildings, sited north-east of the former Esplanade, a part of the erstwhile Mody Bay.

While re-structuring the newly laid out town in the 1860's, two important axes were created- One in an East-West direction emanating from the Town Hall on the eastern edge through the Elphinstone Circle (Horniman Circle) and the other running along the ramparts in the North-South direction. This axis was anchored at one end by the grand Victoria Terminus and at the other end by the Gateway of India. The intersection of these two axes was punctuated by the Flora Fountain.

The Victoria Terminus (V.T.) and the Municipal Corporation Building, both designed by F. W. Stevens, create an important urban node. The V. T. node is linked directly to three important nodes in the Fort precinct, namely the Flora Fountain in the north along D. N. Road and the Crawford Market and Metro in the south. Stevens could easily have located his building to face the south, continuing the north-south axis of the D. N. Road and the railway line, orienting the building towards the commercial centre of the Fort district instead he designed a 'C' shaped building, enclosing a courtyard of its own. This was a bold urban design gesture, which viewed later with the Municipal Corporation building, created a vast plaza.

Today, this node is a hub of frenzied activity, which bears the rush-hour traffic of pedestrian commuters and a cross-vehicular traffic leading to mass confusion. The terminus has to live through the onslaught of ever increasing number of commuters. Amidst all the chaos, the Victoria Terminus rises above this environment, providing a majestic backdrop for a crucial city node. The Victoria Terminus was re-named in 1995 as Chhatrapati Shivaji Terminus.



Sectional elevation of the building

1.2 VICTORIA TERMINUS (1888)

A Rhapsody in Stone – History

Indeterminately beyond the traffic in Hornby Road, Bombay, there looms an edifice which seems to be rather blurred than clarified by the burning sunlight - something vast, fretted, ornate, with a tower like Wren's Tom Tower in Oxford on top of it, and multitudes of galleries, loggias and elaborate windows all around. The structure does not much elucidate itself when we get nearer, tangled as it is in the turmoil of the city, but at least the effect of it, as we enter its railed forecourt between two great lions couchant, is altogether explicit. It is a statement of pride. It bespeaks the incomparable power and beauty of steam, and the uncountable blessings of empire too. It is Victoria Terminus.

- Jan Morris with Simon Winchester, Stones of Empire, 1983

In the decades before the demolition of the Fort ramparts in the 1860s, the present site of Central Railway's Victoria Terminus (now Chhatrapati Shivaji Terminus) and its environs was quite different from what it is today - the bustling and noisy hub of jostling pedestrian commuters rushing to and back from work and the snarl of traffic that seemingly gets worse day by day.

Two of the Fort's Bazaar Gates were once located near the present Nagar Chowk Gardens. Beyond the Gates was an extensive tank, known as Fansi Talao or 'Gallow's Tank'. In earlier times, murderers were hanged near this spot with the gallows standing in full view of the public. At a pillory on the site, offenders were, in the words of the 19th century diarist, K. N. Kabraji, "subjected by the populace to raillery and at times to the indignity of rotten eggs, old shoes, mud and brickbats being thrown at them." The tank was filled in during the 1850s and the gruesome spectacles ceased. The original temple of Mumbadevi, built by the Kolis, was also located in the neighbourhood of the gallows until it was demolished by the British authorities in 1737 when the fortifications were enlarged. Further to the north was the Dhobi Ghat, where washermen laundered piles of clothing until the Ghat was moved to Mahalaxmi. Bori Bunder itself was then a mere landing place for country boats.

Meanwhile, the Great Indian Peninsular Railway (GIP) Compnay was incorporated in England on 1 August, 1894. Four years later, the first railway line was inaugurated on 16 April, 1853 and ran the distance of 21 miles from the make-shift terminus at Bori Bunder in Bombay to Thane, accompanied by bands and considerable pomp and pageantry. According to Kabraji, the Bori Bunder station, located behing Dhobi Ghat, was "a miserable wooden structure which did duty as terminal station until it was replaced by the magnificient Victoria Terminus."

Until the construction of Victoria Terminus, the adminstrative office of the GIP Railway had been located in various parts of the city. Initially it was located near Bombay Green, then moved to Victoria Hall, a bungalow in Mazgaon. In 1863 the office was moved again to a lane off Grant Road and three years later to Byculla Villa. Similarly, the Agent's and Accountants' offices had been located in Shankarshett's bungalow in Byculla and the Chief Engineer's Office was housed in 1869 in a house on Churchgate Street. In 1870, all the offices were moved to Remington & Company's Building in Elphinstone Circle (now Horniman Circle).

While the construction of a new central terminus and passenger station for the GIP was under consideration, A. S. Ayrton, secretary of the GIP Company had proposed a site at Mody Bay - a proposal that was acceptable to the Government of Bombay as well as the Board of Directors in London. The Directors in Bombay, however, countered the proposal and alternatively suggested a temporary goods and passenger station at Bori Bunder, which could gradually be enlarged with additions from the Esplanade and land reclaimed from the harbour side. The land required for the station and terminus was estimated to be about 80 acres. In 1861 the Bombay Government entered into an agreement with the Elphinstone Land & Press Company to reclaim two-thirds of Mody Bay, of which 100 acres were to be given to the Government for the construction of the terminus. Work on the terminus was eventually begun in May 1878 and took 10 years to complete at a cost of Rs 16,35,562 for the offices and Rs 10,40,248 for the station.

The planning and construction of the terminus had a long and chequered history. Having failed to obtain suitable designs from England, the GIP Directors selected as their architect Frederick William Stevens from the Public Works Department with the approval of the Government and commissioned him as a salaried officer to design the new Terminus at Bori Bunder. In 1877 his services were placed at the disposal of the GIP. The work extended over ten years and on its completion, the Directors of the Company, with the approval of the Government of India, presented him with a bonus of Rs 5000 in appreciation of the eminent services rendered by him. Stevens' design for the Terminus was also accorded the honour of being selected for exhibition at the Royal Academy, London, in 1881.

F. W. Stevens had a distinguished professional record. Born at Bath, he was articled in March, 1862 for five years to Charles E. Davis, FSA, Architectural and Civil Engineer & City Superintendent of Works to the Corporation of Bath. In 1867, Stevens passed a competitive examination at the India Office and was appointed to the Engineering Branch of the PWD as Assistant Engineer. He arrived in India in the same year and proceeded to Poona to work under Colonel Mellis, RE. He was appointed Assistant Engineer of the third grade in the following December and a month later was transferred to Bombay and attached to the office of the Architect to the Government, General Fuller of the Royal Engineers. At the end of the year he was promoted to the second grade and transferred to the Office of the Architectural Executive Engineer & Surveyor. Various promotions followed and by the end of 1876, he was appointed Government examiner to the Bombay School of Art.

In 1878, a year after his appointment to the GIP, he returned to Europe on furlough for ten months. Back in Bombay, he took charge of the office of the Executive Engineer at the railway terminus, to superintend the buildings he had designed. During his years in Bombay, Stevens was responsible for the design of many other public buildings, including the Royal Alfred Sailor's Home, the Municipal Buildings and the Bombay, Baroda & Central India Railway Administrative Offices.

Stevens slightly enlarged upon his original plans for the terminus and station buildings, thus necessitating the acquisition of more municipal land. The consent from the Town Council and Corporation took a little time, the monsoon set in and the work had to be postponed. During the first half of 1879, the foundations for the booking and administrative offices were laid and the erection of the passenger shed made good progress. Detailed estimates for the project were sent to the Government of India for approval and sanction.

Very little progress was made, however, in the latter half of the year due to lack of funds. Sanction finally came for the completion of the first storey, following which the building was to be roofed over with corrugated iron and left unfinished until further orders were received from the Government of India. By late 1879 the structure had risen to 3 feet and construction of the booking offices for 3rd and 4th class passengers made commendable progress. The station proper, erected under the supervision of District Engineer, T. W. Pearson, was then known as the Bombay Passenger Station and was opened for traffic on 1st January, 1882.

In the execution of his designs, F. W. Stevens was ably assisted in the gargantuan task by Sitaram Khanderao Vaidya, Assistant Engineer and M. M. Janardhan, Supervisor. While the ground floor of the structures was partly constructed departmentally and partly by various contractors, the upper floors were built primarily by the firm Burjorji Rustomji Mistri & Company. All the models for embellishments on the building were undertaken by Mr Gomez and students of the J.J. School of Art under the supervision of the Principal, J. Griffiths and were executed by local carvers. The painted decorations of the waiting hall and refreshment room were by Signor Gibello, the handsome marble work was by Ms Muraglia of Apollo Bunder, while the plumbing and sanitary arrangements were undertaken by the Company's plumber, M. Smith, assisted by local plumbers.

In December 1885, the interiors were almost ready for occupation and the offices from Elphinstone Circle were moved to the new premises. By 1887, only the dome, the central staircase and the fixing of the sculptures remained to be completed. The waiting and refreshment rooms, however, could also not be opened to the public as connections were yet to be made with the city's sewerage system

Describing the new but still to be completed building, Maclean's Guide to Bombay recorded, "The best point of view from which to gain an idea of the great work is from the junction of Cruickshank and Market Roads. Standing where the tramway lines diverge, the eye takes in at first with mingled amazement and admiration the lofty and gigantic pile of solid masonry; then ranging from one extremity to the other along the ornate outlines directly before it, resting upon the gabled ends, with their tall cutstone spires, the graceful domes above the rounded angles of the quadrangle, distinguishing the rich ornament dimly perceivable all over the exterior from porch to summit, one's vision is finally carried far upwards of a quarter of a mile along the elegant facade which screens the iron structure of the adjoining station in the direction of the Crawford Markets."

Finally, on Jubilee Day, 1887, the terminus was named after the Queen Empress. The architect, F. W. Stevens, died within three years of malarial fever and was buried with due honour at the Sewri Cemetery. In an eulogy in The Times of India on Stevens' death, a close friend wrote: 'The city of Bombay has lost by the death of Mr Stevens a man who did infinitely more for its embellishment than any other of our generation… Mr Stevens was an artist in the true sense of the term. His profession was not merely the labour, it was also the delight of his life. Even on his holidays he was never happy unless his drawing board accompanied him. The mental recreation which other men find in reading or in conversation was found most of all by him in the intellectual absorption of designing... Few people know that the whole of the ornamentative detail of the V.T. was drawn by his own hand. In most architects' offices the minor details are marked out by the assistants, but Mr Stevens took the whole labour upon himself. Of the architectural works which he has left to us, this magnificent station with its blocks of offices will probably be ranked as the most impressive.'

In time, Victoria Terminus came to be considered one of the finest stations in the world and, next to the Taj Mahal at Agra, the most photographed monument in the country at that time. An English traveller, G. A. Mathews, described it in Diary of an Indian Tour, 1906, as "the most beautifully designed and the most elaborately ornamented railway building I have ever seen. The style is Italian Gothic, with certain Oriental modifications in the domes. It is said to have cost the G.I.P. 300,000 pounds and is certainly the finest railway station in India, if not in any country."

Designed with a frontage of over 1500 feet on the main road, Victoria Terminus displays exquisite ornamentation and embellishment on the facade and the beautifully executed panels, dados and friezes adorning the walls and the many loggias, buttresses, arches and windows complement the magnificent exteriors. The majestic dome is surmounted by a colossal figure representing 'Progress' whereas each of the main gables carries a distinctive sculpture - one representing Engineering, another Commerce, and a third, Agriculture. The west front, approached by a grand gateway and sculptures of a lion and tiger couchant (representing England and India) forms three sides of a square with a courtyard between the two wings.

Inside the crowded booking office is a wealth of choice Italian marble, polished Indian blue stone and elaborate stone arches covered with carved foliage and grotesques. Other features here include a tessellated floor, dados of glazed tiles, stained glass windows, galleries of highly ornamented iron work executed by students of the J. J. School of Art and long counters made of cleverly blended wood - ebony, teak and sewan. The groined roof of the booking office was originally painted in a shade of azure with gold stars (it gladly survives).

Striking features in the main entrance include ornate wooden doors spaced between impressively crafted marble columns and a grand cantilevered staircase that loftily skirts the walls with eight and a half feet wide overhanging slabs of blue stone, beautiful wrought iron railing and rich Sienna marble wall. Between each of the eight ribs of the dome are long, stained glass windows decorated with the GIP monogram and arms and foliage.

In 1896, the lighting by kerosene oil at Victoria Terminus was changed to gaslight with incandescent burners, although electricity was considered as an alternative. The next important modifications came in 1929 when the remodelled V.T. was opened on 27 March, 1929 by the Governor, Sir Frederick Sykes. The new buildings also contained refreshment rooms, bed- and dressing rooms and bathrooms for various communities. The former station, which adjoined it, was reserved for suburban traffic. The new wing had 13 platforms, the last five being exclusively used for through trains to and from various parts of India. An extensive car park was also provided for the convenience of passengers. Over the following decades, more additions and modifications were carried out to the original buildings.

Even today, the terminus continues to play a significant role in the life of lakhs of local railway commuters and long distance passengers. The building is a 'must' on the itineraries of tourists from all over the world visiting the city.

1.3 A UNIQUE ARCHITECTURAL EXPRESSION

The Victoria Terminus was designed in the Gothic style adapted to suit the Indian context. After the Rampart removal, the authorities chose to adorn Bombay with the height of 19th century architectural fashions. The governor of the time, Sir Henry Bartle Frere, invited Gothic Revival architects to assist him in planning the city's growth. They followed his ideals to found an indigenous school of Anglo-Indian architecture. Due to several studies of ancient Hindu sites, historic styles came to be incorporated into building designs of the 1860's, 1870's and 1880's in Bombay and in other parts of India. The High Victorian Gothic style was extremely compatible with both, the Indian taste and its building tradition. The Gothic style, offering the colour and complexity of Mughal and Hindu architecture, harmonized and most effectively made reference to the indigenous preference for ornamentation, making it the right choice of style for Victoria Terminus. The skyline, turrets, pointed arches and eccentric ground plans of the Gothic Revival structure being closest in appearance to the traditional Indian palace architecture gave an appropriate platform for the incorporation of vernacular architecture.

The building is a utilitarian work of art, with Steven's wit and play in a deceptive non-symmetrical symmetry. The building is symmetrical about the east-west axis. The elements are freely changed in style, size and materials, and yet there is an indescribable unity in totality. The building was presented as a palace with all the sides of the building being as focal in nature as the other. The skyline and turrets of the Gothic Revival style being closest in appearance to the traditional Indian Palace emphasized the impact of the building.

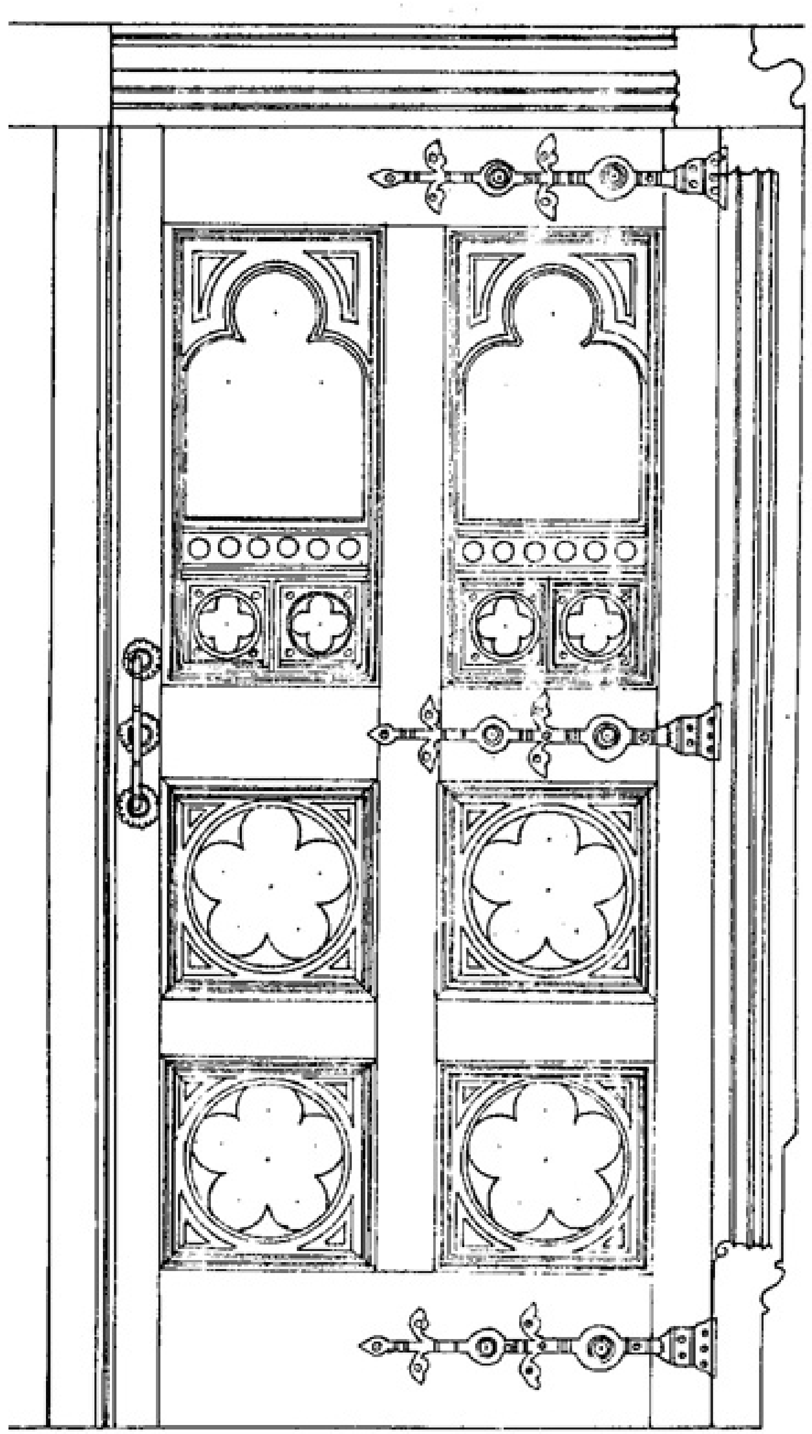
The 'C' shaped building is planned symmetrically about the east-west axis. The uni-axial symmetry is crowned by a high central dome, which acts as the focal point around which the building is built. The two side wings enclose the courtyard, which opens onto the street. The wings are anchored on all four sides by turrets that effectively balance and frame the central dome.

Striking features in the main entrance include ornate wooden doors spaced between impressively crafted marble columns and a grand cantilevered staircase that loftily skirts the walls with eight and a half feet wide overhanging slabs of blue stone, beautiful wrought iron railing and rich Sienna marble wall. Between each of the eight ribs of the dome are long, stained glass windows decorated with the GIPR monogram and arms and foliage. The use of different coloured stone creates a striking impact. There are carvings in white limestone contrasting with grey basalt stone used for detailing on the dome. The main structure is in yellow malad stone and red sandstone with limestone used effectively to pronounce the corner stones.

The Indianisation of the ornamentation has created an indigenous school of motifs and embellishments like the Gujrati trellis- work offsetting the pointed arches, the use of floral and animal motifs in typical Indian style like the peacock jali. There are typically European symbols like empirical shields and animal motifs like owls, which intermingle with the vernacular fenestrations. Other prominent features are the essentially European gargoyles. These are seen adorning all corners of the building and also skirting the base of the dome. Though most are European in design, the use of tropical animals like the crocodile adds an Indian touch. Monkeys play on the arches of the structure while squirrels scamper around the cornices. Thus the building is a unique example of Anglo-Indian architecture.

The planning of the building is simple, with large working spaces. Stevens has conceived a simple arrangement of large rooms with high ceiling, surrounded by verandahs. Thick load bearing walls and an arrangement of transitional spaces from open to semi-open to closed was the perfect solution to the hot humid climate of the region. The local climate and culture was taken into full consideration in design. The external corridors afford excellent protection from the heavy monsoon rains that afflict the area. The use of inner windows, shuttered from the weather, avoids the unpleasant effects, which exposed shutters and wooden awnings have on a facade's appearance. The simplicity and the robustness of the arrangement of spaces is concealed by the elaborate architectural embellishments for which the building is more known.

The dome, being the most prominent feature, covers the grand central staircase. The vast magnificent space with its single volume from floor to dome and its impressive cantilevered staircase spiralling around the open well, was certainly designed to impress and ovderawe the visitor. There is elaborate detailing and use of Italian marble for dado work in the interior. Intricately carved squinches are incorporated in the corner spaces. The ground floor and the wing across the rail line housing the Star Chambers has a wealth of choice Italian marble, polished Indian blue stone and elaborate stone arches covered with carved foliage and grotesques. Other features here include a tessellated floor, dados of glazed tiles, stained glass windows, galleries of highly ornamented iron work executed by students of the J. J. School of Arts and long counters made of cleverly blended wood- ebony, teak and sewan. The groined roof of the booking office is painted in a shade of azure with gold stars.



1.4 CONSTRUCTION TYPE AND MATERIALS

The gothic three storeyed structure has load bearing walls of stone masonry set in lime mortar, with tiled roof over wooden trusses and full boarding. The small dome and spires and decorative parapet wall are made of limestone while the terraces above are constructed of lime concrete laid on wooden boarding resting on wooden joists. The dome and central tower supporting it is made of 2 m thick limestone ashlar masonry construction set in lime mortar.

A archuated system is used for the transfer of floor load to the foundation. As noticed, the size and span of the arches varies with the height, a typical gothic feature.

The 'C' shape of the building in plan, though apparently symmetrical, has subtle asymmetric variations in elevations.

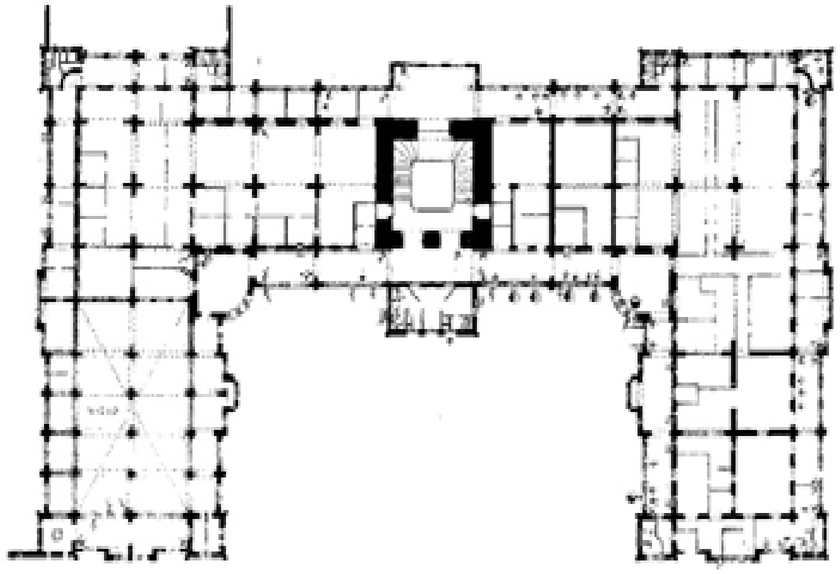
The divisions of the interiors is cleverly achieved by the structural grid-iron pattern used. A continuous 'Verandah' runs around the floors and the central tower on all levels. The load bearing Malad stone walls in the interiors are whitewashed in lime plasters of about 1.5' to 2' thickness.

The gothic character is reflected in intricate carvings mostly on limestone arches, capitals, arch infills, although Malad stone carvings are also found at some places in the exterior. Though structural walls are of Malad stone, the alternate endings are lined with white limestone, Kurla Basalt and red sandstone for aesthetic effects.

The short-circular columns lining the corridor are of Malad stone made of different parts, positioned using iron dowels. The thicket Star Chambers has long columns cladded with high quality black marble. The staircase floor in the main stair lobby and its skirting (1 m high) is also cladded with marble, while the huge cantileverd staircase itself is made of granite.

Seasoned teak wood is used for trusses, joists, purlins, rafters, boardings as wells as for door/window joinery. Tiled roof and flat lime concrete terraces on wooden beams and boardings form the roof with gargoyles for roof water available.

The original flooring would have been of patterned clay tile evidenced by a small area presently.



A typical floor plan

Originally all glazed openings would have been of stained glass. Presently stained glass windows at top levels of the dome remain, along with a few windows at Star Chambers. There are four corner wooden staircases as well as five wrought iron staircases (3 are missing from the original).

A list of building materials and brief description is as follows.

Stone

Many types of stones have been used within the building. The masonry is with yellow Malad stone[1]. For architectural detailing white limestone has been used, and at places a red Agra stone has been introduced to add contrast.

The Malad yellow stone has withstood the weathering rather well. The white limestone has weathered rather badly, especially in places where it is directly exposed, like the cornices, and the pinnacles. The limestone at such places appears porous and brittle.

Timber

Timber used is Burma teak wood. All the structural teak appears to be in good condition, except in few places where it is attacked by wood bores. The timber used in boarding also seems to be in good condition. Most of the timber used in external door

[1] The yellow malad stone is often mistaken to a sandstone due to its equigranular texture is in reality an igneous rock. Please refer microscopic examination results for details.

and window frames is badly damaged and needs replacement/repairs.

Lime masonry

As in all masonry buildings, lime mortar is used for construction. It appears that sand dust has been added for pozzolonic effect.

Cast iron and wrought iron

The Condition of the cast iron and wrought iron all over the building is good and well maintained. They are well painted and cared for.

Stained glass

Stained glass is used in the Star Chambers and quite extensively in the main dome. Overall, it is in good condition. In the main dome all the lower panels have been replaced by fibre glass panels which look quite incongruous, though practical. A report by a renowned expert is enclosed in the annexure

Finishes

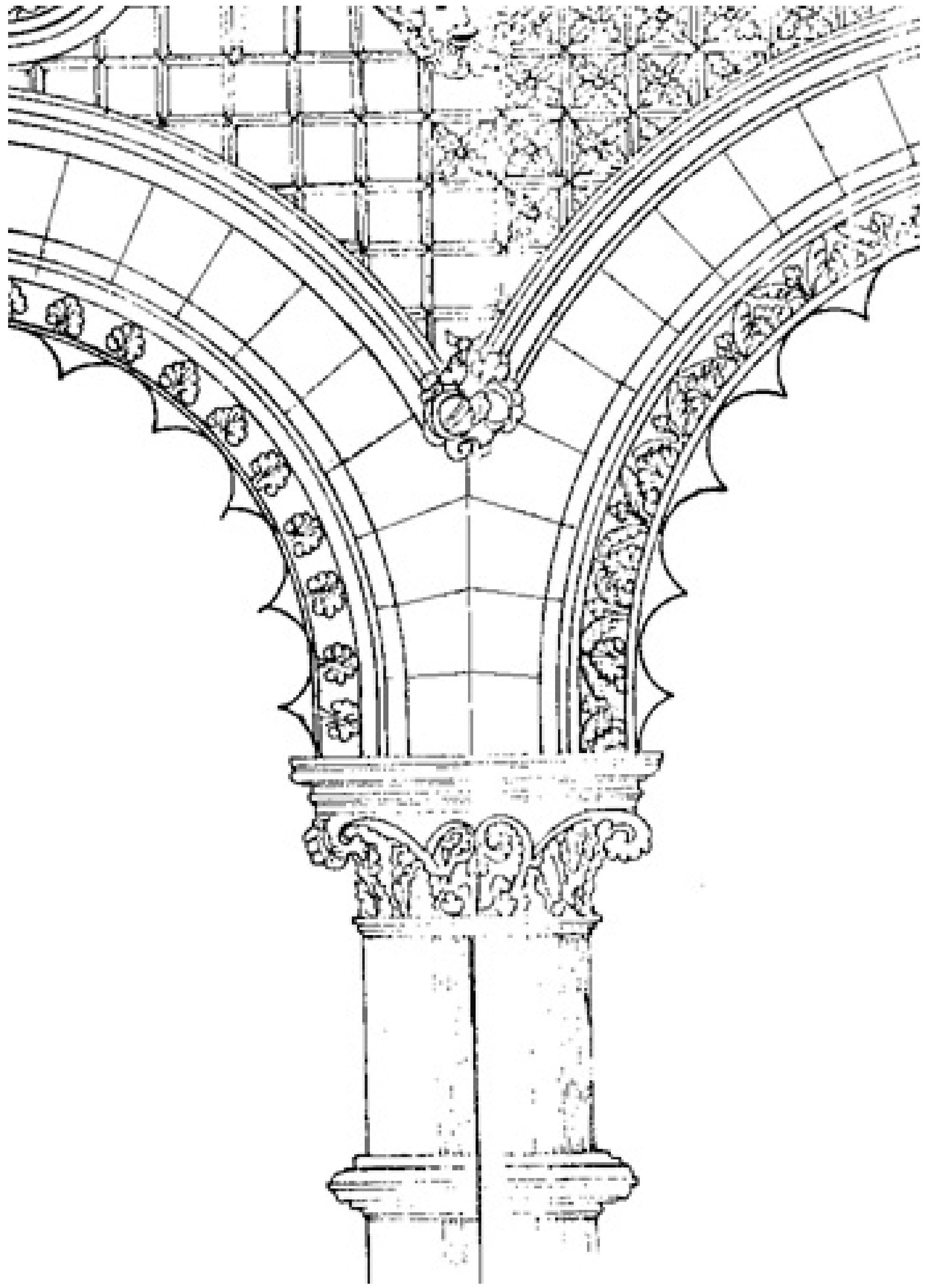
The central stairs and the Star Chambers have been given a choice of rich finishes, which have been retained through the years. Though the flooring in the ground floor has probably been replaced by Indian marble, the Italian marble dado is intact. However, it needs some consolidation.

The original Minton tile flooring and dado is found to be still intact in few places. At many locations the flooring has been repaired in patches; sometimes it has been covered up by a new flooring over it. The original veranda flooring on all floors has been replaced by grey Kotah with black border.

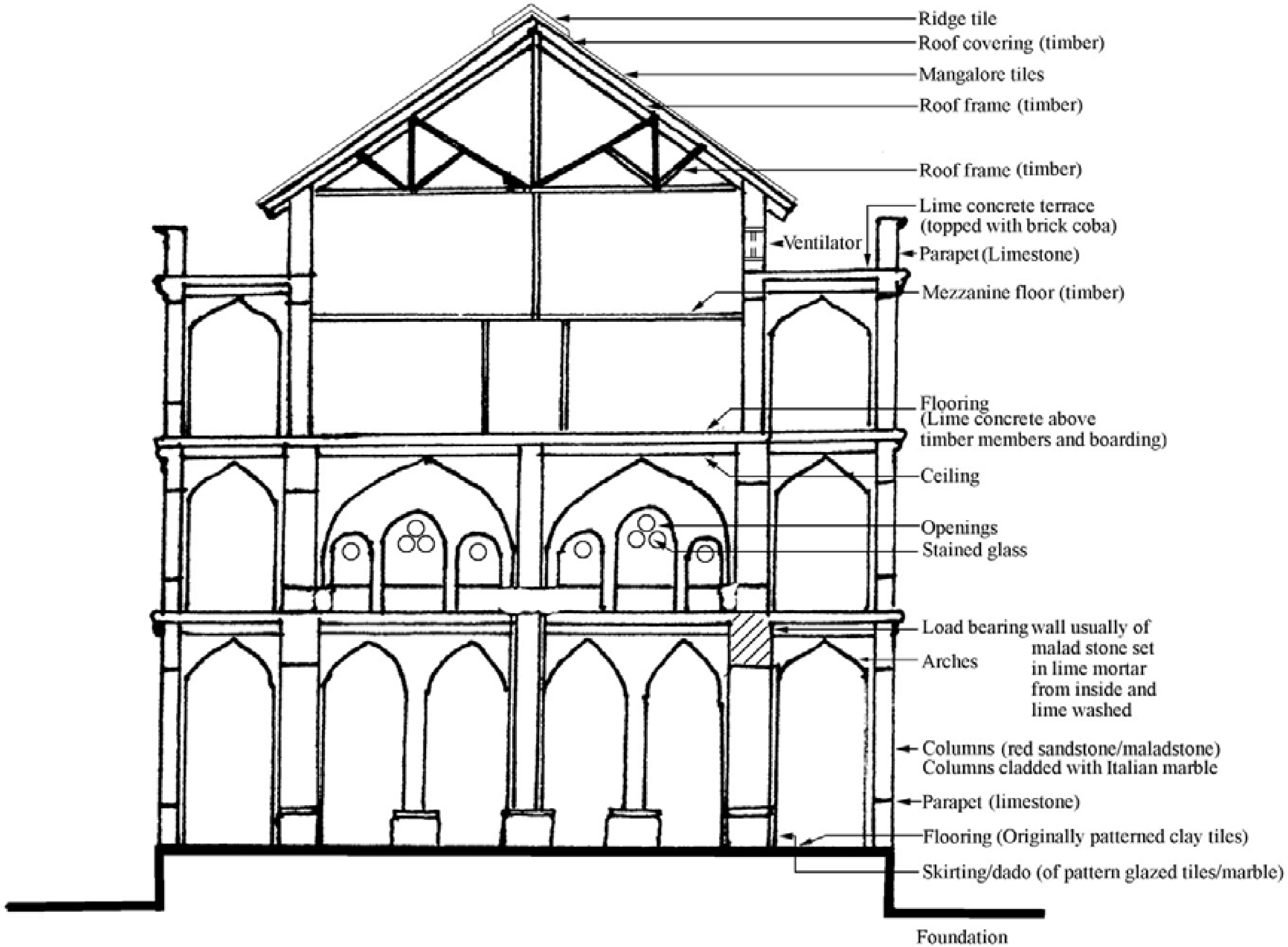
The Star Chambers is the only room to have its original ceiling finish intact, and in a good condition. Though the flooring here has been replaced by new tiles it has not weathered the heavy traffic well and needs to be replaced.

False roof has been created under the original roof on the second floor, probably to hide the trusses and to insulate from the heat. This is in a good condition. False ceiling with acoustic tiles on aluminium framework is made in most of the rooms. However, this looks quite incongruous with the historic character of the building.

Most walls are painted in lime wash, which is a good decision as with masonry so thick, any paint which would not allow the masonry to breathe would blister. However the painting is not carried out carefully and the dripping paint on the stone arches below looks ugly. Care must be taken to clean up the paint from the stone arches.



STRUCTURAL PARTS				MATERIALS		ARCHITECTURAL FEATURES
Roof	Flat			Lime Concrete on wooden planks resting on joists with lime parapet.		Balustrades
	Pitched			Mangalore Tiles on timber battens on planks resting on joists spanning trusses		Statues
	Curved			Limestones		
Super-Structure	Ceiling/Floor			Flooring Tiles on lime concrete on wooden planks and joists		Pinnacles
	Wall	Masonry	Inner	Bricks Stones	Lime Plastered Malad	Groined Roof
			Outer	Stone	Malad-Yellow Sandstone-Red Limestone-White	String Courses Cornices Carvings
		Columns			Sandstone Marble	
			Arches	Stones	Sandstone Limestone	Carvings
	Staircase		Windows	Timber Glass	Stained Glass Ordinary Glass	Monogram
		Opening	Doors	Timber		
			Ventilators	Glass		
	Staircases			Metal Timber Stone	Wrought Iron Basalt with Italian Marble Dado	Grills Mouldings



Ridge tile
Roof covering (timber)
Mangalore tiles
Roof frame (timber)
Roof frame (timber)
Lime concrete terrace (topped with brick coba)
Ventilator
Parapet (Limestone)
Mezzanine floor (timber)
Flooring (Lime concrete above timber members and boarding)
Ceiling
Openings
Stained glass
Load bearing wall usually of malad stone set in lime mortar from inside and lime washed
Arches
Columns (red sandstone/maladstone) Columns cladded with Italian marble
Parapet (limestone)
Flooring (Originally patterned clay tiles)
Skirting/dado (of pattern glazed tiles/marble)
Foundation

Chapter 2

CONSERVATION PLAN FOR CHHATRAPATI SHIVAJI TERMINUS HERITAGE BUILDING

2.1 INTRODUCTION

The building is truly historical and irreplaceable. This needs to be appreciated increasingly with each additional year in letter and spirit. This can not be overdone at all !!

Having accepted the fact, it is imperative that the outlook regarding the attitude in which the building is seen, needs to be new. Afterall, the physical problems apart, the building will dominate the urban space for a very long time to come. However, by proper understanding of the behaviour of the building and its material constituents it will be easy to maintain the building in dignity.

The findings point to the ad-hoc, immediate requirement-based solutions to the ever increasing demands of changes with time, as the major (if only) problem area.

While understanding the scenario, it is clear that the great building was very intelligently designed and diligently constructed as a major public building in its location. The local climate and culture were given full consideration in design, as was the rigorous use the building would be put to.

Some where down the line, amidst the urban pressures and burning priorities, the building has been surrounded by unsympathetic environment, obscuring aura. This, interestingly, has been the starting point of decay, while the lack of the type of care that is called for in dealing with the heritage monument, is slowly pervading inwards, like a cancer !! Perhaps this explains why some parts of the building are in exquisite condition, while others (decidedly, the least frequented / squatted) are in an undesirable state.

The concept of the design is worth dwelling on, for it alone throws light on upkeep / conservation of the building. Stevens has conceived a simple arrangement of large rooms with high ceiling with verandahs on all sides. Thick load bearing walls and an arrangement of transition from open to semi-open to closed spaces, was the solution to the hot humid climate, as is normal to the region. The great dome and the general arrangement facilitated ventilation and keeping the structure dry in the heavy rainfall area.

Introduction to the conservation plan

The great old building is ever busily serving a main function of the metropolis with no apparent discomfort. However, on a close scrutiny the signs of distress are visible and the alarms can be heard. The volume and intensity of use has quadrupled over time and many - alterations have been accommodated to cope with new requirements. Building services (water, electricity, sanitary, etc.) have been expanded with the increased demands over a length of time. The main problem area of buildings, that of waterproofing is being attended to regularly but in isolation with other problems contributing to water leakage. While the changing requirements of the ever growing user group's was given priority, the building itself perhaps could receive better attention and care.

In the absence of a comprehensive outlook towards the physical and other requirements of the unique, large and complex heritage structure, the aforesaid unintegrated changes / alterations have had a impact on the well being of the building. Age, all of 110 years, the aggressive climate and highly polluted micro environs of the traffic-ridden Mumbai, have left their tell tales on the building fabric in the form of broken / cracked / eroded / disfigured / chemically degraded stones (particularly the reactive Marble & Lime stone), precarious stain glass, leaking roof structure, etc.

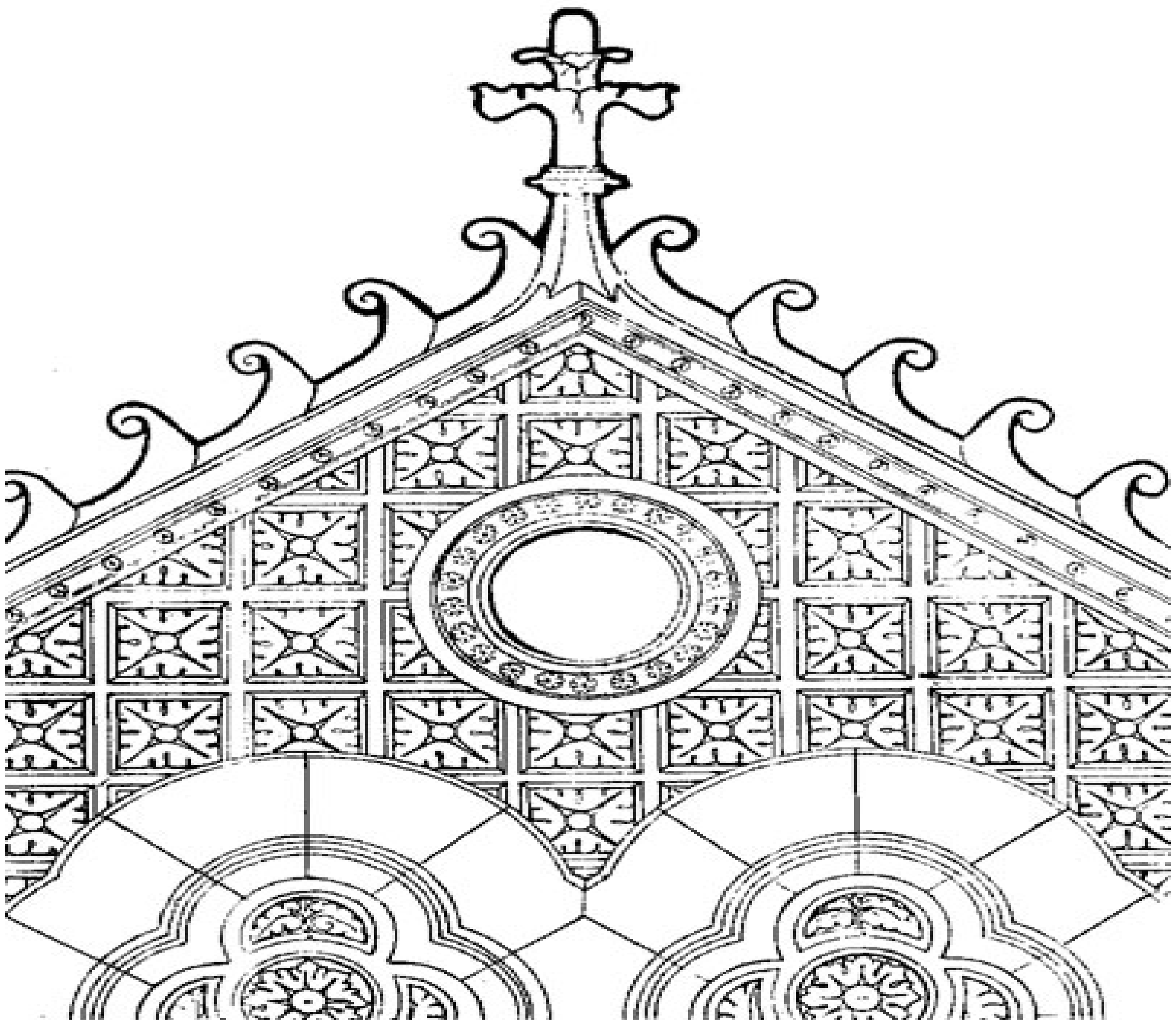
A closer inspection especially of the rear side of the building, roof spaces and interiors reveal several problems that need to be tackled urgently. Crammed cabins and vast unused spaces are simultaneously found, as well as ubiquitous leaking plumbing lines, loose wiring giving a feeling of lack of adequate upkeep. All these are no doubt an indicator of the increasing and varying demands on the building and hence present a strong case for a comprehensive policy for proper use and care of the heritage building, besides timely restoration works and appropriate maintenance.

Increased awareness regarding the significance of the irreplaceable building in contemporary and future societies, coupled with provision of guidelines & training to facilitate authentic repair - restoration, and maintenance befitting the status of the living / functional monument, will help in preserving the building in its full splendour.

Current thinking else where in the World and in India are strongly favouring use of historical buildings as a backbone of societal development, with its built-in wisdom, maturity and educational value for the oncoming generations. In Mumbai, the Urban Heritage Committee of BMC has set up an example for the country by listing & monitoring heritage buildings. CST being the finest of the buildings needs the best possible attention and a comprehensive plan to take the building proudly to the 21st century.

The programme of action encapsulated in the report addresses itself to such issues as adequate understanding of the building, its planning, elements and materials of construction, proper use of spaces, methods of repairs and restoration, and the required level of maintenance required of the building considering its heritage status and current needs.

The problems are studied, quantified and an estimate is prepared for restoration the implementation of which is envisaged in phases, for implementation.



2.2 Brief methodology of the plan

The magnitude of the building complex and the main building under study being vast and in the light of the limited availability of data on past problems and techniques used, the inspection has been broadly based on visual inspection and laboratory analysis of the building stones.

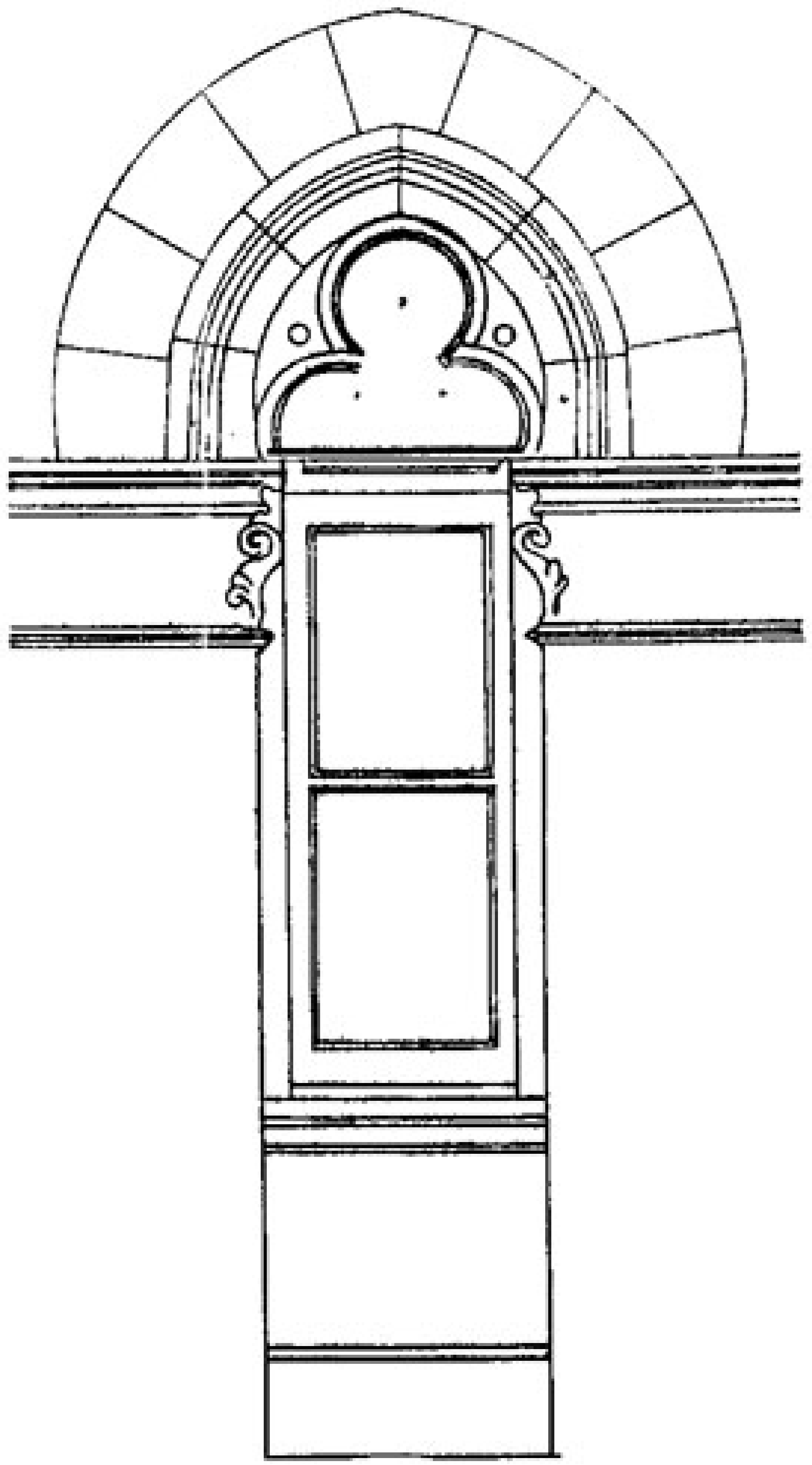
A multi disciplinary team comprising of conservation architects, specialist engineers, architects, material scientists, and historians was assembled for the work.

The team surveyed the building over an eight month period both during wet and dry conditions and focuses on serious, services, structural, architectural and other problems.

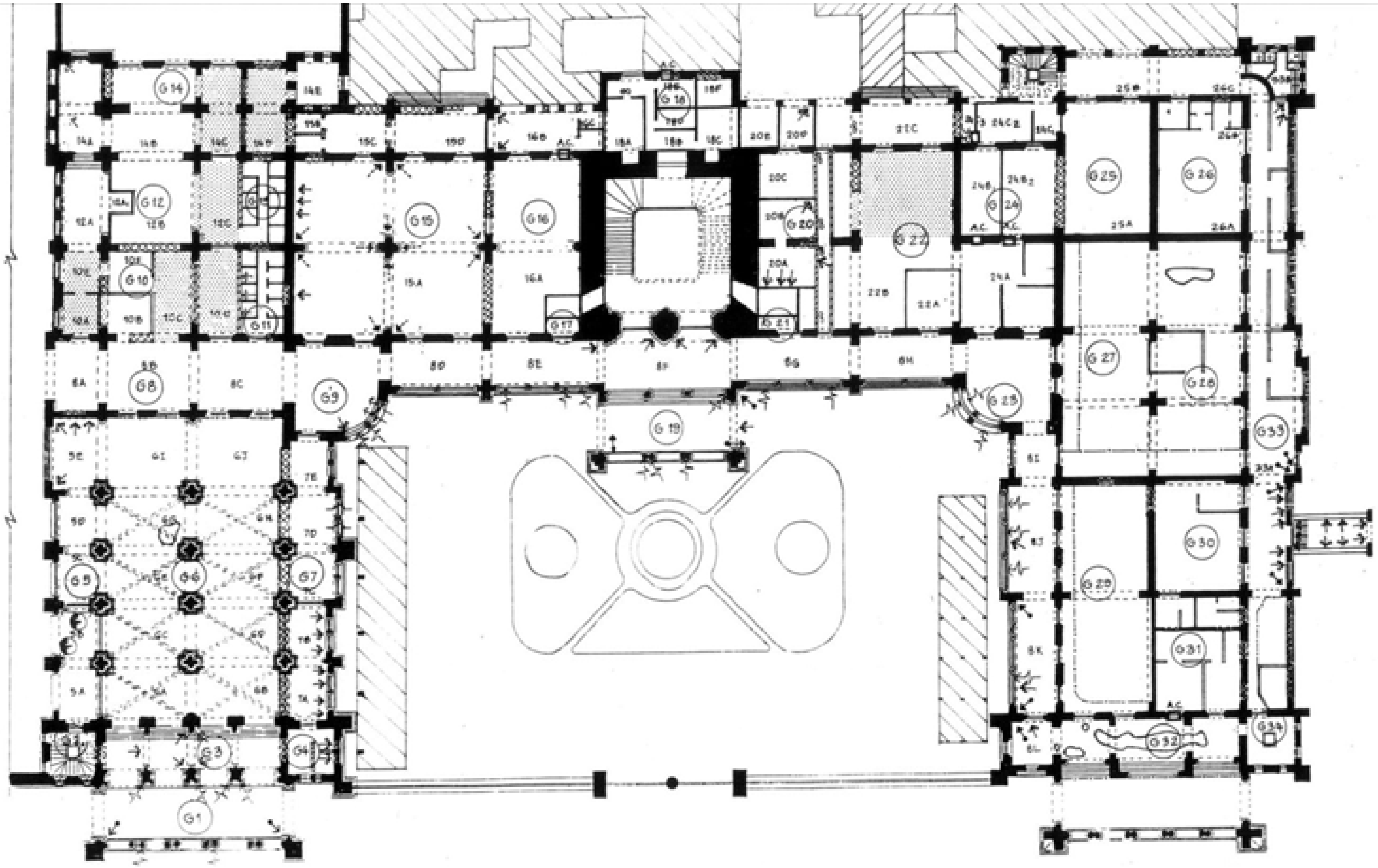
The C.S.T. main building and the platform no 1 towards Crawford market have been detailed for surveys although the entire complex is a heritage site. This was done due to constraints of time etc.

The authentic principle and technique of repair is described with respect to typical problems. The principle of 'Repair and avoid restoring' and 'repair with honesty, using like-materials for-like where possible' has been advocated echoing the best traditions of conservation.

Specific problems in the building services which call for higher specialised inputs, are listed and it is proposed that such agencies provide their services under the overall considerations of the conservation plan. Implementation planning and estimates are prepared and enclosed.



2.3 CONDITION DRAWINGS



LEGEND

	CRACKS		REPLACED BY ACRYLIC SHEETS		STAINING OF MASONARY		LEAKAGE DUE TO PLUMBING
	CRACKED ELEMENT		INFILLED MASONARY	M.E	MISSING ELEMENT		ELECTRICAL CABLES
	MORTAR JOINTS OPENING UP		LATER ADDITIONS		FICUS GROWTH		DUCT ADDED
	CONSOLIDATION REQUIRED		I - SECTION GIRDER ADDED		CAST IRON / AL. GRILLS ADDED		PLUMBING PIPES ADDED

THE ASSOCIATED CEMENT COS. LTD.
THE CONSERVATION CELL
RCO - THANE, PIN 400604

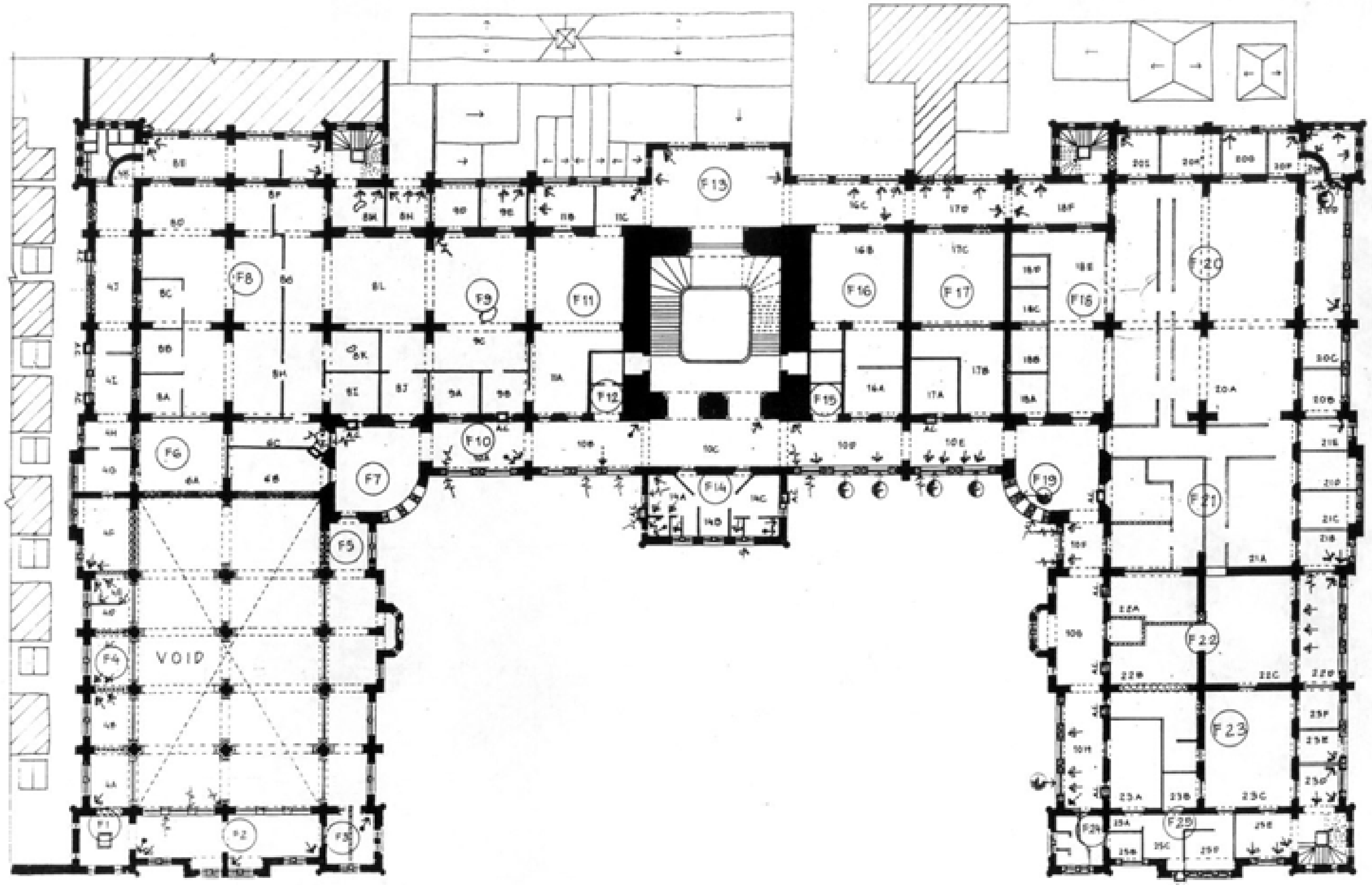
CONSULTANTS THE BOMBAY COLLABORATIVE

CSTMB - THE CONSERVATION PLAN

BUILDING CONDITION DRAWING- CONCOURSE ELEVATION

Scale: 0 10 20 30 FT.

Drg. No. 10



LEGEND

CRACKS	REPLACED BY ACRYLIC SHEETS	STAINING OF MASONARY	LEAKAGE DUE TO PLUMBING
CRACKED ELEMENT	INFILLED MASONARY	M.E MISSING ELEMENT	ELECTRICAL CABLES
MORTAR JOINTS OPENING UP	LATER ADDITIONS	FICUS GROWTH	DUCT ADDED
CONSOLIDATION REQUIRED	I - SECTION GIRDER ADDED	CAST IRON / AL. GRILLS ADDED	PLUMBING PIPES ADDED

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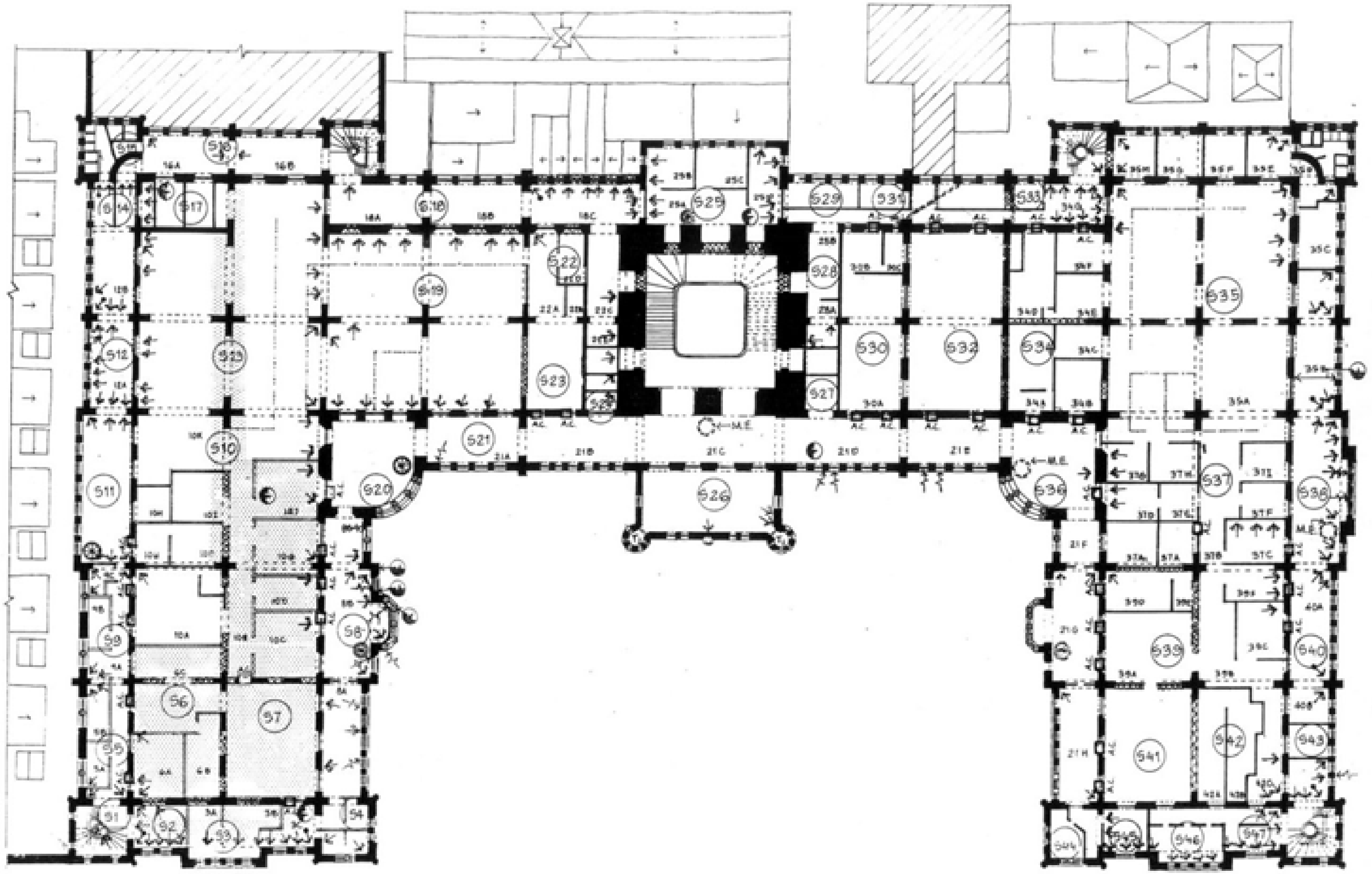

LEGEND

CRACKS	REPLACED BY ACRYLIC SHEETS	STAINING OF MASONARY	LEAKAGE DUE TO PLUMBING
CRACKED ELEMENT	INFILLED MASONARY	M.E MISSING ELEMENT	ELECTRICAL CABLES
MORTAR JOINTS OPENING UP	LATER ADDITIONS	FICUS GROWTH	DUCT ADDED
CONSOLIDATION REQUIRED	I - SECTION GIRDER ADDED	CAST IRON / AL. GRILLS ADDED	PLUMBING PIPES ADDED

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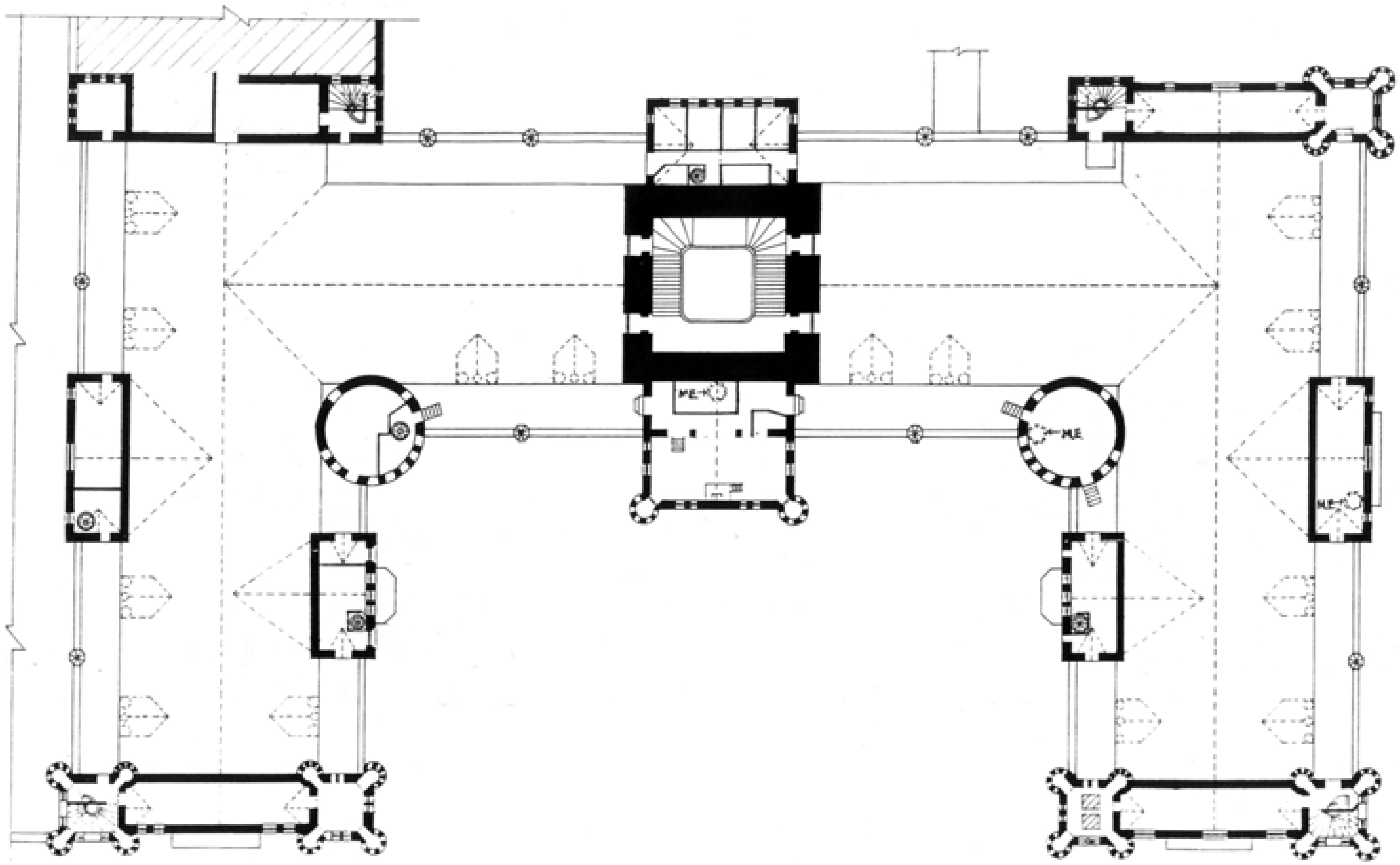
CONSULTANTS THE BOMBAY COLLABORATIVE

CSTMB - THE CONSERVATION PLAN

BUILDING CONDITION DRAWING- CONCOURSE ELEVATION

Scale: 0 10 20 50 FT.

Drg. No. 10



LEGEND

CRACKS	REPLACED BY ACRYLIC SHEETS	STAINING OF MASONARY	LEAKAGE DUE TO PLUMBING
CRACKED ELEMENT	INFILLED MASONARY	M.E MISSING ELEMENT	ELECTRICAL CABLES
MORTAR JOINTS OPENING UP	LATER ADDITIONS	FICUS GROWTH	DUCT ADDED
CONSOLIDATION REQUIRED	I - SECTION GIRDER ADDED	CAST IRON / AL. GRILLS ADDED	PLUMBING *PIPES ADDED*

THE ASSOCIATED CEMENT COS. LTD.

THE CONSERVATION CELL

RCO - THANE, PIN 400604

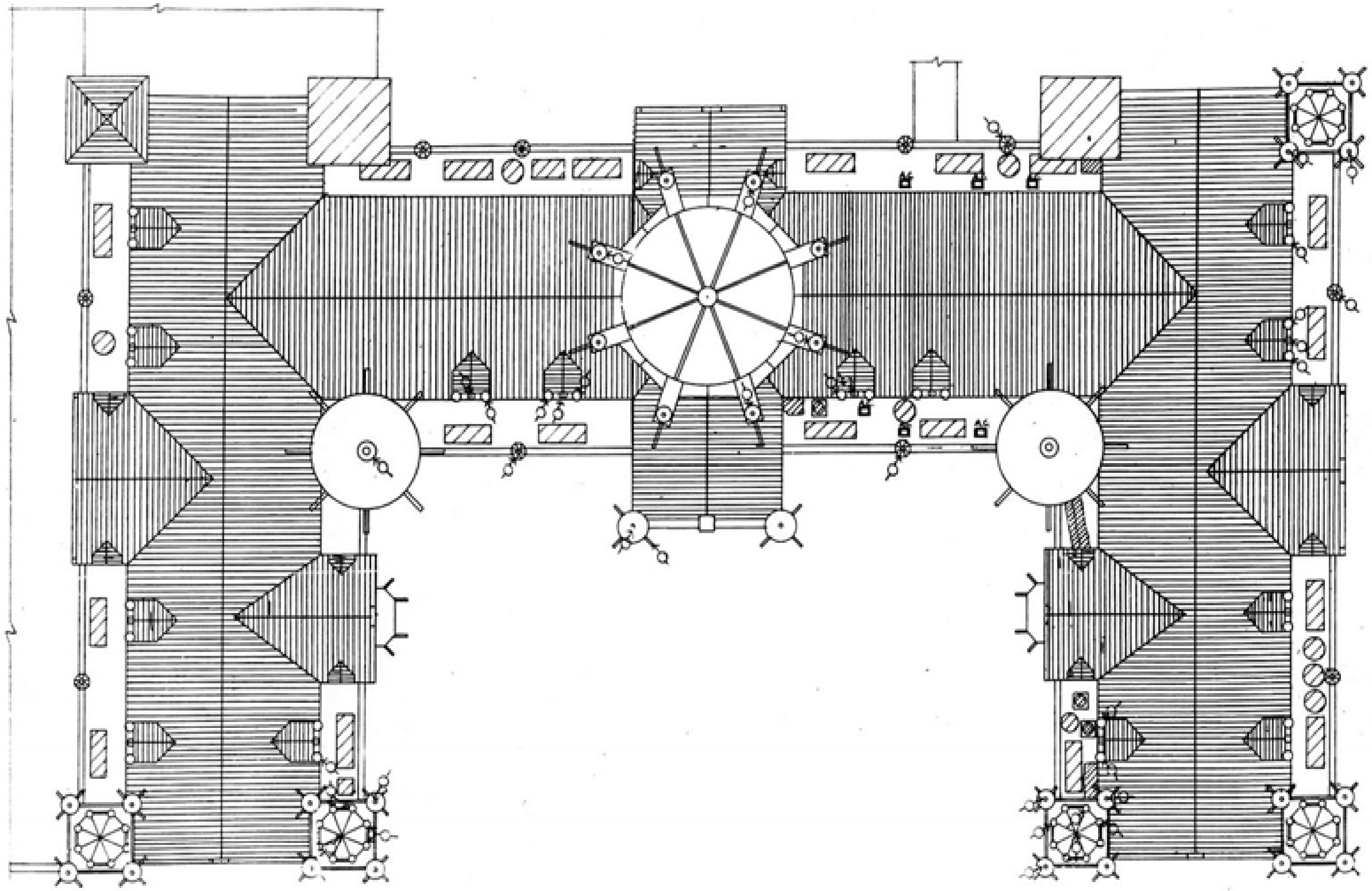
CONSULTANTS THE BOMBAY COLLABORATIVE

CSTMB - THE CONSERVATION PLAN

BUILDING CONDITION DRAWING- CONCOURSE ELEVATION

Scale: 0 10 20 30 FT.

Drg. No. 10



LEGEND

CRACKS	REPLACED BY ACRYLIC SHEETS	STAINING OF MASONARY	LEAKAGE DUE TO PLUMBING
CRACKED ELEMENT	INFILLED MASONARY	M.E MISSING ELEMENT	ELECTRICAL CABLES
MORTAR JOINTS OPENING UP	LATER ADDITIONS	FICUS GROWTH	DUCT ADDED
CONSOLIDATION REQUIRED	I - SECTION GIRDER ADDED	CAST IRON / AL. GRILLS ADDED	PLUMBING PIPES ADDED

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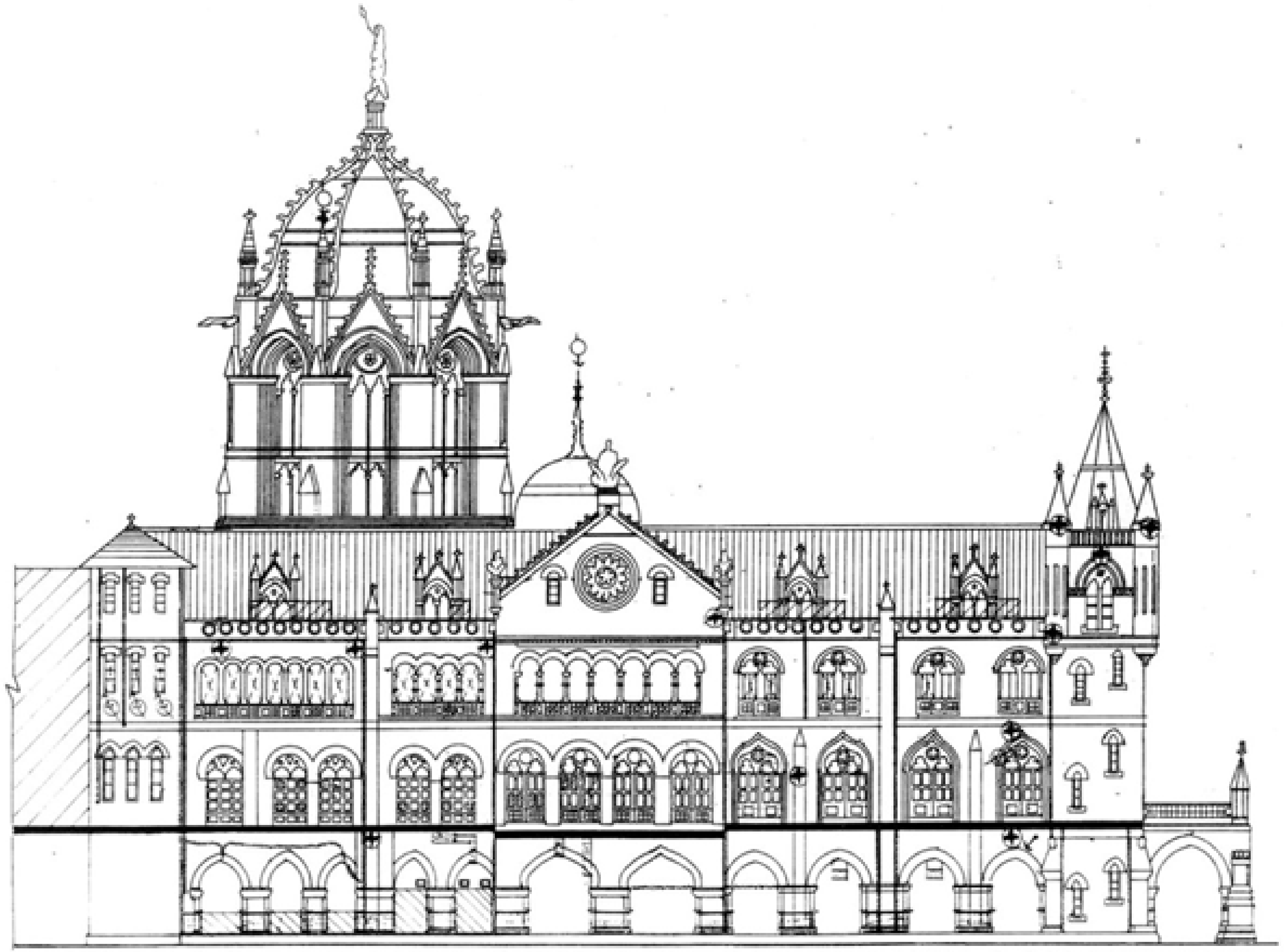
CSTMB - THE CONSERVATION PLAN

BUILDING CONDITION DRAWING- CONCOURSE ELEVATION

Scale: 0 10 20 30 FT.

Drg. No. 10



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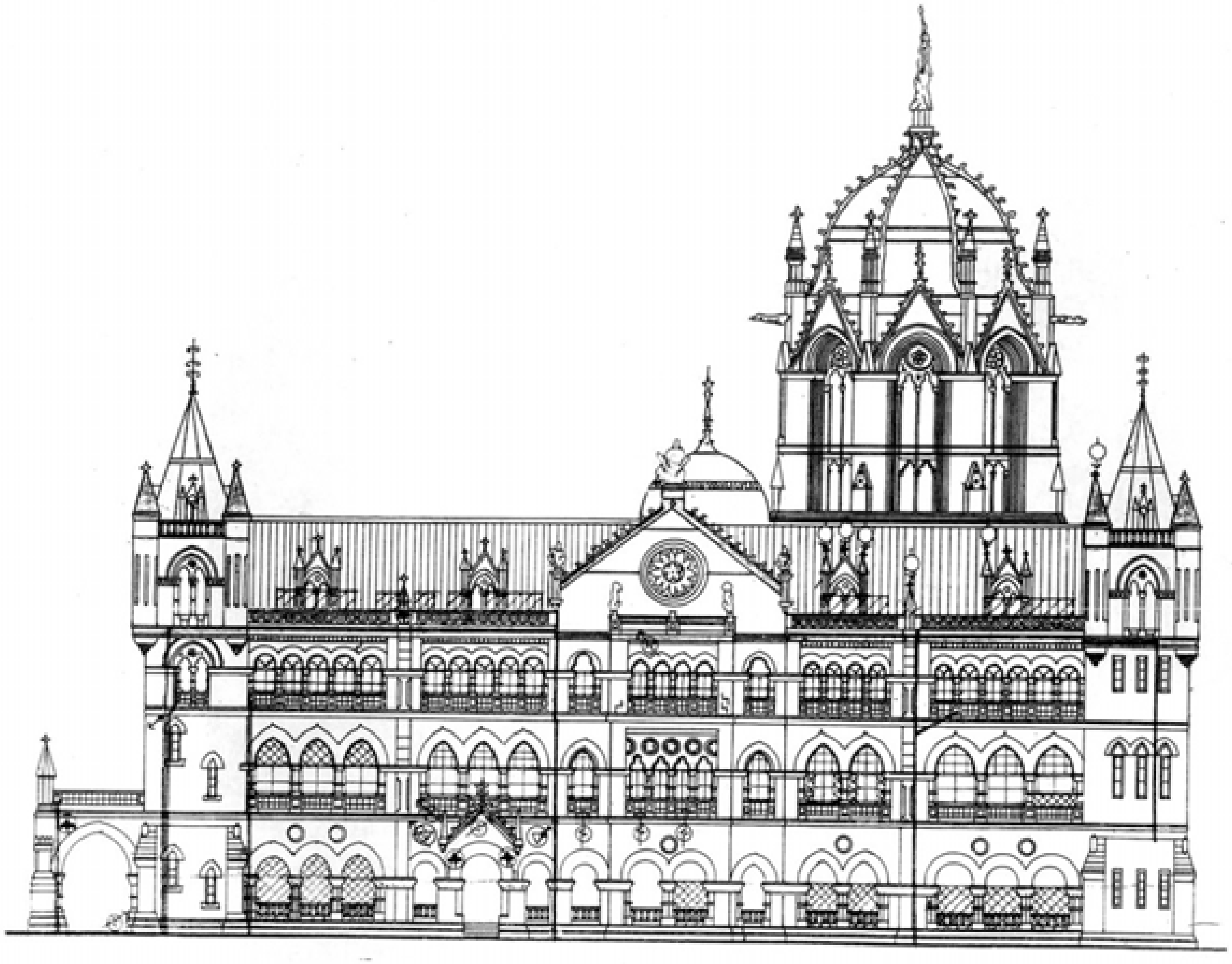

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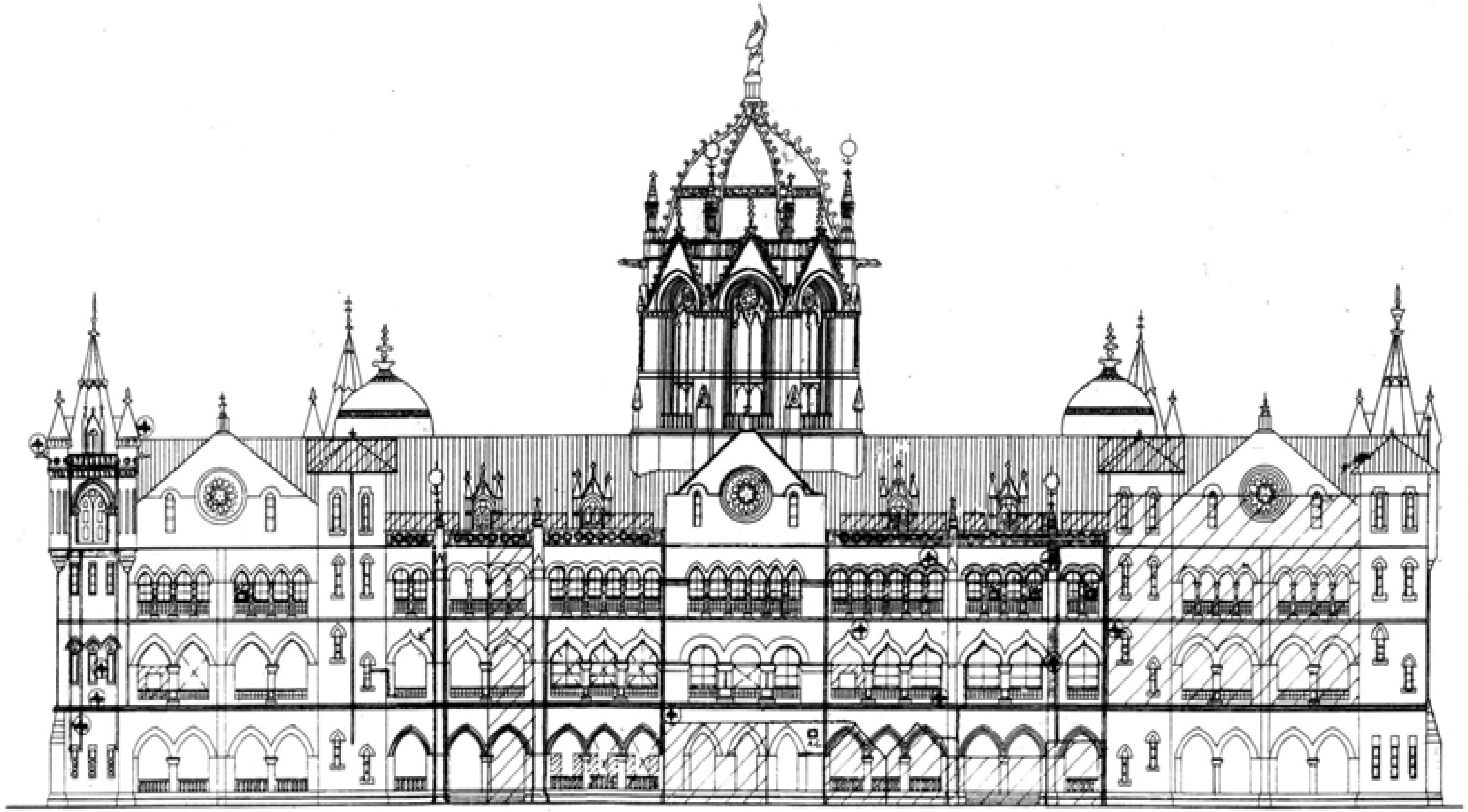

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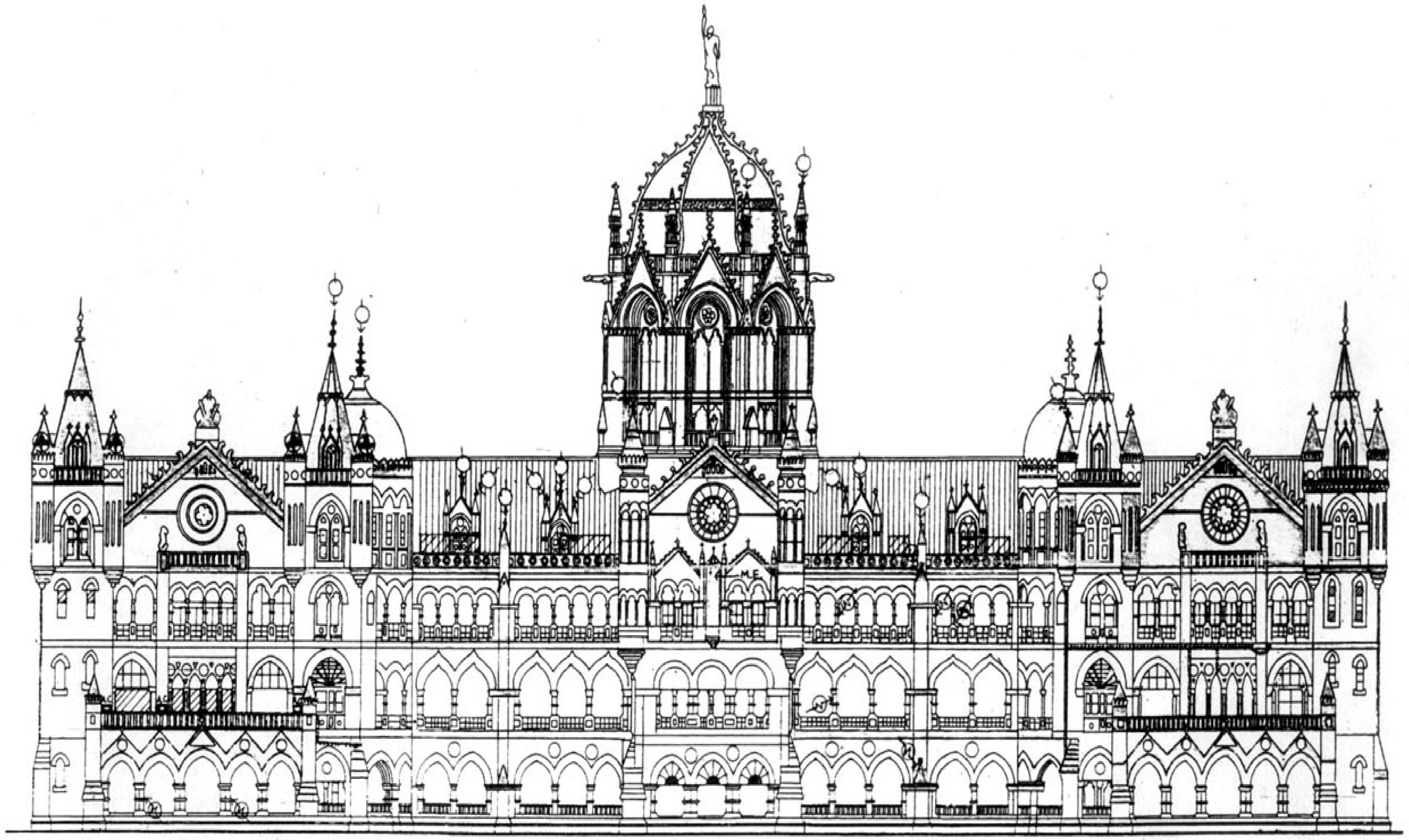

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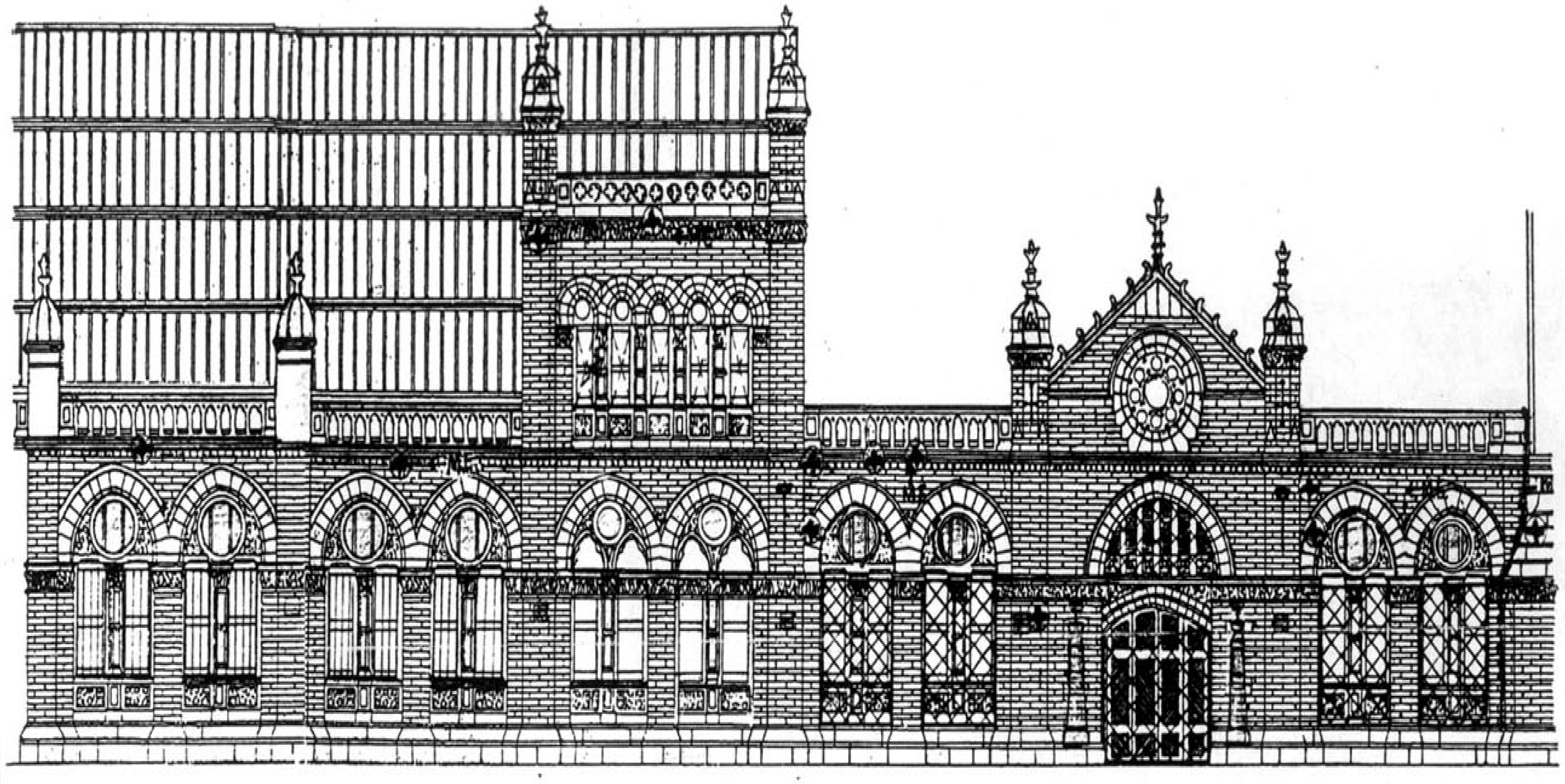

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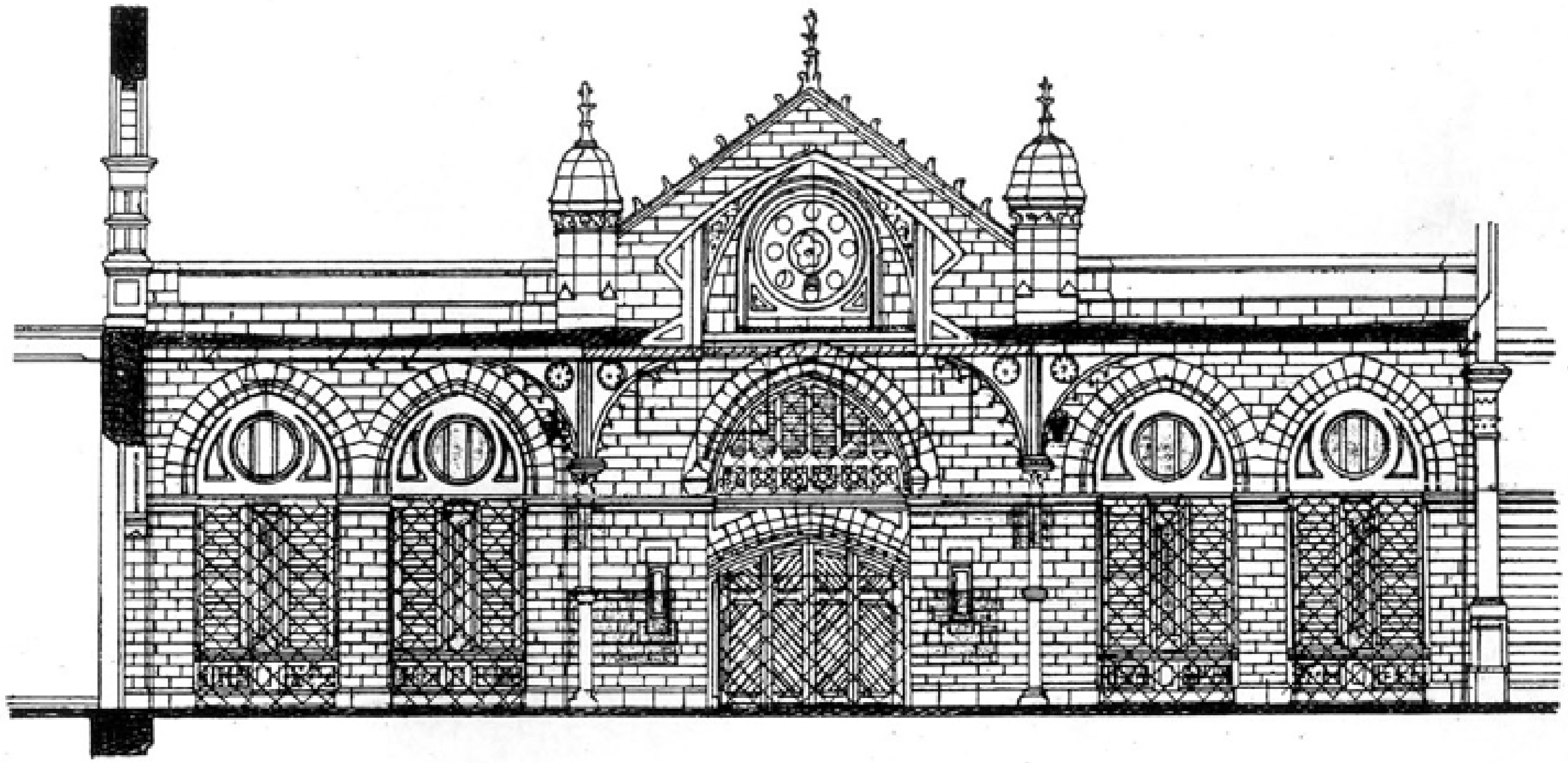

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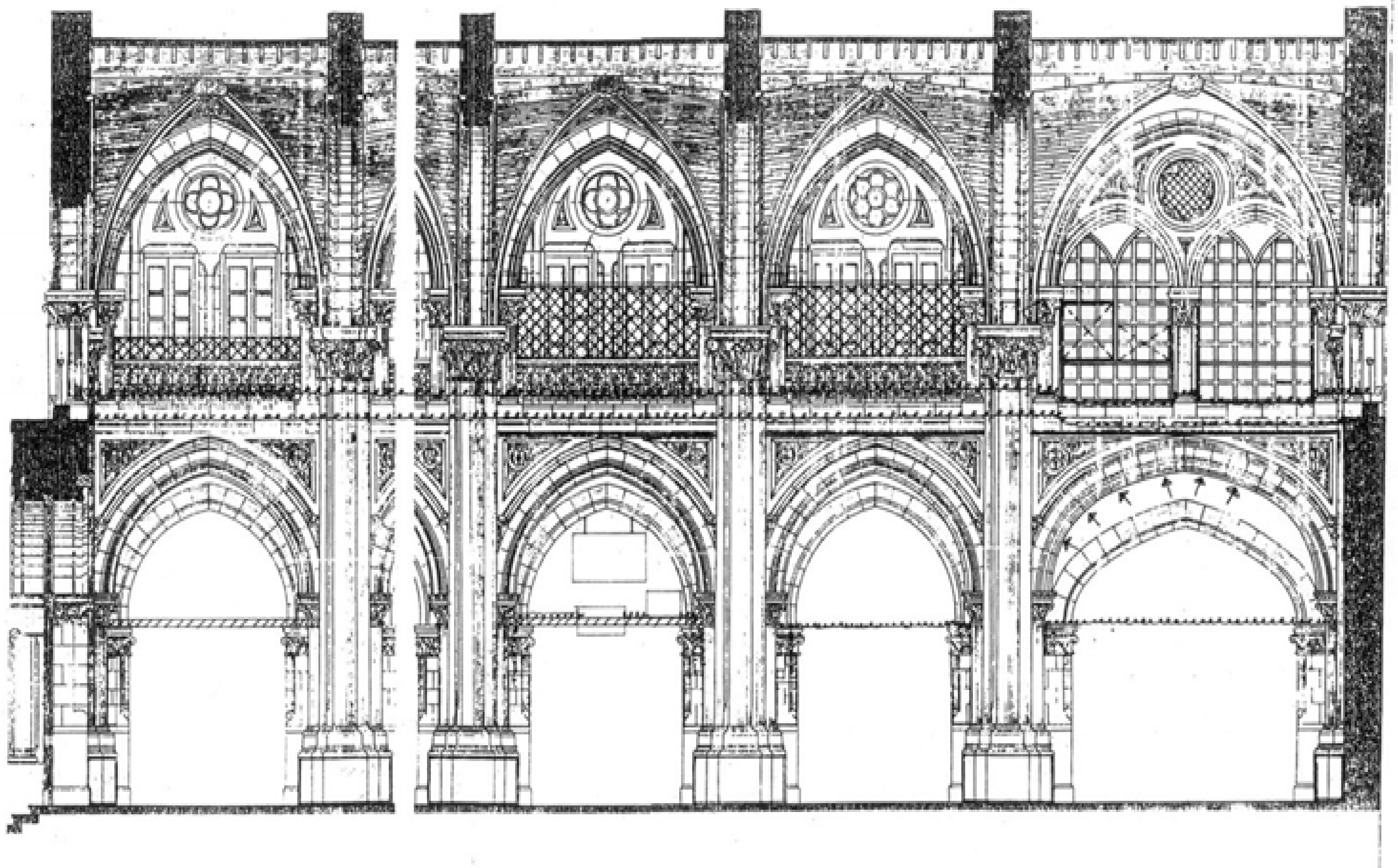

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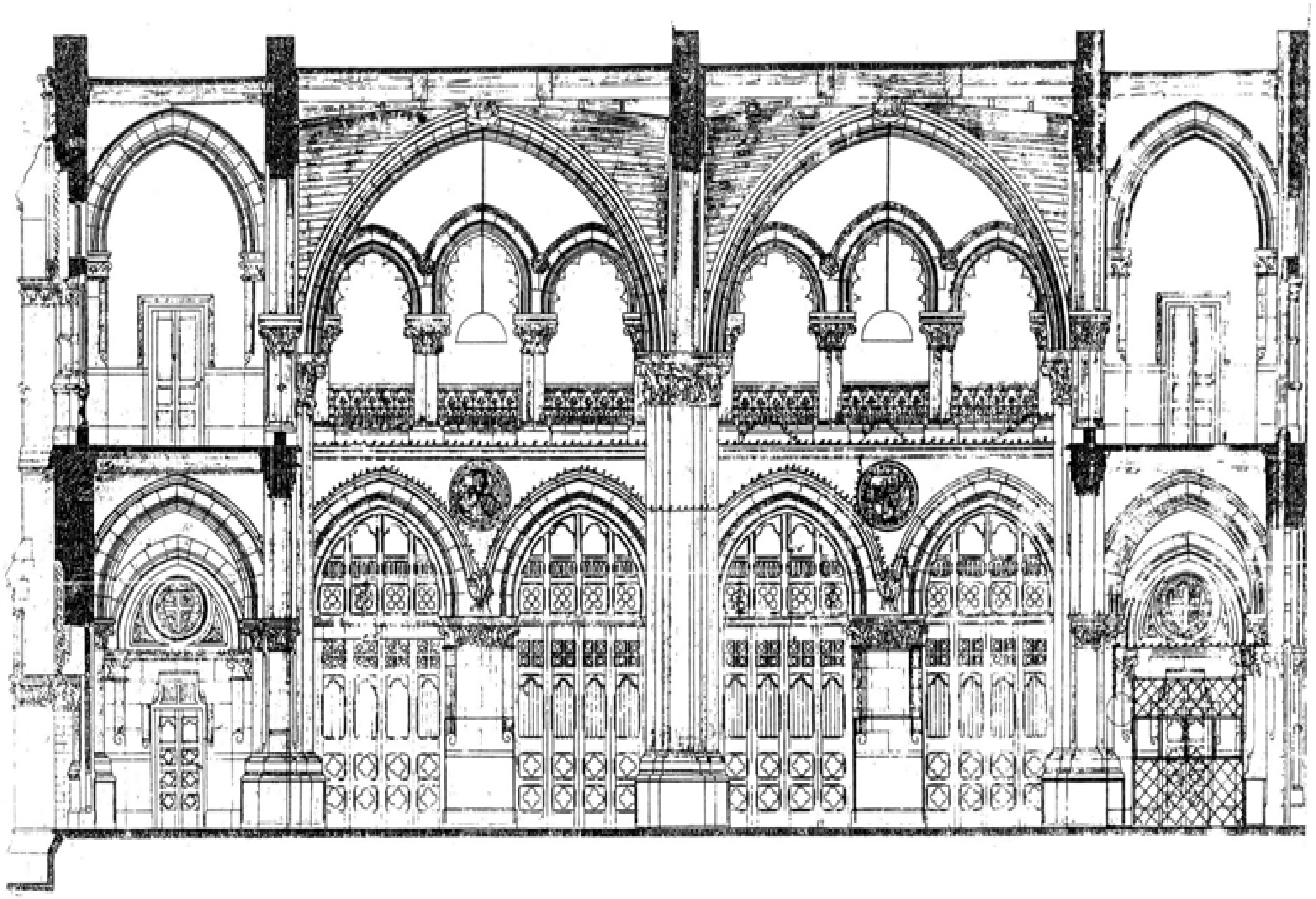

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BUILDING CONDITION DRAWING- CONCOURSE ELEVATION

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TYPICAL PROBLEMS - A CHECK

GROUND FLOOR (Area: 51,00.00 $m^{2)}$

TYPE	CAUSE/EFFECT	AREA
a) Distress*	Marble decay	The columns (Star Chambers)
b) Incongruous additions*	Incorrect	Parking sheds (west side) improper temporary sheds (east side)
c) Seepage*	Degradation	Columns, walls, partitions, toilets, entrance porch, lobby & above parapet wall
d) Leakage due to plumbing*	Degradation	Booking counter, toilets, corridor, entrance
e) Flooring*	Inappropriate, non-uniform	Everywhere
f) Arches infilled*	Inappropriate obstruction of light and ventilation, defy spaces	Star Chamber, library and cash area
g) Brick wall/full height partitions, half height ply partition*	Inappropriate, inadequate light and ventilation, defy spaces	More in the right wing
h) Services*		
Electrical/telephone	Dangerous	
Water-supply	Inappropriate	
Sanitary	Inappropriate	
Rain water drainage	Inadequate	
Fire-fighting	Inadequate	

TYPE	CAUSE/EFFECT	AREA
Solid waste disposal	Improper, disorganized	
Air-conditioning	Improper, disorganized	
Parking	Unpleasant	Need for relocations
i) Cracks		Short columns, parapet wall
j) Buckling		Window panes of the star chamber
k) Rising damp	Degradation	Walls of the dining hall
l) Cast iron/Al. Grills added	Inappropriate, not maintained periodically	Cash area
m) Exhaust/A.C. units added	Improper locations	
n) Incongruous cladding	Bad and non-functional	Star Chambers, cash counter area
o) Mezzanine floors	Improper, Obstruction of light and ventilation	Office area
p) Circulation	Unused – serve as garbage chute	Corner spiral staircases, corridors
q) Lifts	Improper	Adjacent to the staircase

FIRST FLOOR (Area: 46,00.00 m2)

TYPE	CAUSE/EFFECT	AREA
a) Seepage*	Degradation	Toilets, Corridor
b) Leakage due to plumbing*	Degradation	Corridors, toilets
c) Flooring*	Inappropriate, non-uniform	Everywhere
d) Arches infilled, brick wall/full height partitions, half height ply partition*	Inadequate light and ventilation, defy spaces	Corridors, office area
e) Services*		
Electrical/telephone	Dangerous	
Water-supply	Inappropriate	
Sanitary	Inappropriate	
Rain water drainage	Inadequate	
Fire-fighting	Inadequate	
Solid waste disposal	Improper, disorganized	
Air-conditioning	Improper, disorganized	
i) Circulation	Unused – serve as garbage chutes	Corner spiral staircases
i) Cracks	Cause of weathering	Short columns, parapet wall
k) Distress	Cause of weathering	Parapet walls, short columns
l) Incongruous additions	Incorrect	Rear side of the building
m) Exhaust/A.C. units added	Improper	Rooms adjacent to corridor
n) Lifts	Improper	Adjacent to staircases

SECOND FLOOR (Area: 51,000 m$^{2)}$

TYPE	CAUSE/EFFECT	AREA
a) Seepage*	Degradation	Rooms, corridors
b) Leakage due to plumbing*	Degradation	Corridors, toilets
c) Flooring*	Inappropriate, non-uniform	Everywhere
d) Arches infilled, brick wall/full height partitions, half height ply partition*	Inadequate light and ventilation, defy spaces	Entire floor
e) Services*		
Electrical/telephone	Dangerous	
Water-supply	Inappropriate	
Sanitary	Inappropriate	
Rain water drainage	Inadequate	
Fire-fighting	Inadequate	
Solid waste disposal	Improper, disorganized	
Air-conditioning	Improper, disorganized	
f) Distress	Cause of weathering	Parapet walls, short columns
g) Cracks	Cause of weathering	Short columns, parapet wall
h) Incongruous additions	Unpleasant	Rear part of the building
i) Exhaust/A.C. units added	Improper	Rooms adjacent to the corridors
j) Lifts	Improper	Adjacent to the staircase
k) Pipes on floor	Dangerous	Rear corridor
l) Mezzanine	Unwanted storage, addition of dead load	Left wing
m) Missing element	Wrought iron spiral staircases	Corridor
n) Incongruous cladding	Unpleasant and non-functional	Corridors, Toilets in the turrets

ATTIC FLOOR (*Area: 16,30.00 $m^{2)}$*)

Seepage, leakage, improper use of space, unwanted storage, pumps and machines adding to the dead weight and unused area

ROOF (*Area: 8,312.00 $m^{2)}$*)

TYPE	CAUSE/EFFECT	AREA
a) Incongruous additions*	Unwanted storage, extra dead load	Waer tanks, A.C. Units, A.C. ducts, water coolers, machines, pump rooms
b) Waterproofing*		
	1. Domes, spires (2400.00 m^2)	Seepage through limestone joints, efflorescence
	2. Pitched roof (5010.00 m^2)	Leakage through tiles
	3. Flat roof (902.00 m^2)	Existing waterproofing ineffective
c) Architectural Elements	Missing and broken pinnacles, gargoyles	
d) Rainwater disposal	Inadequate	Choked gargoyles and downtake pipes

ELEVATIONS

TYPE	CAUSE/EFFECT	AREA
NORTH ELEVATION		
a) Stone staining*	Environmental pollution	Domes, spires, comices
b) Ficus growth*	Large scale	Walls
c) Electrical cables*	Dangerous	Walls
d) A.C. units, plumbing*	Unpleasant	Walls
e) Incongruous additions, cladding	Unpleasant	Ground floor
EAST ELEVATION		
a) Stone staining*	Environmental pollution	Domes, spires, comices
b) Ficus growth*	Large scale	Walls
c) Electrical cables*	Dangerous	Walls
d) Leakage due to plumbing*	Degradation	Wall
e) A.C. units, plumbing*	Unpleasant	Walls
f) Incongruous additions	Unpleasant, chemical degradation, additional dead loads	Water tanks
SOUTH ELEVATION		
a) Stone staining*	Environmental pollution	Domes, spires, comices
b) Ficus growth*	Large scale	Walls
c) Electrical cables*	Dangerous	Walls
d) A.C. units, plumbing*	Unpleasant	Walls
e) Incongruous additions	Unpleasant	Cast iron grills, covered arches
f) Cracks	Cause of weathering	Comices
g) Missing elements	Cause of weathering	Pinnacles at the roof level
h) Later Additions	Addition dead load	Water tanks

TYPE		CAUSE/EFFECT	AREA
	WEST ELEVATION		
a)	Stone staining*	Environmental pollution	Domes, spires, comices
b)	Ficus growth*	In plenty	Walls
c)	Electrical cables*	Dangerous	Wall
d)	Incongruous additions*	Aesthetically unpleasant, dead load	Water tanks
e)	A.C. units, plumbing	Aesthetically unpleasant	Wall
f)	Leakage due to plumbing	Degradation	Wall
g)	Missing elements	Cause of weathering	Missing & broken pinnacles at the roof level

2.4 SUMMATION OF THE MAJOR PROBLEMS APPEARING IN THE BUILDING

As years pass by, a building undergoes slow degradation due to climatic & environmental changes, but in the case of CST building, it has degraded due to major problems like over-stressed building services (electrical, water-supply, sanitary, rain-water drainage, fire-fighting, air-conditioning, solid waste disposal). Seepage through walls, toilets, columns, partitions; leaking-water tanks, toilet pipes have enhanced degradation. Filled arches, half/full height partitions, unwanted storage, water tanks, machine-rooms, A.C. ducts, mezzanine floor add to the dead load as well as obstruct the natural light and ventilation. This retains the humidity in the building leading to dampness. It stimulates other problems like cracks, wood rotting, peeling of paint, etc. Unused area used as dumping place for variable storage adds to the discomfort. Insufficient space and rather improper location of parking is a great cause of concern. Changing the flooring several times causes damage structurally and gives a non-uniform appearance. The grand central staircase is extensively used and the corner staircases are redundant - they are inadvertently used as solid garbage chutes. The Malad stones and more particularly the limestone on all the elevations are unevenly stained and in places architectural features are hidden due to incongruous additions and alterations caused due to emergent necessities.

The action of wind and rain along with atmospheric pollution has affected the limestone badly. The stone is darkly stained and the surface is brittle. This needs attention. Hence a clear master plan is required to upgrade the building services which include the Electrical System, Plumbing and sanitation, the Fire regulations and Air conditioning system.

There are several physically interlinked problems, mostly related to roof leakage, which is indeed a crisis situation. One can see that the leakage has caused wood rotting, peeling of plaster and a host of other related problems.

In totality it can be summed that the Heritage building is in excellent shape structurally while the architecture, despite the pollution and overuse, continues to behold its status in the urban setting of Mumbai. It is the areas of adequate and sympathetic use, modern building services and attention to systematic and professionally managed restoration programmes followed with training to the in-house staff which require to be taken cognisance of immediately.

In conclusion it can be arguably said that the specialised requirements of the grand old buildings are not always met with within the existing system of maintenance. It requires a defined conservation policy, budget and resources and infrastructure, to be able to preserve the building for generations.

Chapter 3

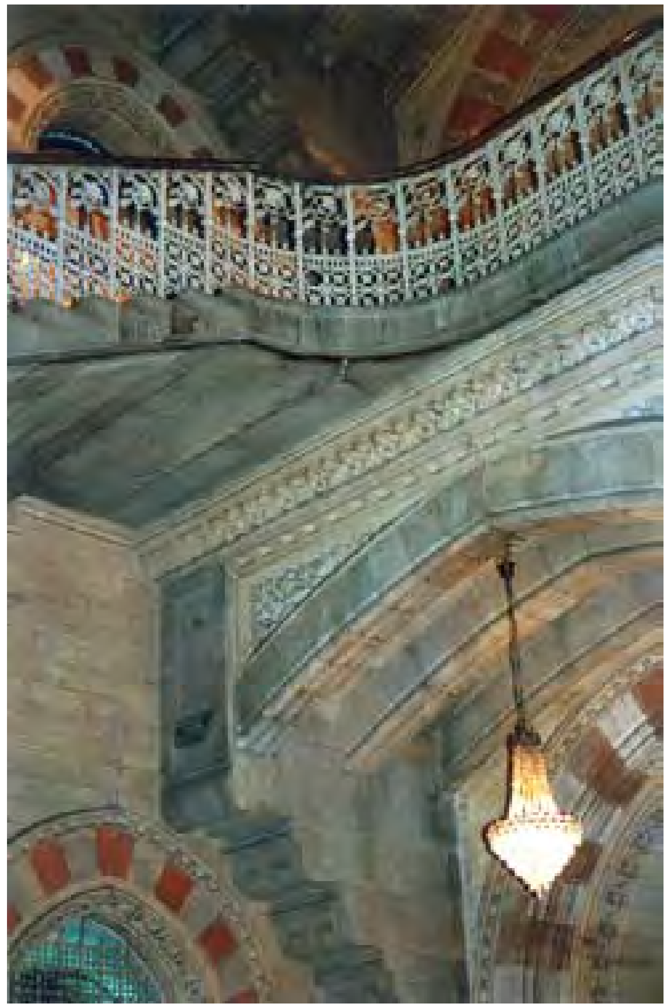
Plan Proposals

3.1 Architectural Conservation

The aesthetic appeal and the values the old buildings emanate, of old buildings is a phenomenon that all societies and cultures have grown to appreciate and get inspired by. The reasons lie some where in the human psyche and the character of those of buildings. There have been artists who loved to paint and draw old buildings and ruins. And there have been Architects, Engineers, Urban Planners, and Craftsmen who have taken immense satisfaction in involving themselves in conservation of old and historic buildings. The wealthy of all periods have been patronising such works from time to time.

Ageing of buildings is a natural process and brings with it the dual effects of decay and charm. Taking the latter first, maturity, harmonising, stature and visual presence continuously enhance with ageing. Natural building materials, as were inevitably employed in old buildings, have that power, but are also susceptible the forces of disintegration. Physical, mechanical and chemical forces of nature as well as the man-made problems of improper and inadequate repair, maintenance and use, contribute to the process of disintegration. With increased ageing and neglect, however, decay mechanism accelerates. One thing is obvious; the historical, rarity, romantic values or the picturesqueness can never be replaced by anything else. It is a duty on our part to preserve our past architectural heritage to the on coming generations. Hence the inevitability of field of conservation.

Presently in the developed and the developing countries, there is much enthusiasm generating towards the professional management of the built heritage property. For, the art and science of architectural conservation has developed as a front line field, wherein the stress is on SENSITIVITY, EXTREME CARE, IMAGINATION AND ACCOUNTABILITY. A very high priority has to be placed on documentation, reversibility of intervention and authenticity of replacement. Physical testing and diagnostics using trained multi-disciplinary professionals and modern and reliable testing facilities are the key to solving problems of historical buildings



3.2 CONSERVATION PRINCIPLES

A comprehensive awareness of the needs and clear approach to achieve the same aura of the old and historical, & remainders of the past / passing era, that will be of educational / cultural / socio - economical value to the on-coming generations is the basic pre-requisite for any conservation activity. The adage that the worst enemy of a historical building is human intervention reminds us that the same must be kept strenuously to a minimum, and if possible, reversible. That is to say, that with minimum difficulty the intervention should be removable, if found unsuitable after a period of time.

• Conservation primarily, is a process which leads to the prolongation of the life of the cultural property for its utilization now and in the future. All practical alternatives should be explored and then evaluated in the light of theory in order to find the 'least bad' solution, which must respect the qualities in the historic building.

• Historic Building:- It is one that gives a sense of wonder and makes us want to know more about the people and culture that produced it. It has architectural, aesthetic, historic, documentary, archeological, economic, social and even political and spiritual or symbolic values; but the first impact is always emotional, for it is a symbol of our cultural identity and continuity - a part of our heritage

• Causes of decay - The most uniform and universal is gravity followed by the actions of man and then by diverse climatic and environmental effects - botanical, biological, chemical and entomological.

** Extracts, Conservation of historical buildings, principles & practice,*
Mr Bernerd M. Fielden

While the term architectural conservation encompasses a wide range of activities, the following words are often used to describe the categories of action

Restoration

A technical term for authentic repairs. This includes specific necessary / inevitable interventions conducted on a heritage building or a part of it, covering routine to unique methods. The objective is to facilitate a subdued, down to earth, and hence feasible & sustainable conservation of a heritage building. The centrality being on responsible, tested and calculated methods of dealing with the subject. - to retrieve the original concept of restoration. The cleaning of buildings is also a form of restoration and the displacement of missing decorative elements is another

Rehabilitation

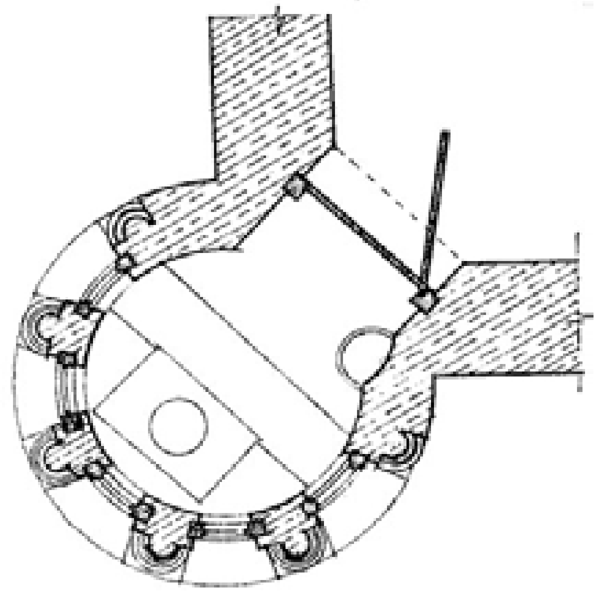
Efforts dealing with issues of putting the building or parts of it to active use, for it alone assures conservation of the building. It is always desirable that the reuse shall be same as the designed use or in case of change of use to squatting etc., to a compatible one. e.g., Staircases at corners of C.S.T. main building, terrace rooms, and external facades that are covered.

Preservation

An aspect of conservation dealing with prolonging the life of the historical building or a part of it, in its existing situation, using techniques ranging from specialized ones to merely leaving it to die a natural death. Prolonging the life in its existing form by minimising intervention, this is the purest form of conserving a heritage building and calls for high degree of restraint and tolerance.

Redevelopment

When in the case of extreme danger to the stability of the structure or for any other reason, the whole building is rebuilt or extensively changed, it is termed redevelopment. The new development might have ethos of the original structure using a modern language of building construction and architecture.

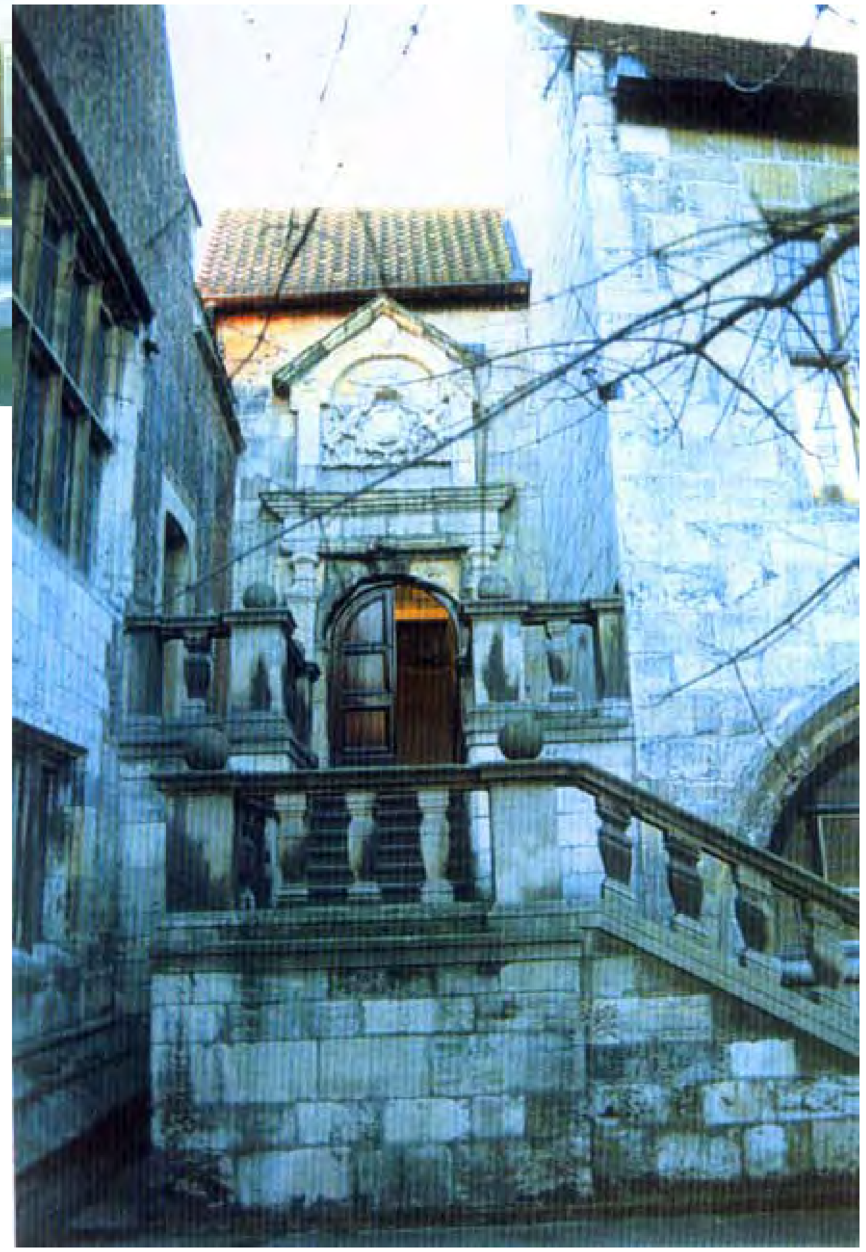


Plan of a typical turret

Ambience of historical enviornoment. Note the Quality of the architecture and significance which is easily comparable to our own C.S.T. building.

* 1 York Minster, Yorkshire, UK
  2 Parliament House, London, UK

Case of sensitive subservient and yet a modern addition to a historical building. An international award winning entrance to York theatre, using glass and concrete



Adaptive reuse of Kings Manor Yorkshire, UK,(6th century AD) for modern use.

Antiquity and restraint in restoration - case for 'repair and do not replace' theory

A statement of history using materials from all periods. Note the subtle change in treatment of windows, glass and masonry to suggest various periods of history. Also to note the pitched roof and its undulations. These have not reduced the functionality while keeping it very picturesque

Interior blending old and new with sensitive design. Note the impact of the furniture, flooring and fittings

York Railway station is the oldest in UK and is a major tourist attraction

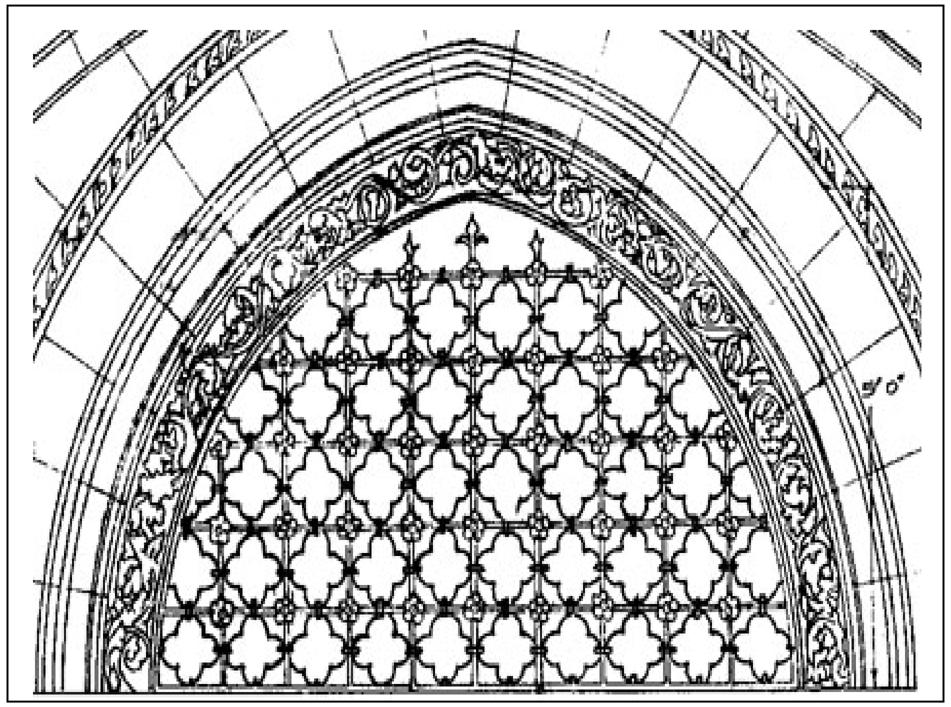
Spaces between two period buildings revitalised for modern contemporary uses. Case of modernity and antiquity coexisting complementing each other.

3.3 PROPOSED CONCEPT OF LONG TERM CONSERVATION PLAN

The implementation of the proposed plan has its basis on the establishment of a nodal conservation agency that will be the conservation project managers for the Central Railways. It is proposed that a committee of the Central Railways under the chairmanship of the General Manager, C. Rly. could coordinate the internationally significant conservation project.The conservation of this historic monument is a matter of national pride. This could be done using a special conservation fund with inputs from public, private international sources, if need be.Considerable thinking has gone into areas of making conservation a viable and even profitable option. Going by the principle that the best way of conserving the building is by intelligently using it, the plan sees to rationalise the use patterns.

The panoramic roof space is proposed to be used as a visitor/ tourist place with excellent viewing utilities that will earn returns going to the construction fund. Exhibitions, displays, books and antiquities from the rich railway archives gives an ideal museum option. All these and the revenue earned from advertisements and displays can easily contribute towards conserving the building in the best possible way.

Spiral staircase



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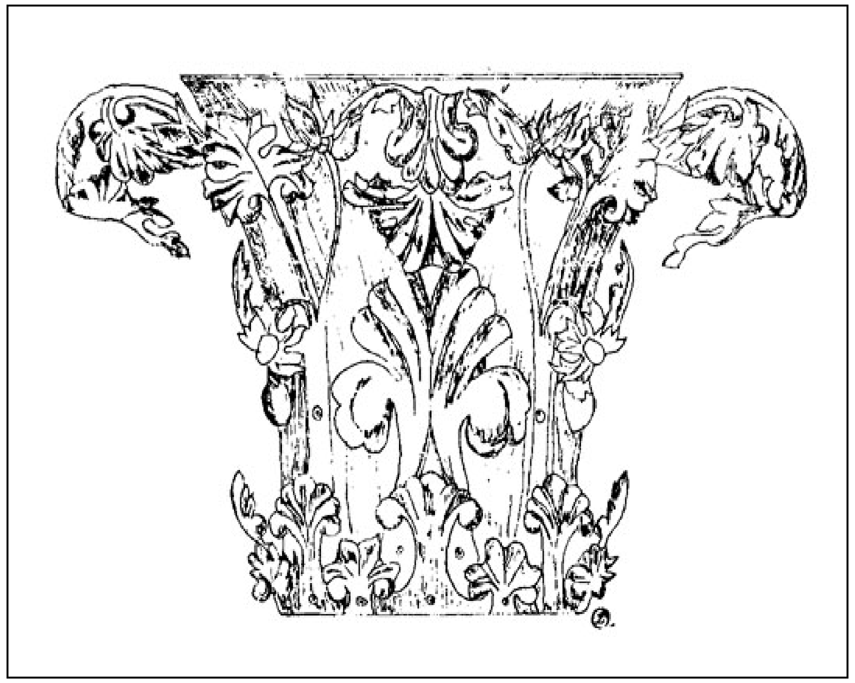


Capital Of a Column

3.4 Restoration proposals

The restoration proposals have been drawn keeping the aspects mentioned in 3.1 & 3.2. The methods for the same have been explained with the help of simple drawings. The implementation will however be defined by the conservation project managers, nodal agency who will co-ordinate the entire implementation of the plan besides being QA/QC agency. The specialised works such as the building services modernisation needs to be planned with the additional expertise of the nodal agency.

The same have been organised in the following order

3.4.1 Roof - (sloping, flat terrace, ground surface)

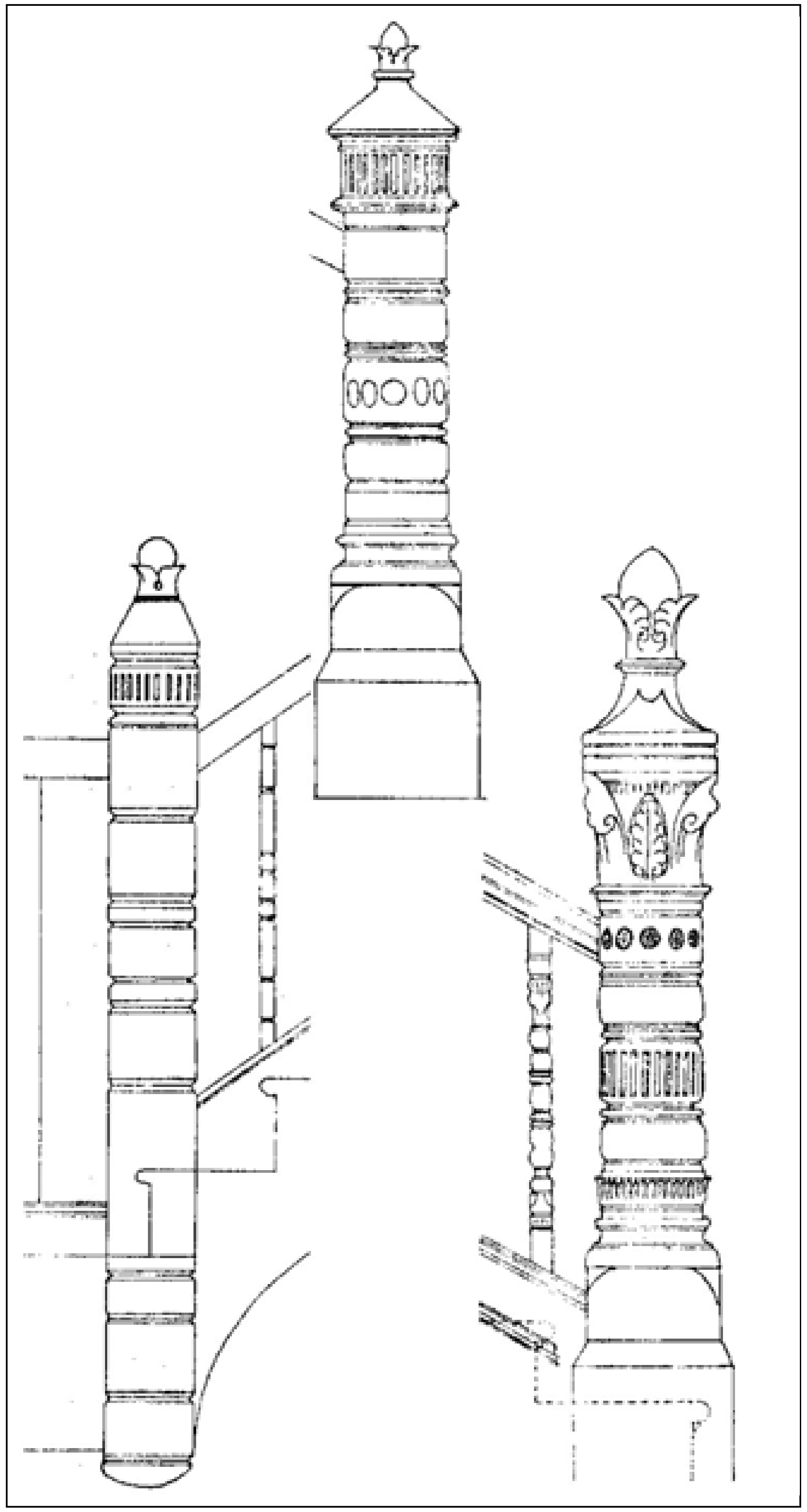
3.4.2 Floors

3.4.3 Walls

3.4.4 Finishings and interiors (12, 21, 9)

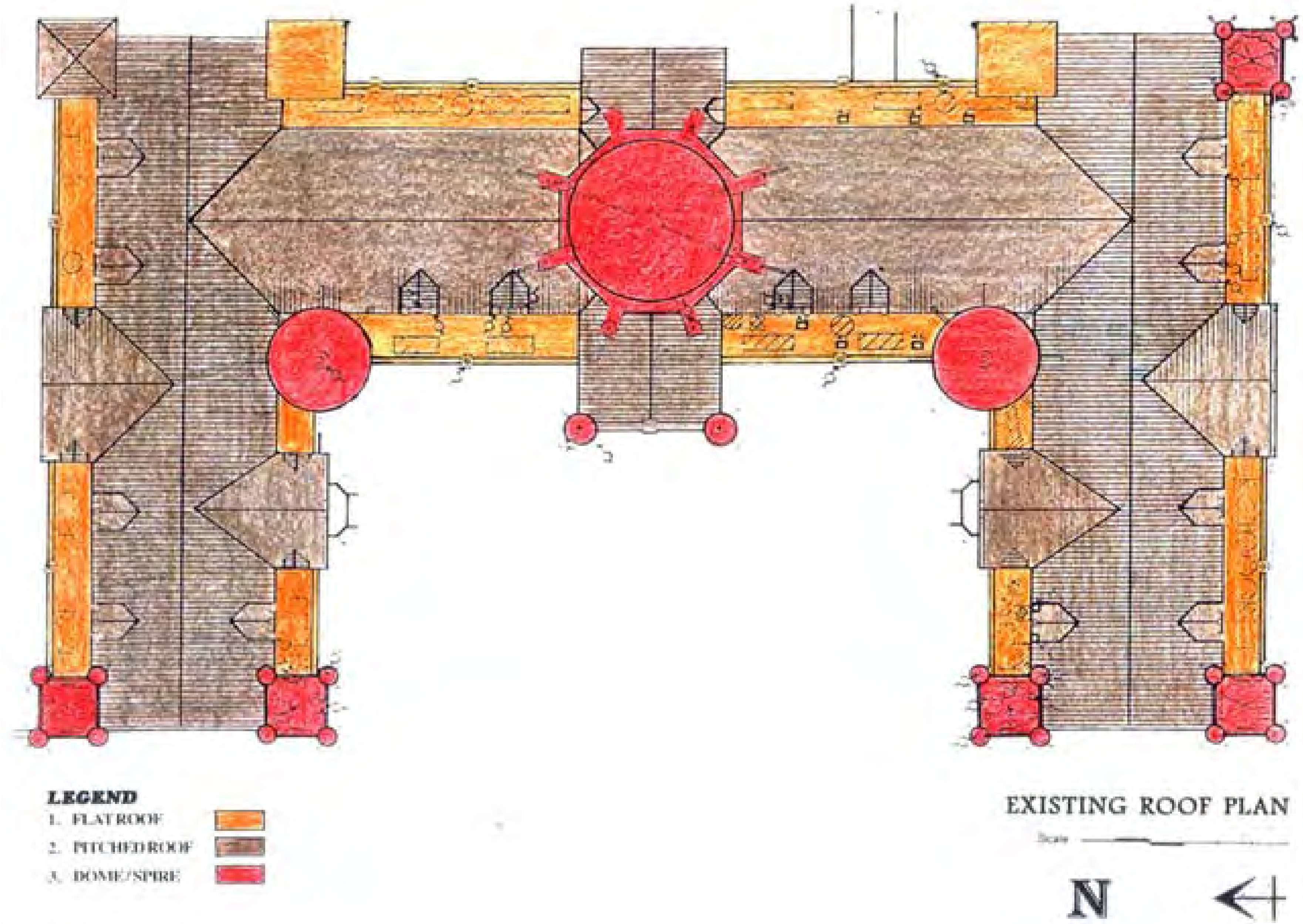
3.4.5 Services

- (i) Electrical
- (ii) Water supply
- (iii) Sanitary/plumbing
- (iv) Air-conditioning
- (v) Fire-fighting
- (vi) Landscaping and parking

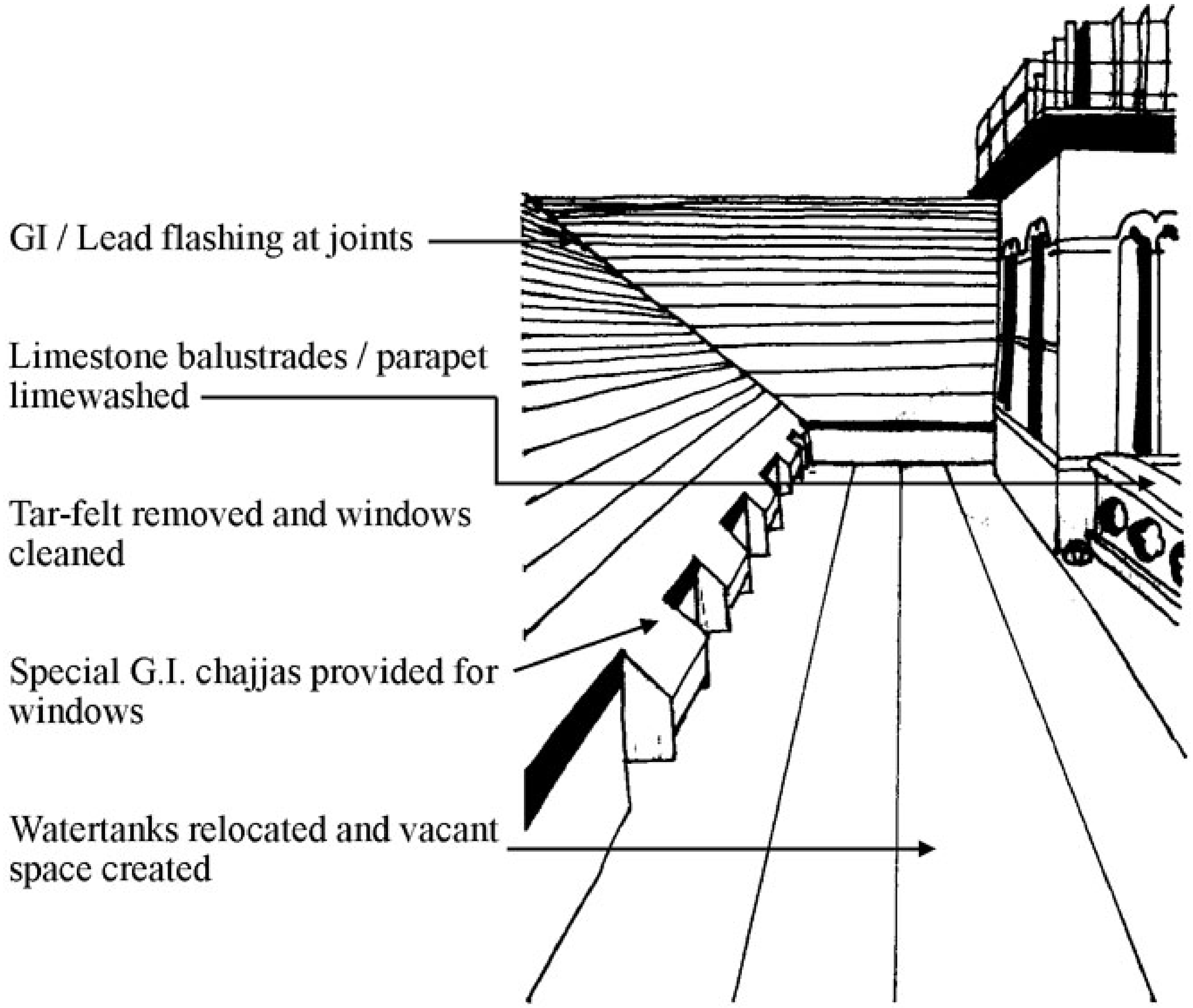


Intricately Detailed Timber Work

ROOF (Sloping, flat terrace, ground surface)



ROOF VIEW



ARCHITECTURAL ASPECT

PROPOSED ROOF VIEW

ROOF MANAGEMENT AND MAINTENANCE

A. PRIORITIES -

1. USE

2. UPGRADING SERVICES

3. STRUCTURAL REPAIRS

B.

1. REMOVAL OF EXISTING CONVENTIONAL WATER-PROOFING.

   REPAIRS TO LIME CONCRETE.

   RE-DOING BRICK-BAT COBA.

2. CLEANING VEGETATION / MOSS-

   FUNGICIDE / WEEDICIDE TREATMENT.

3. CLEANING VENTILATORS AND G.I. SPECIAL CHHAJJAS TO VENTILATORS.

4. ACTIVE USE OF ROOF.

   1. REPLACING DAMAGED TILES

   TIGHTNESS OF FIT OF TILES

   SUCCESSIVE LIMEWASH TO LIMESTONE

6. JOINT TREATMENT :-
   - FLASHING
   - CAPPING
   - SEALANT

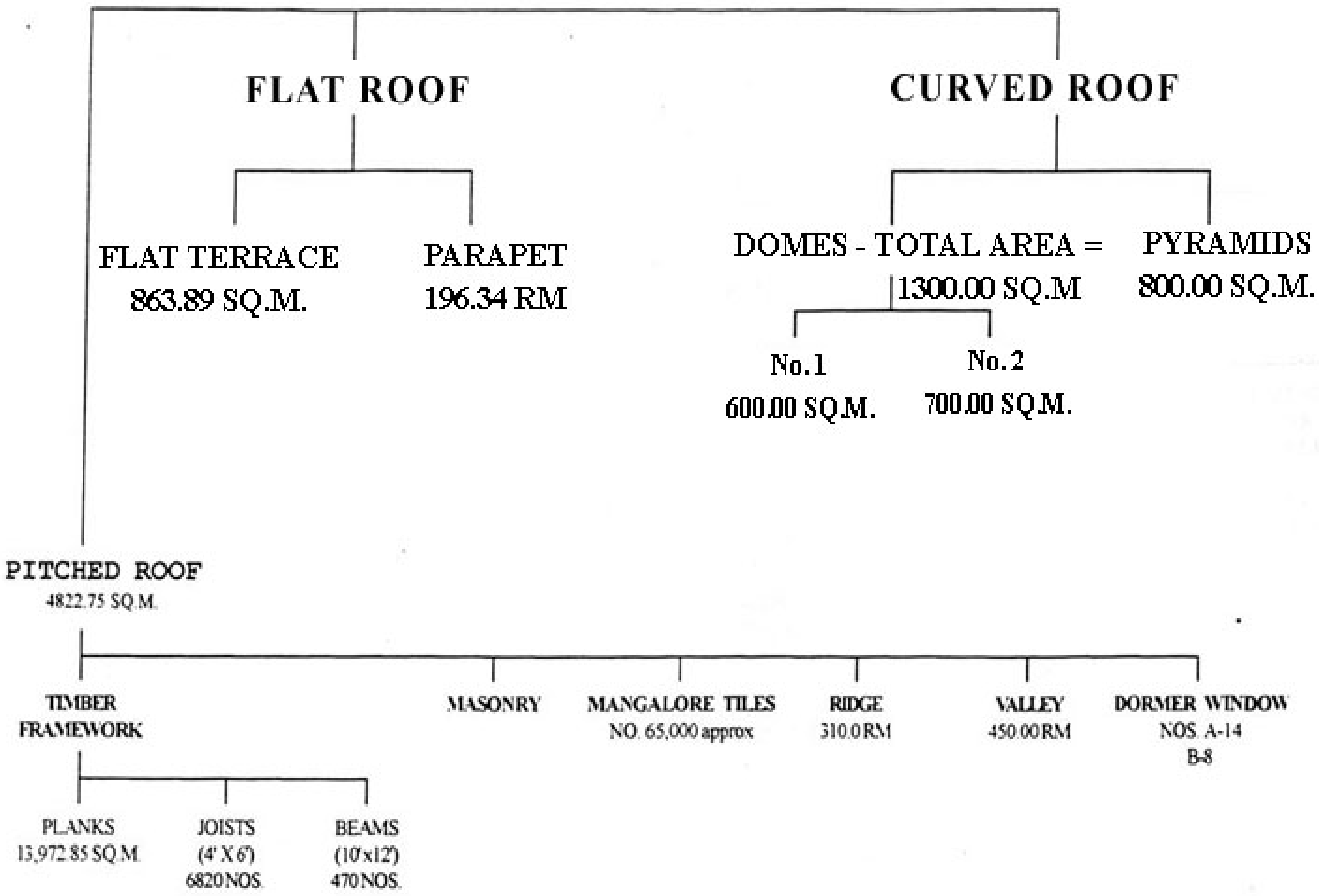
8. WATER TANK RE-LOCATION AND PLUMBING.

9. CLEANING AND UP-GRADING EXISTING

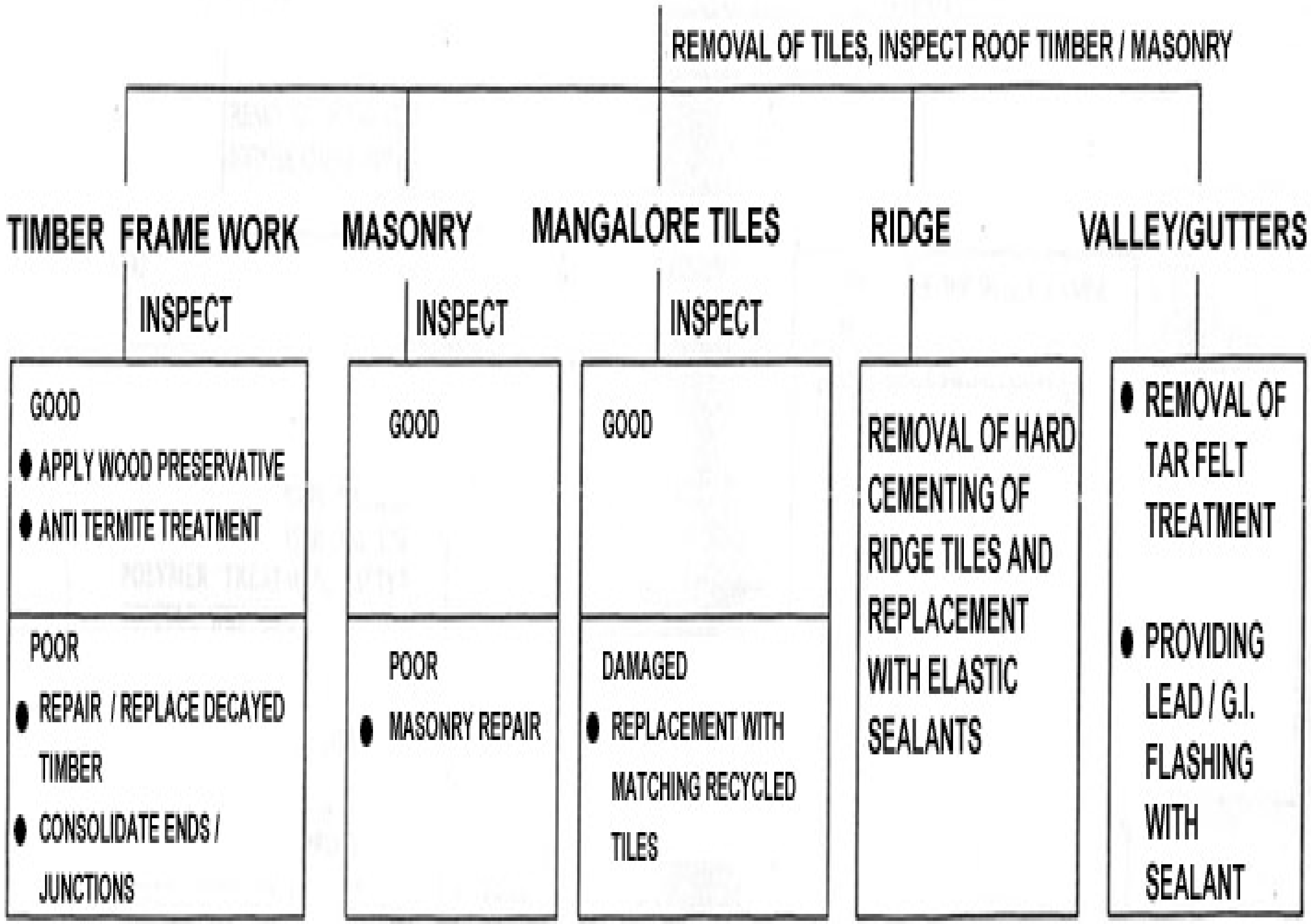
   EXTERNAL SURFACE RUN OFF SYSTEM

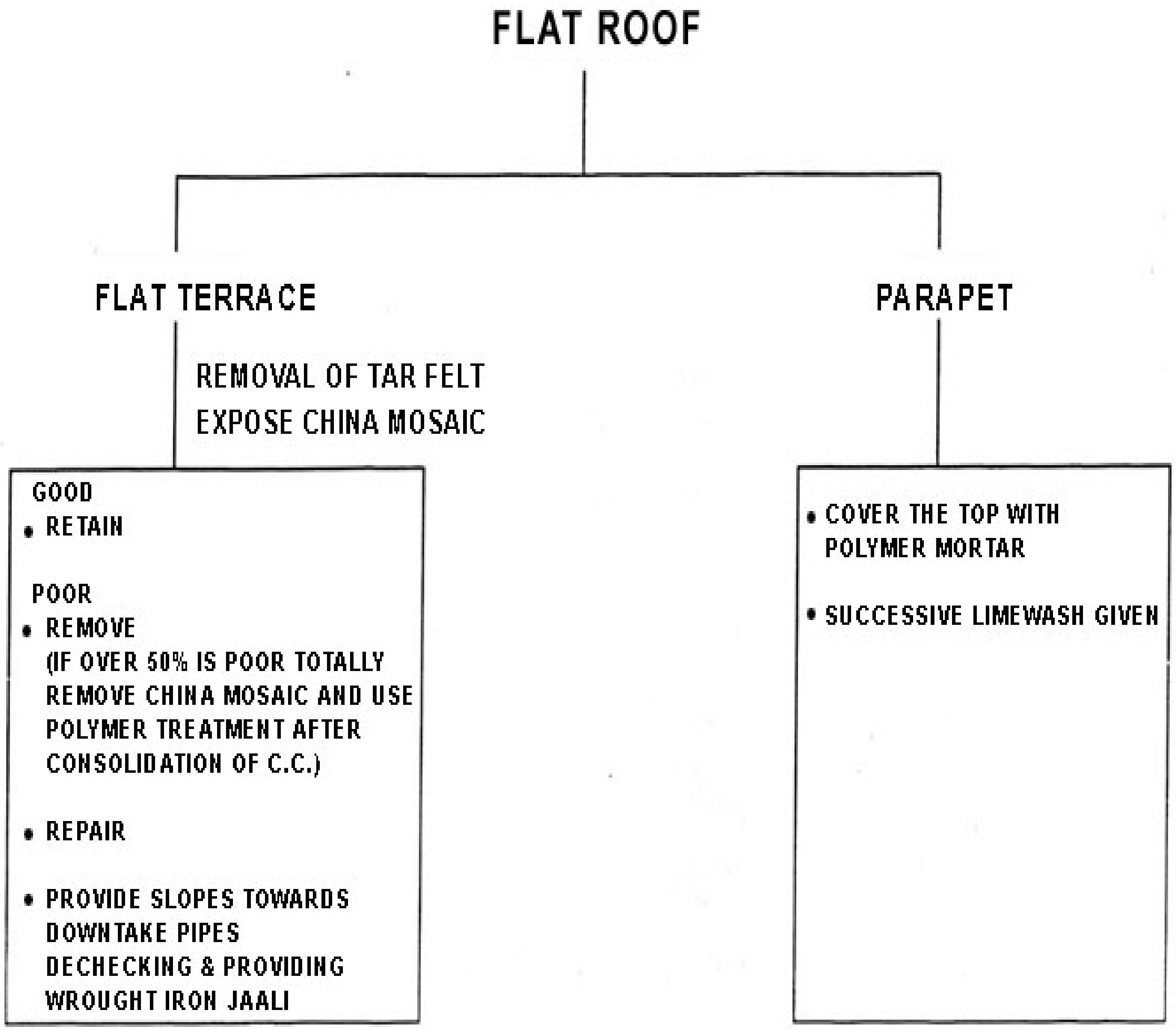
   REPAIRS / DE-CHOKING OF GORGOYLES AND DOWNTAKE PIPES.

ROOF


ROOF
FLAT ROOF
CURVED ROOF
FLAT TERRACE
863.89 SQ.M.
PARAPET
196.34 RM
DOMES - TOTAL AREA =
1300.00 SQ.M
PYRAMIDS
800.00 SQ.M.
No.1
600.00 SQ.M.
No.2
700.00 SQ.M.
PITCHED ROOF
4822.75 SQ.M.
TIMBER FRAMEWORK
MASONRY
MANGALORE TILES
NO. 65,000 approx
RIDGE
310.0 RM
VALLEY
450.00 RM
DORMER WINDOW
NOS. A-14
B-8
PLANKS
13,972.85 SQ.M.
JOISTS
(4' X 6')
6820 NOS.
BEAMS
(10'x12')
470 NOS.

PITCHED ROOF (WITH DORMER WINDOWS)




FLAT ROOF
FLAT TERRACE
PARAPET
REMOVAL OF TAR FELT
EXPOSE CHINA MOSAIC
GOOD
• RETAIN
POOR
• REMOVE
(IF OVER 50% IS POOR TOTALLY REMOVE CHINA MOSAIC AND USE POLYMER TREATMENT AFTER CONSOLIDATION OF C.C.)
• REPAIR
• PROVIDE SLOPES TOWARDS DOWNTAKE PIPES DECHECKING & PROVIDING WROUGHT IRON JAALI
• COVER THE TOP WITH POLYMER MORTAR
• SUCCESSIVE LIMEWASH GIVEN

SLOPED MASONRY ROOF

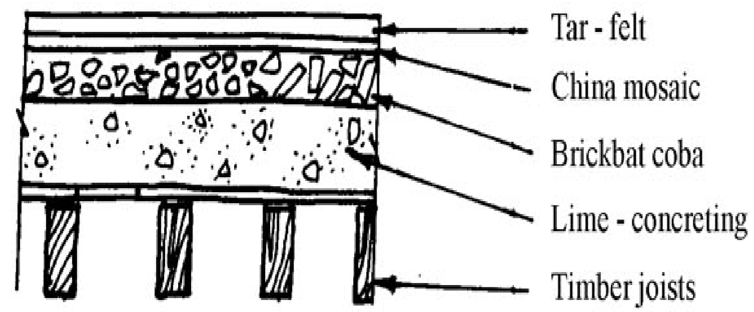
ERECT SCAFFOLDING ENABLING WORK INSPECT

DOMES

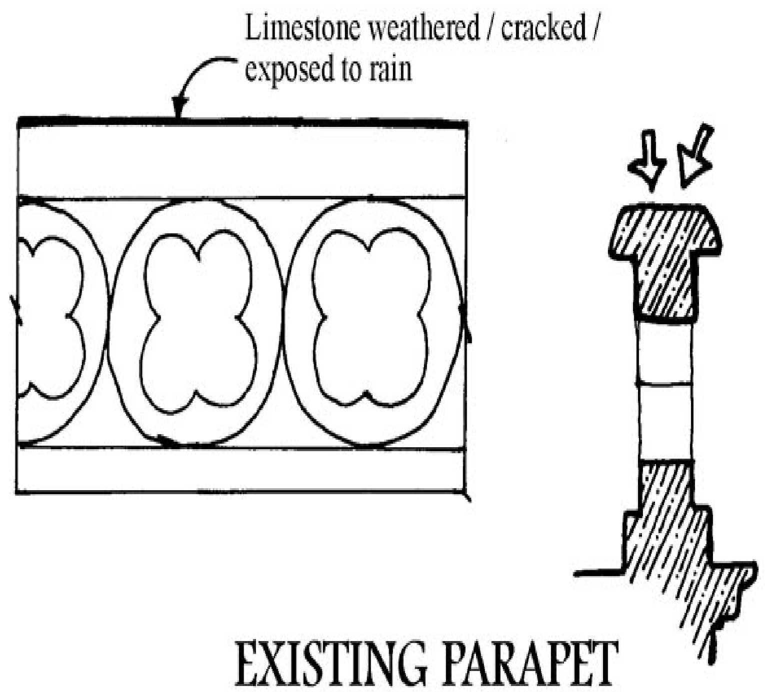
CONICAL

POLYGONAL

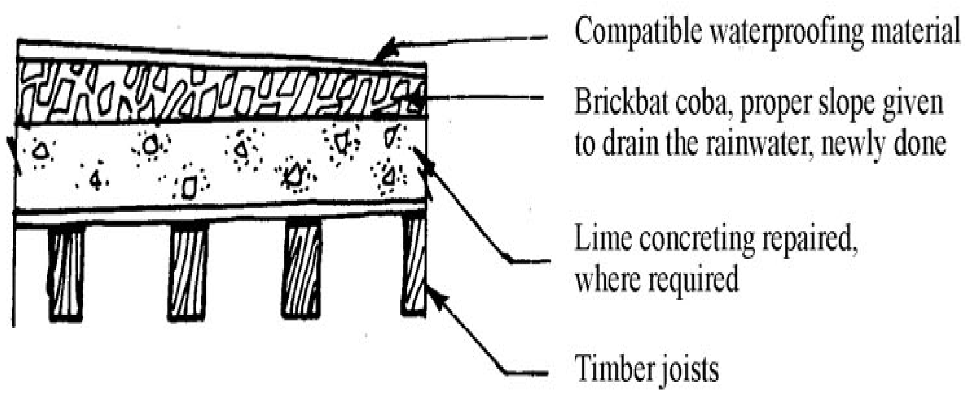
- JOINT REPAIRS WHERE NECESSARY WITH LIME MORTAR AND SEALANT
- SUCCESSIVE DILUTED LIME BATH TO STRENGTHEN LIMESTONE
- APPLICATION OF A HYDROPHOBIC AGENT LIKE PMMA/PVA



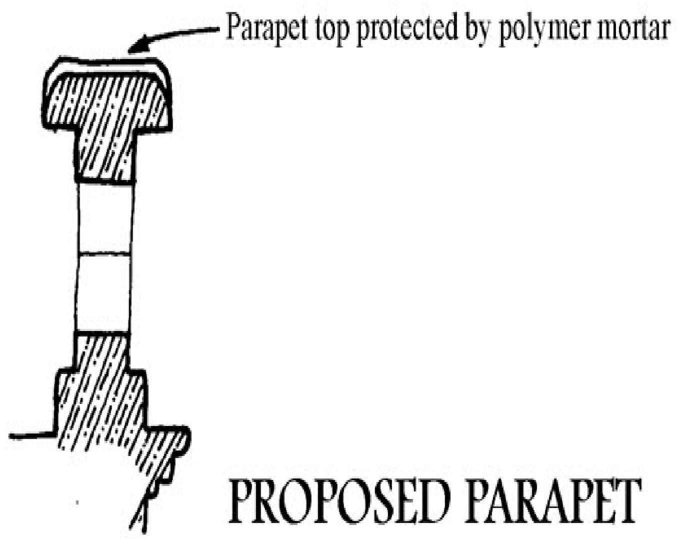
EXISTING TERRACE



EXISTING PARAPET



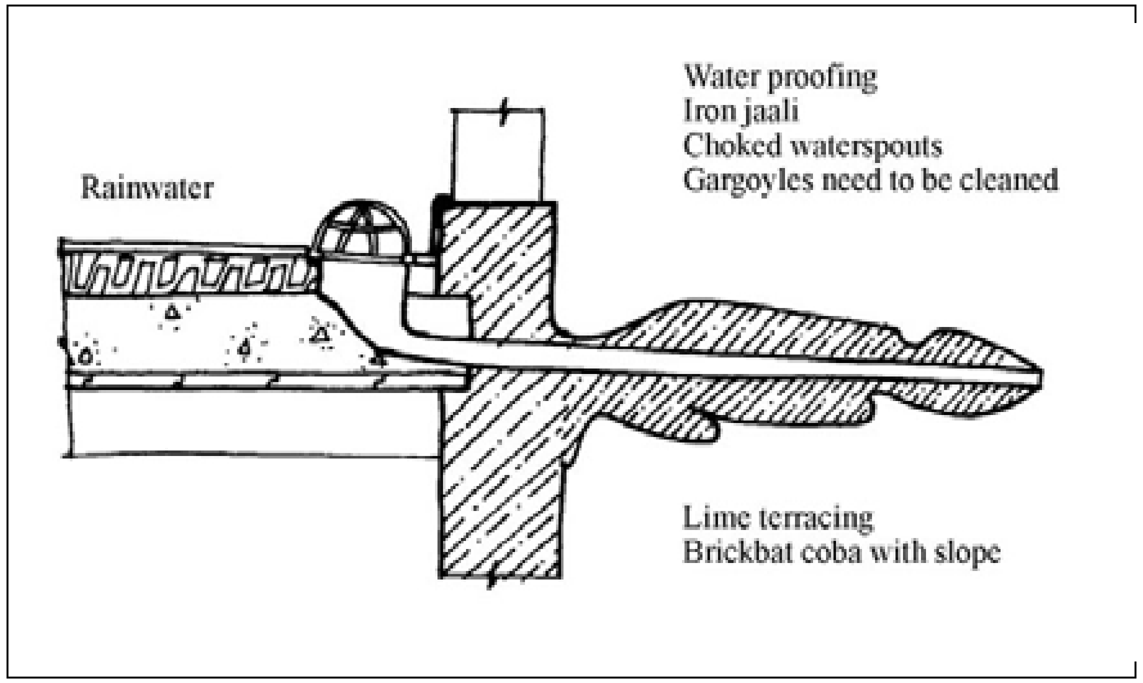
PROPOSED TERRACE

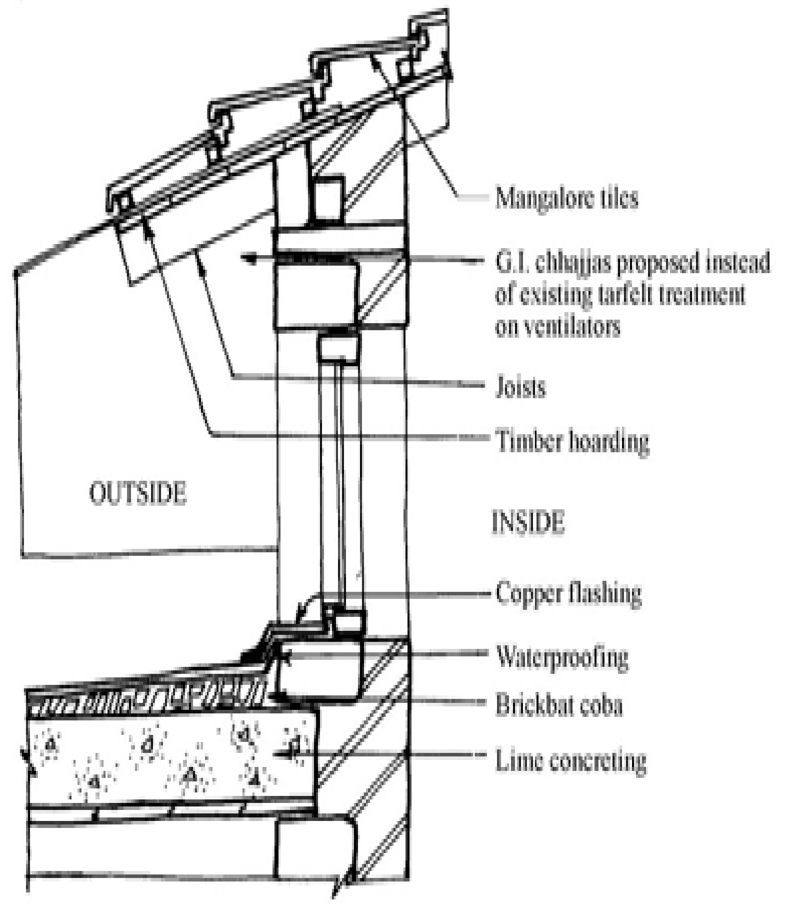


PROPOSED PARAPET

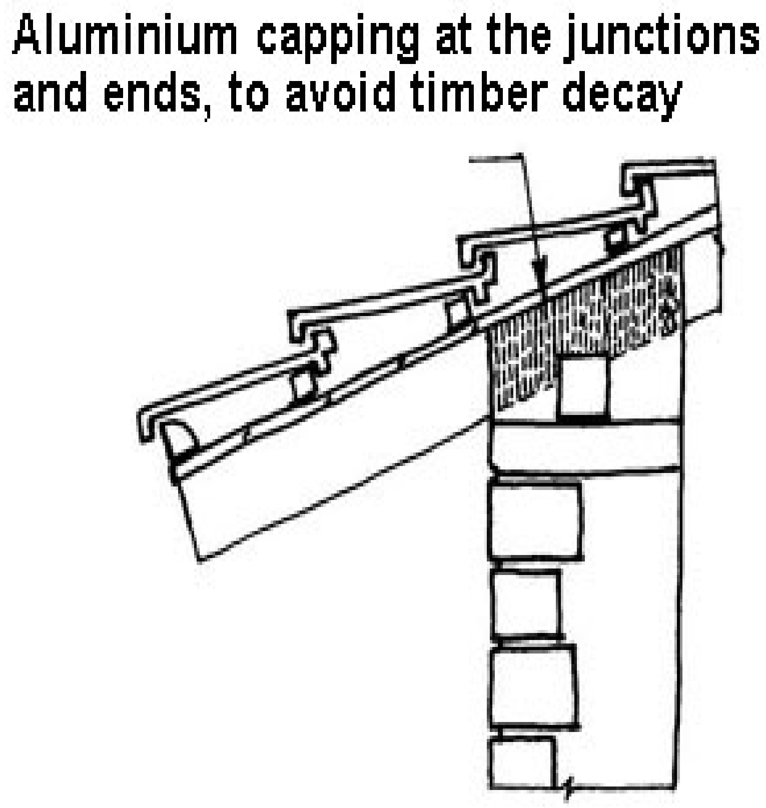
DETAIL ~ 1

DETAIL ~ 2

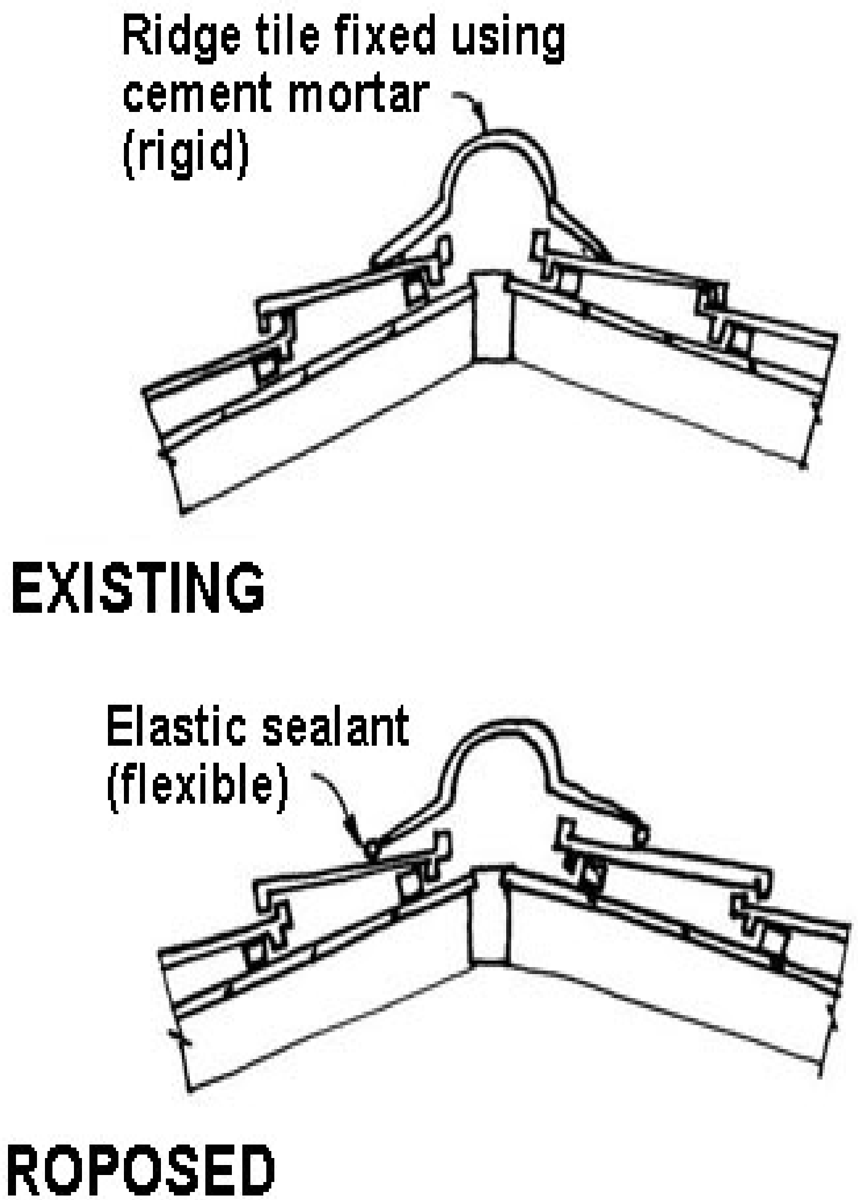

Water proofing
Iron jaali
Choked waterspouts
Gargoyles need to be cleaned
Rainwater
Lime terracing
Brickbat coba with slope


Mangalore tiles
G.I. chhajjas proposed instead of existing tarfelt treatment on ventilators
Joists
Timber hoarding
OUTSIDE
INSIDE
Copper flashing
Waterproofing
Brickbat coba
Lime concreting

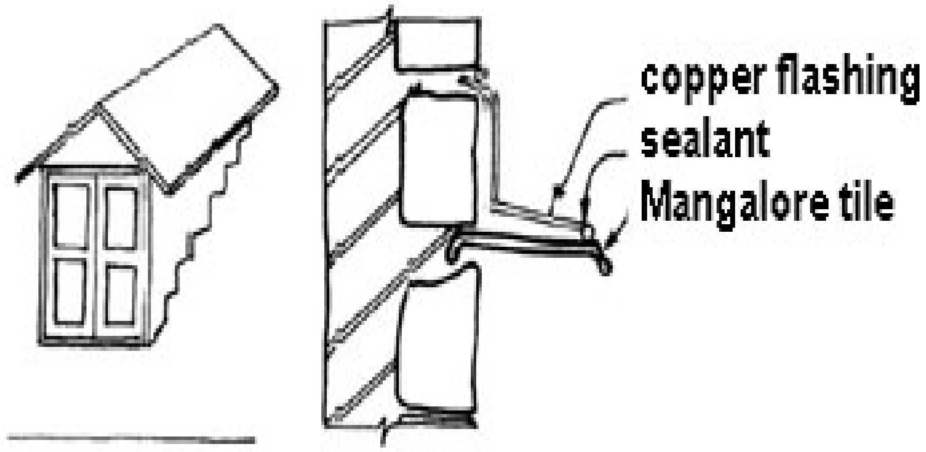
Detail - 3



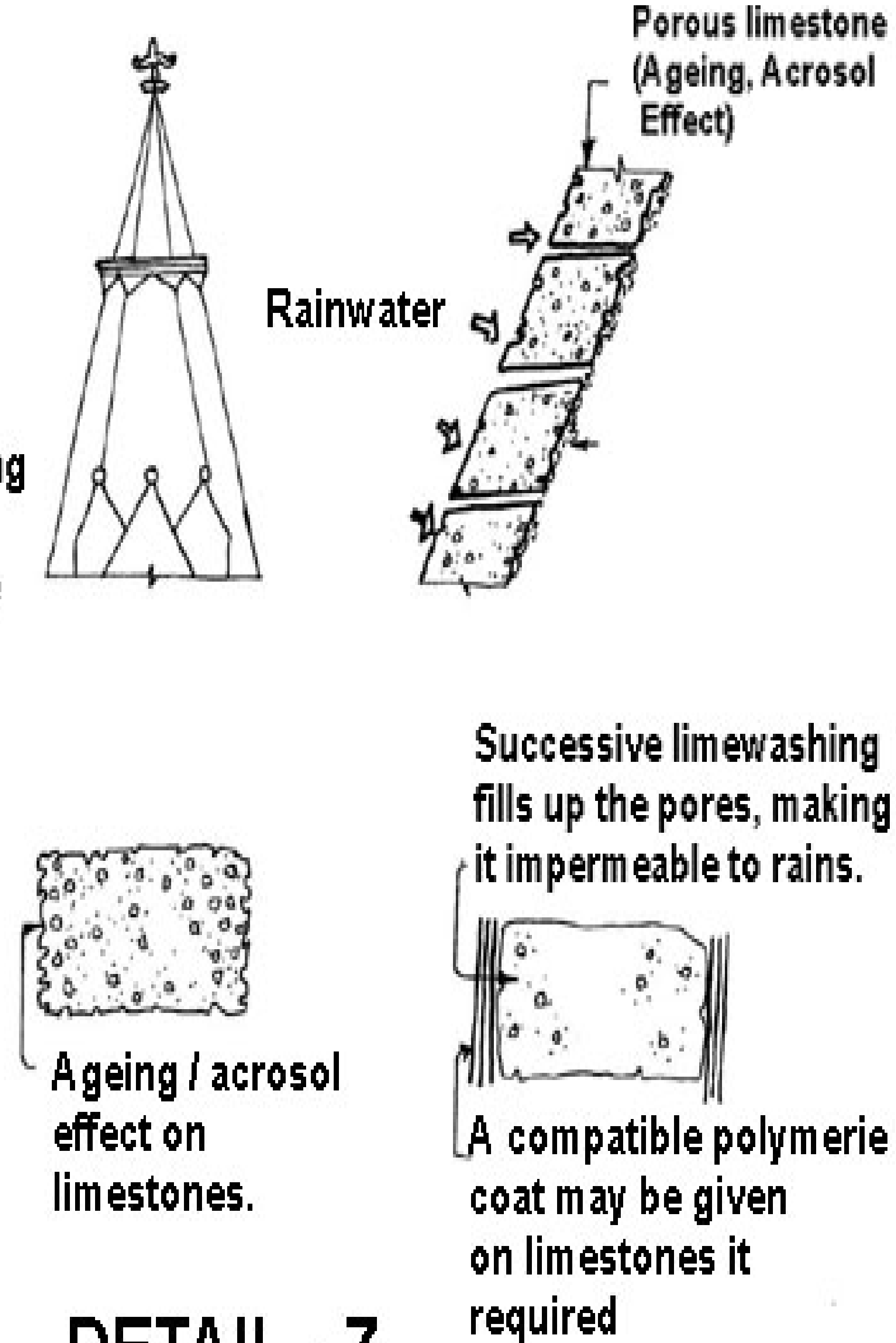
DETAIL - 6



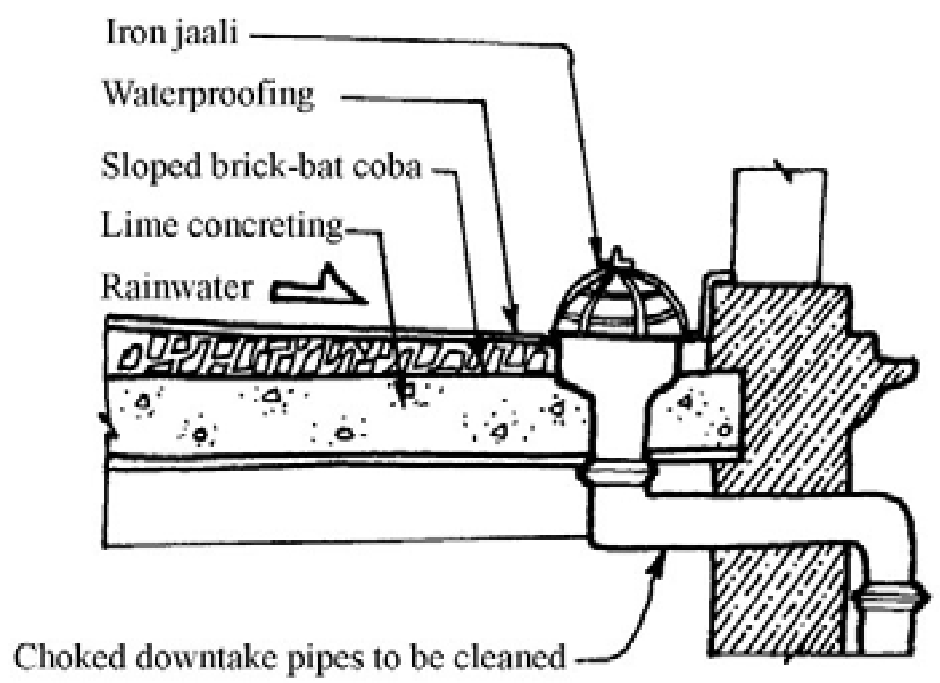
DETAIL -4



DETAIL - 5



DETAIL - 7

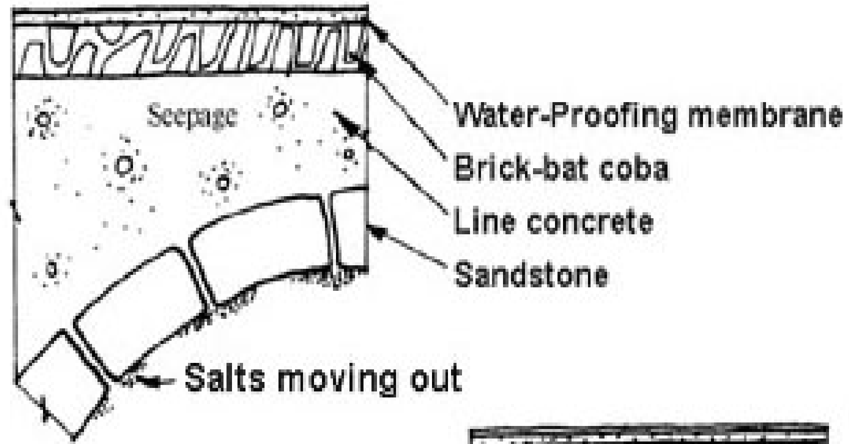


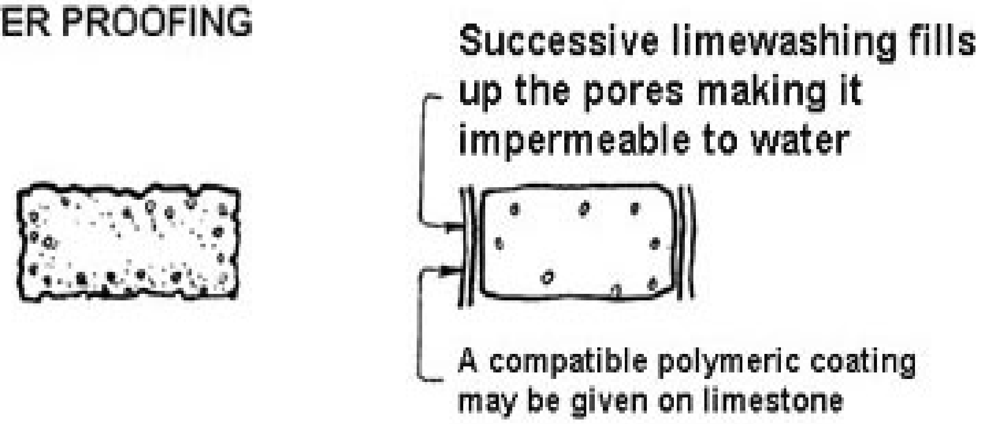
EXISTING SURFACE WATER DRAINAGE SYSTEMS

FAILURE OF WATERPROOFING

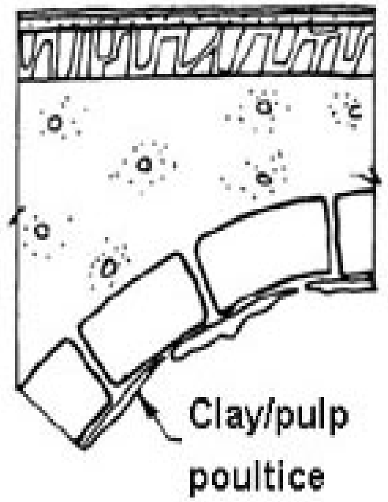
SEEPAGE

SEEPAGE DUE TO FAILURE OF WATER PROOFING





LIMESTONE SEEPAGE



Salts absorbed by poultice

ROOF JUNCTION WITH RIGID CEMENT MORTAR JOINT

MANGALORE TILES NEED TO BE REPLACED AND RE-ALIGNED

VALLEY JUNCTION WITH COMPATIBLE/FLEXIBLE E.P.D.M.
(examples from elsewhere)

3.4.2 FLOORS

The floors are made of a topping course on lime concrete of about 15-20 cm thick placed over wooden plankings and beams. The flooring does not show excessive signs of deflection and other distress . Many of the original building materials would have been replaced by a variety of modern materials such as mosaic, ceramic graded tiles, linoleum, IPS etc

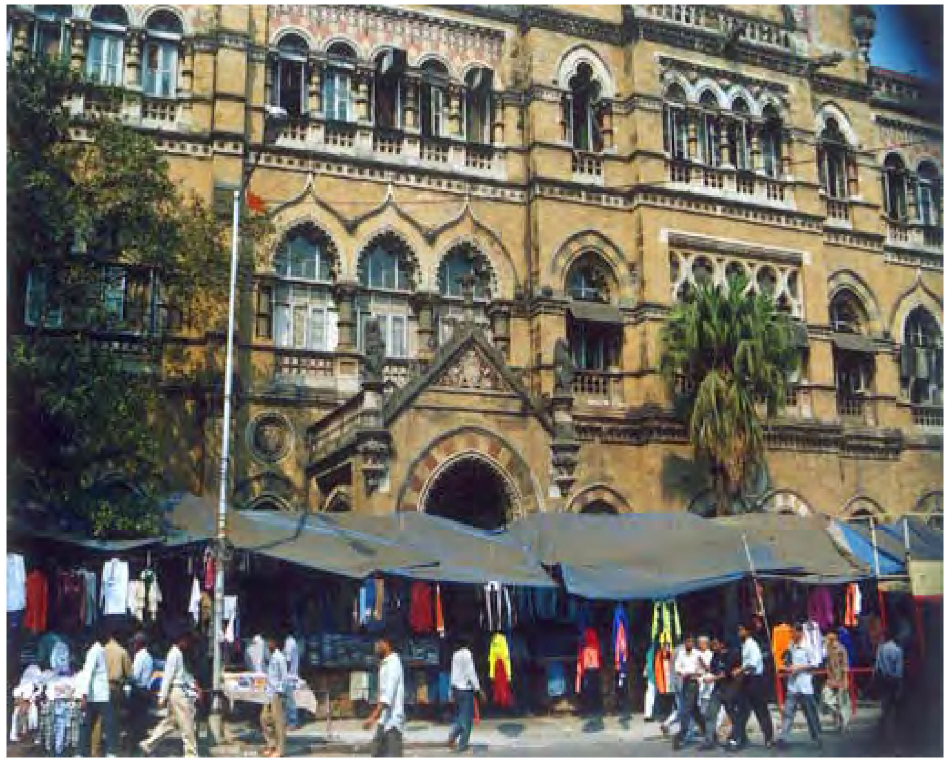
The conservation needs require that all the tiles used should be uniform and shall blend with the architecture of the building. The choice will be made by the relevant appropriate authority through the nodal agency proposed.

In the case of repairs found necessary in flooring concrete, use of site prepared lime concrete using grey cement should be adopted. In case of excessive damage to timber planking or the beams, the same shall be either repaired or replaced by a matching timber followed by anti-termite and finishing coats.

Mosaic Tiles laid later on

3.4.3 Walls

All the masonry walls are found to be in excellent condition. However due to leaking the plaster is in poor condition at many places, especially in the toilet areas and in the verandahs of the second floor. The plaster in these places needs to be chipped off and repaired with a matching (1:3 lime putty, river sand) site prepared and stored lime mortar in two layers. A bonding agent is useful for adhering new and old materials. More details of lime technology are provided in annexure for reference. However, skilled supervision is the key to successful restoration using traditional materials.



STONE WEATHERING

LIMESTONE

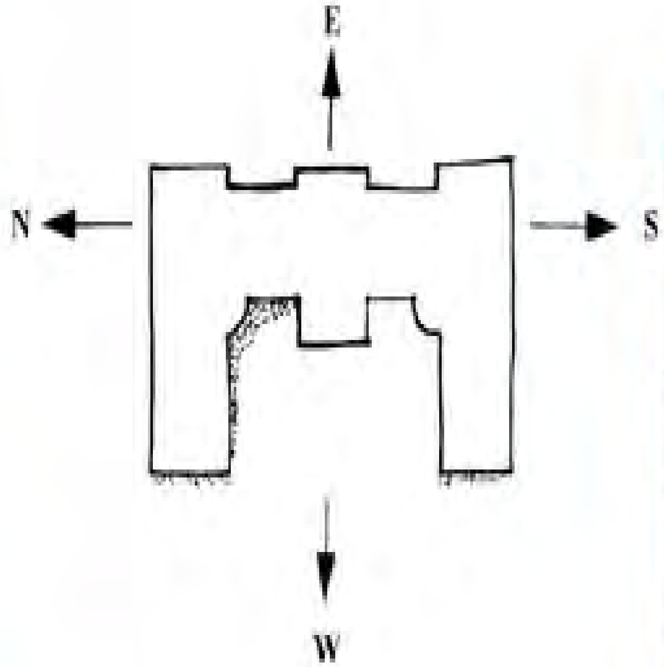
- AS RECOMMEDED EARLIER FOR LIME WASHING

Major weathering of stone

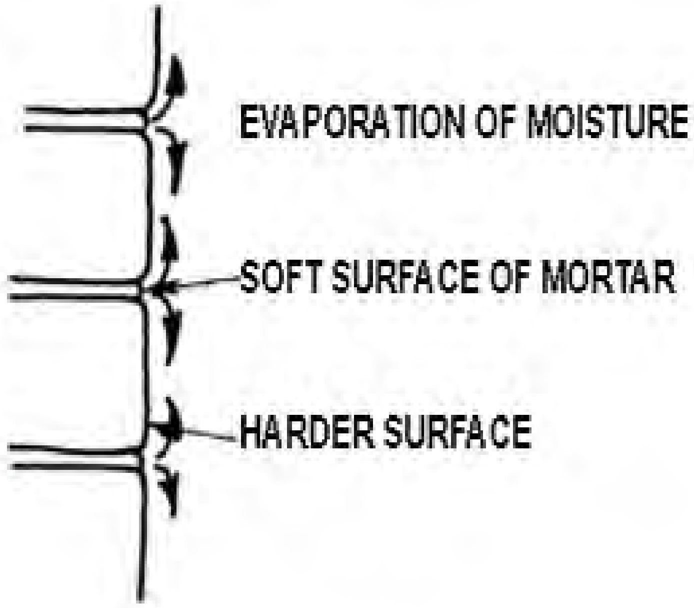
SANDSTONE

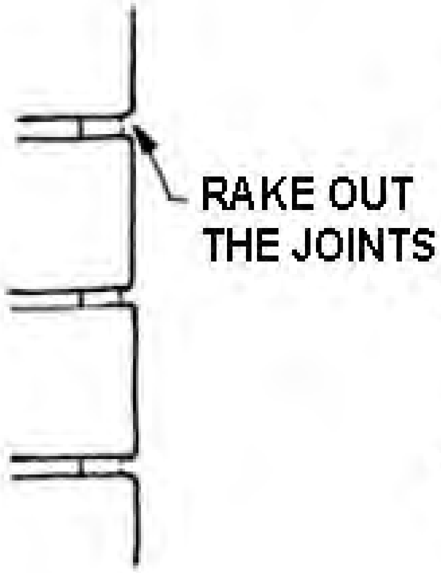
- STONE TO BE MONITORED AND NO ACTION NEEDS TO BE TAKEN FOR THE NEXT FIVE YEARS

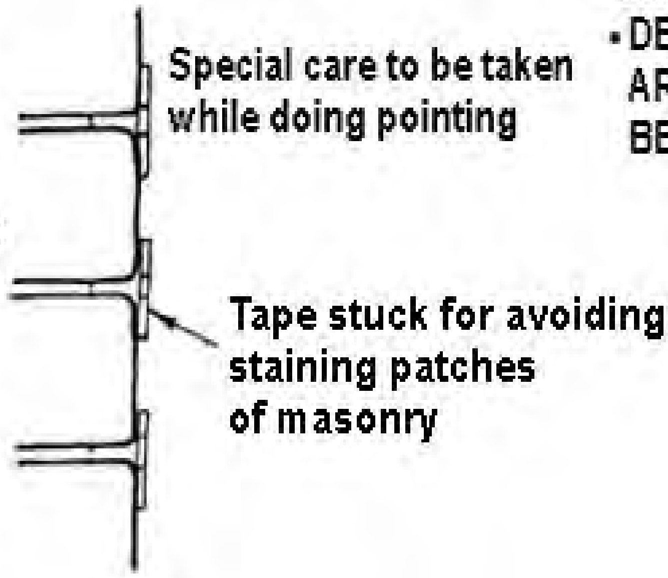
- IF BEYOND REASONABLE LIMITS CONSULT EXPERTS FOR REPLACEMENT



STONE POINTINGWHERE MISSING







GENERAL GUIDELINES

- DECORATIVE POINTING IS A HIGHLY SPECIALISED AREA AND SHOULD BE DONE ONLY WHEN IT BECOMES HIGHLY NECESSARY

STONE STAINING

Oil Painted

- OIL PAINT MUST BE CAREFULLY REMOVED USING MECHANICAL / CHEMICAL METHODS.

STAINING

- STONE CLEANING TO BE TAKEN UP ONCE IN 10 YEARS UNDER EXPERTS' GUIDANCE.
- **SPOT CLEANING** TO BE PREFERRED TO TOTAL CLEANING.

MISSING CORNICES

LIME STONE CORNICS ARE MISSING IN SOME PARTS

LIME STONE CORNICES ARE BROKEN FOR SEWAGE PIPELINES.

PLASTIC REPAIRS SHOULD BE DONE WITH COLOUR AND TEXTURE MATCH

PAINTING DEFECTS

PAINTS PEELING OFF DUE TO IMPROPER **SURFACE PREPARATION**

GENERAL GUIDELINES

1 WHITEWASHING TO BE DONE ANNUALLY IN THE MONTH OF OCTOBER. IN UTILITY AREAS i.e. TOILETS, KITCHEN, BIANNUALLY.

2 REPAIRS OF PLASTER SHOULD BE DONE WITH LIME MORTAR, IF NECESSARY WITH THE HELP OF ORGANIC POLYMER BINDER.

VEGETATIONAL GROWTH (MASONRY)

1 CAREFUL REMOVAL OF SHOOTS BY CHEMICAL TREATMENT

2 MECHANICAL REMOVAL OF ROOTS AND CONSOLIDATION

STONE CRACKS

SANDSTONE / LIMESTONE

- DO NOTHING ABOUT CRACKS.
- DON'T USE CEMENT MORTAR TO FILL UP CRACKS.
- REMOVE CLAMPS
- MINOR SURFACE CONSOLIDATION CAN BE DONE WITH MODIFIED POLYMERS.

MARBLE CRACKS

MARBLE CRACKS

- CRACKS DUE TO ENVIRONMENTAL DE-GRADATION
- NO CONSOLIDATION REQUIRED.
- MONITOR FOR NEXT FIVE YEARS. AS FAR AS POSSIBLE RETAIN ORIGINAL STONE.

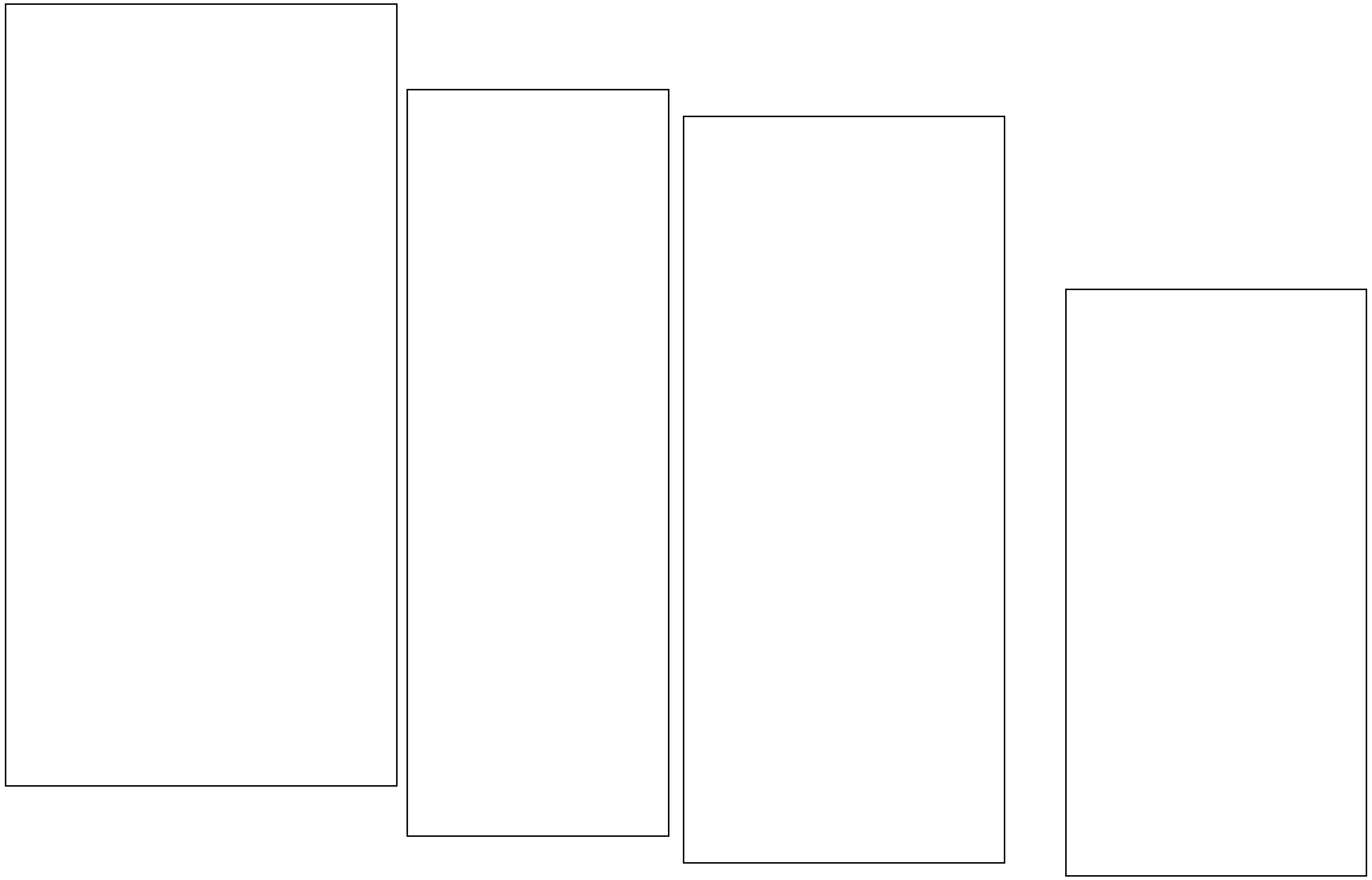
REMOVE AND REPLACE WITH SIMILAR STONE

- CRACKING DUE TO RUSTING OF DOWEL RESTRAINING BY STRAP ACCELERATES CRACKING

- REMOVE STRAPS

- IF SUSPECTED OF FAILURE, CONSULT EXPERT FOR REPLACING IT WITH MATCHING STONE

Replace with similar stone

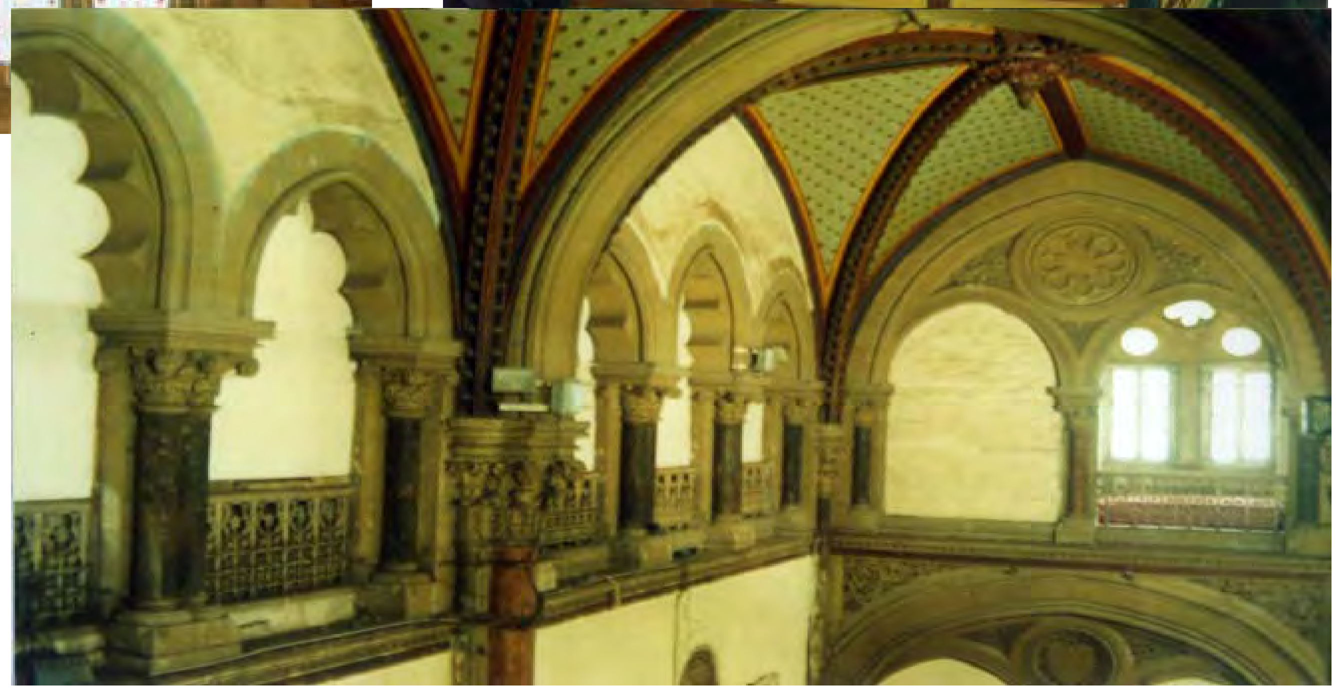


Existing Conditions

3.4.3 FINISHINGS

Finishes like paint varnishes, fittings like light fixtures, door knobs or ceilings fans and furniture have an important role to play in conserving the grade I monument.

A uniform interior is perceived in the long term needing careful attention towards choice and colourful fittings and other finishing materials.



Interiors blending with the architecture of the building

Missing features to be repeated with compatible materials like original material or plaster of Paris

ARCH OPENINGS FILLED UP IN DIFFERENT MANNERS EVERWHERE

- CONSIDERING THE HISTORICAL AND ARCHITECTURAL IMPORTANCE OF THE STRUCUTRE, ALTERATIONS AND ADDITIONS SHOULD BE VERY SENSITIVELY DONE.
- DUE TO REGARD SHOULD BE GIVEN TO THE EXISTING CHARACTER WHILE ADDING FOLLOWING FEATURES

    1. Filling of arches
    2. Windows frames
    3. Grills
    4. Partitions
    5. Flooring
    6. Cladding
    7. Signage

CLADDING NOT KEEPING IN WITH THE CHARACTER

TIMBER

DAMAGED TIMBER TO BE REMOVED AND REPLACED WITH MATCHING RECYCLED TIMBER

GENERAL GUIDELINES

- ANTI-TERMITE AND WOOD PRESERVATIVE TREATMENT, VARNISH AND PAINT SYSTEM - TO BE APPLIED ONCE A YEAR.
- FLAT OIL PAINT/LEAD BASED PAINT TO BE APPLIED TO THE EXTERIOR WOOD.

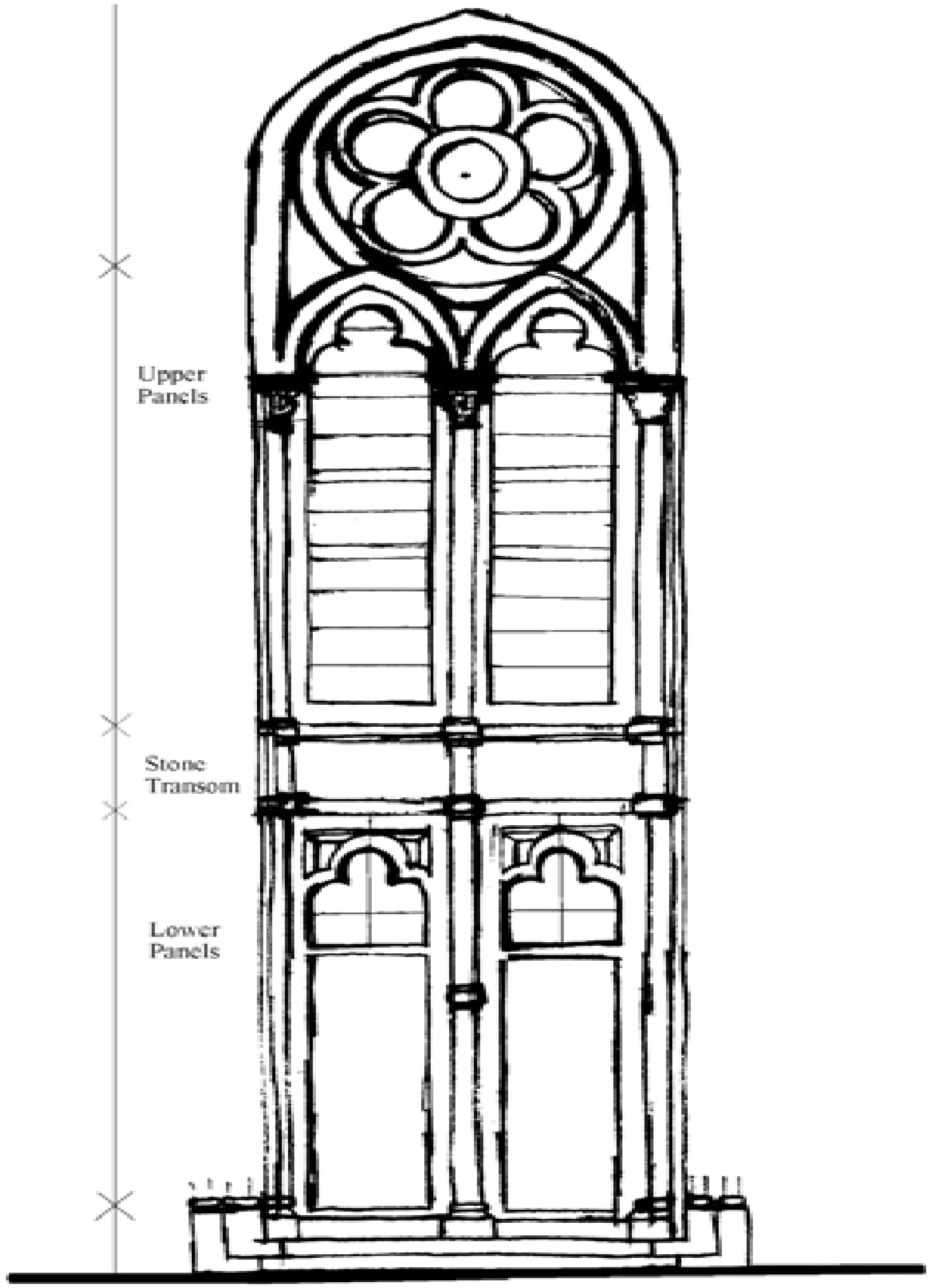
METALS

ALL METAL SURFACES SHOULD BE PAINTED WITH METAL PAINTS ONCE IN THREE YEARS.

USE OF MILD STEEL SHOULD BE AVOIDED IN THIS BUILDING FOR CORROSION INSTEAD NON-FERROUS PLASTIC METALS ARE TO BE USED LIKE STAINLESS STEEL, GALVANISED IRON, COPPER.

STAINED GLASS

REPAIRSARE GOING ON BY EXPERTS ON SITE.



Stained glass window

STAINED GLASS WINDOW

3.4.5.(i) Electrical System

Systematic electrical layout is a major step towards ensuring the safety of the structure. Loosely hanging wires, inoperative switches & switchboards, covered earthing pits stand for the total apathy towards the safety of this timeless grade I monument.

Since wood forms are the chief materials of construction, total care should be taken towards fire safety.

The main building is divided into 3 sections as Mumbai, Middle, and Kalyan ends. The total load on the structure is around 840 A or 600 kVA which is divided for lighting & air-conditioning. Thus the existing 1500 kVA transformer can easily sustain this load.

Switch boards & most of the cables , though of sufficient cross-section have outlived their life span. This open cleat wiring using Rubber P.V.C. wires may harden and crack after ageing & can cause short circuits. Thus immediate attention is very essential for the electrical system

With the increasing demand due to increased users , this system is altered from time to time resulting in many unwanted structural or architectural changes.

Over the years, different electrical fittings and wiring in the CSTMB were added as the need arose, without considering an overall comprehensive electrical programme for lighting and conduiting. This has resulted in a certain amount of confusion in the electrical plan and layout with ugly exposed conduits, criss-crossing across architectural details, thus defacing the building.

As many fire disasters in recent years have resulted from poor electrical wiring in historic buildings, this becomes a pressing issue. For the safety of the building, the wiring must be changed and laid out to follow a more comprehensive electrical plan. Similarly, no fire protection appears to be provided for. Also, as all the structural members are in wood, the fire prevention plan becomes important.

Survey of electrical installation of C.S.T. main building

This report details the existing state of electrical installation and tries to identify the defects & requirements in the existing situation.

Checking of the existing load, capacity, wiring and other detailed requirements

Existing load

Total load during daytime is around 840 A or 600 kVA. This load is divided into 2 major types

- **Lighting:** Fluorescent lights & high pressure mercury vapour or sodium vapour lamps or halides (for flooding the building)

- **Air conditioning:** Since both the loads are of inductive nature and no capacitor banks are provided for compensation, Power Factor of the installation may be low.

Capacity

A 1500 kVA transformer supports the above load. Hence the installed capacity is quite sufficient to support the building load.

Distribution

Main building is divided into three sections namely, Mumbai, Middle and Kalyan sections. Three cables of 300 sq.mm. each from substation L.T. panel supply power to these three sections. All the main cables are of sufficient cross-section to carry the normal full load current as well as the short circuit current (1.5 times the full load current) for short duration.

Cabling from L.T. panels to various switchboards for A.C. units and lighting circuits will be checked for capacity after calculating the individual loads.

Most of the wiring from switchboards to lighting/fan points is very old baton or open cleat wiring using rubber P.V.C. wires which have tendency to harden and crack after ageing and cause short circuits. Also old switches and boards should be replaced.

Identifying and quantifying defects

1 At substation, earthing pits could not be found. According to the concerned staff, the pits are covered by tiles and earthing is quite

intact and the moisture is maintained in the pits. But this should be confirmed by measuring earth distance.

2 Mains cables are hanging loose across the walls and along corridors. (Refer to the photographs).

3 Following defects were found in L.T. distribution panels (8 off) in the main building:

a) More than 75% of the ammeters are inoperative

b) Ammeter selector switches are inoperative

c) More than 50% of voltmeters are inoperative

d) Voltmeter selector switches are inoperative

e) Cable glanding to the panel is not done properly

f) Earthing connections to the panel are not proper

g) Cannot check load balance due to a) & b) above.

4 Distribution board in the terrace is open to atmosphere and not in good condition

5 Wiring: 75% of the wiring from switchboards to lighting /fan points is very old baton or open cleat wiring using rubber P.V.C. and should be replaced as early as possible. Also old switches and boards should be replaced by MCB boards. The existing wiring is a mix of very old wiring and additional wiring done as and when the need arose. There is no systematic approach to the work done so far. Haphazardly hanging telephone cables add to the complications. (Kindly refer to photographs)

6 The combined switch-plug units for window A.C. units result in loose connecting cables hanging out which is not safe and aesthetic. (Refer to photographs)

7 Cables connected to change-over (BEST - C.Rly.) on second floor are not properly glanded since metal enclosure is not of proper size. (Refer to photographs)

Calculation of the requirements in the existing structures

Most of the defects in the existing system are covered under the earlier section and calculation of requirements is based on these findings.

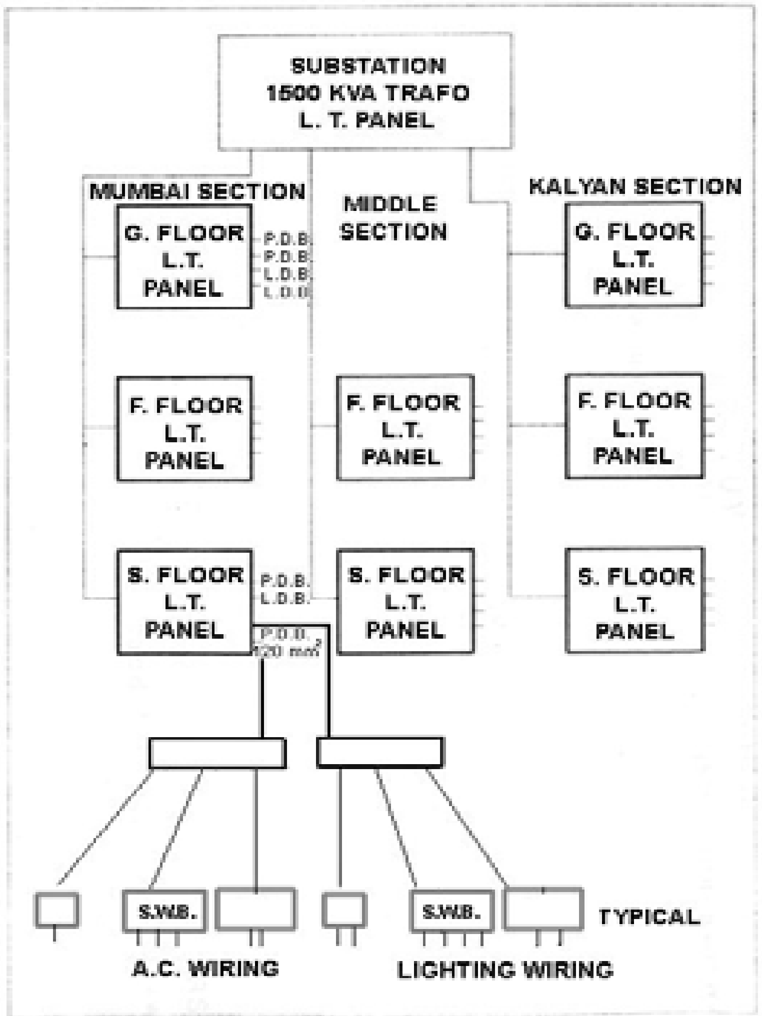
1. Restoration and checking of earth-pits at substation and preventing leakages in the substation.

2. Correcting the defects in the L.T. distribution panels.

3. Replacing old wiring. It is strongly recommended that instead of doing a patchwork, total electrical system for the whole building should be designed and implemented.

   Assuming area of each floor to be 50,000 sq.ft. requirement of wiring points per floor is as follows:

Lighting points	: 500
Fan points	: 300
A.C. points	: 25-30



Schematic diagram showing existing wiring network

Total points per floor : 830

Hence, no of points required for the whole building (approx.) = 2500

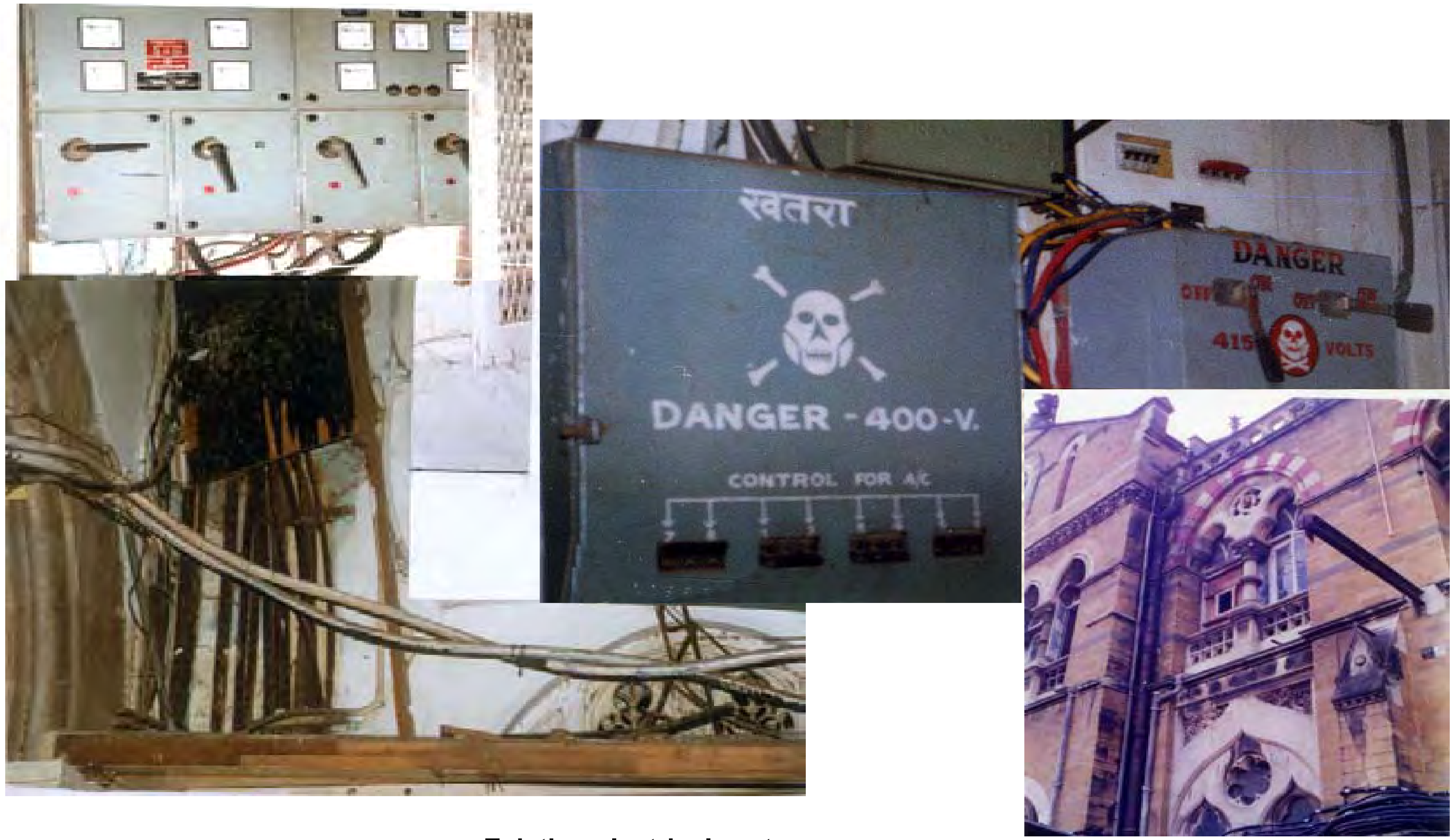
4. Open wiring in corridors should be placed in box type channel throughout the building.

5. Optionally, installation of capacitor-bank and Power Factor Monitoring Equipment to improve P.F. of installation and save energy.

6. Following tests for the installations' safety should be carried out at the earliest:

   a) Insulation resistance test

   b) Earth Continuity test

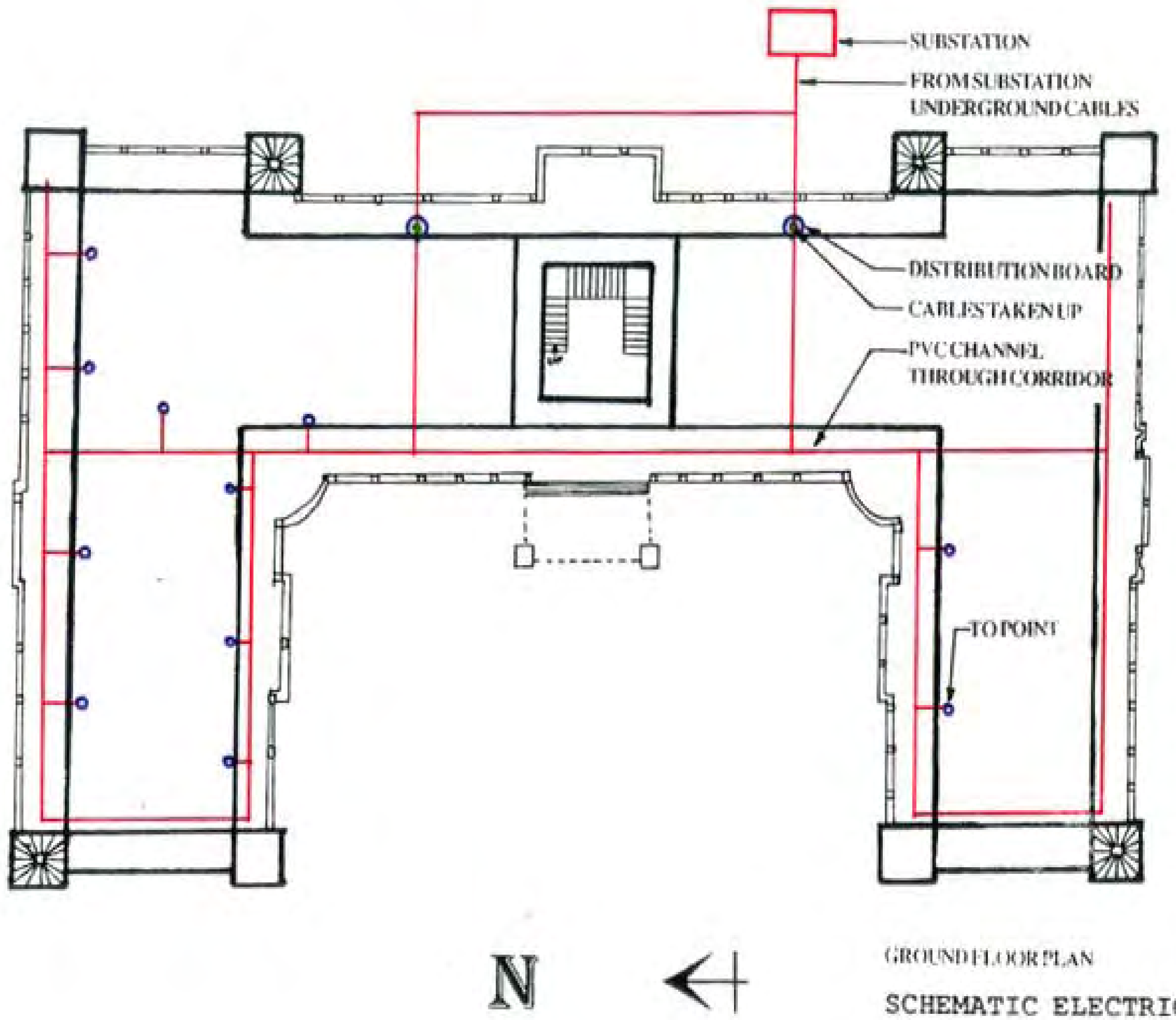


Existing electrical system

Sensitively Designed Partition
for filling up of an arch

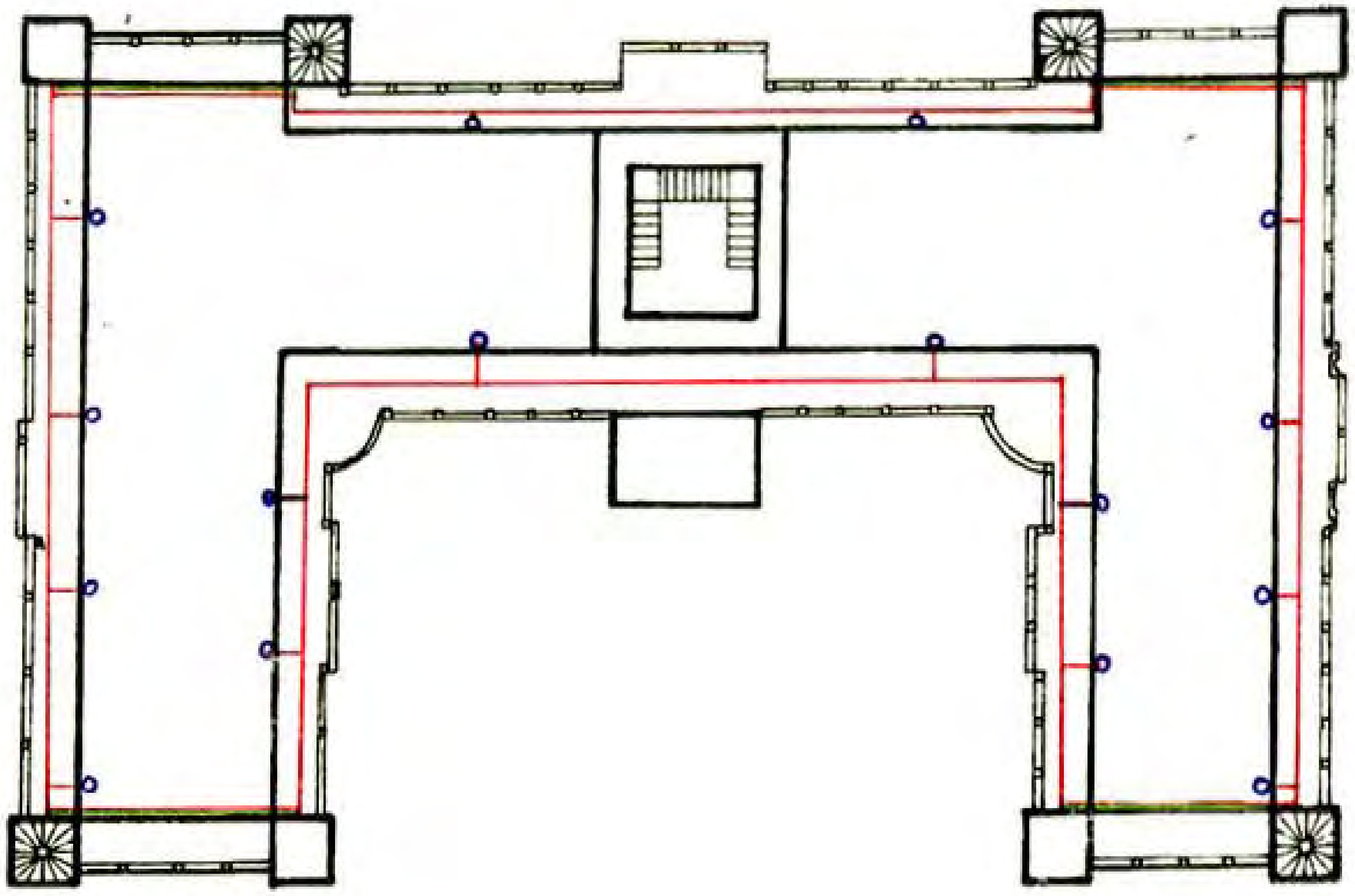
PARTITIONS

WIRING :-
CABLES RUNNING ON THE WALL



GROUND FLOOR PLAN

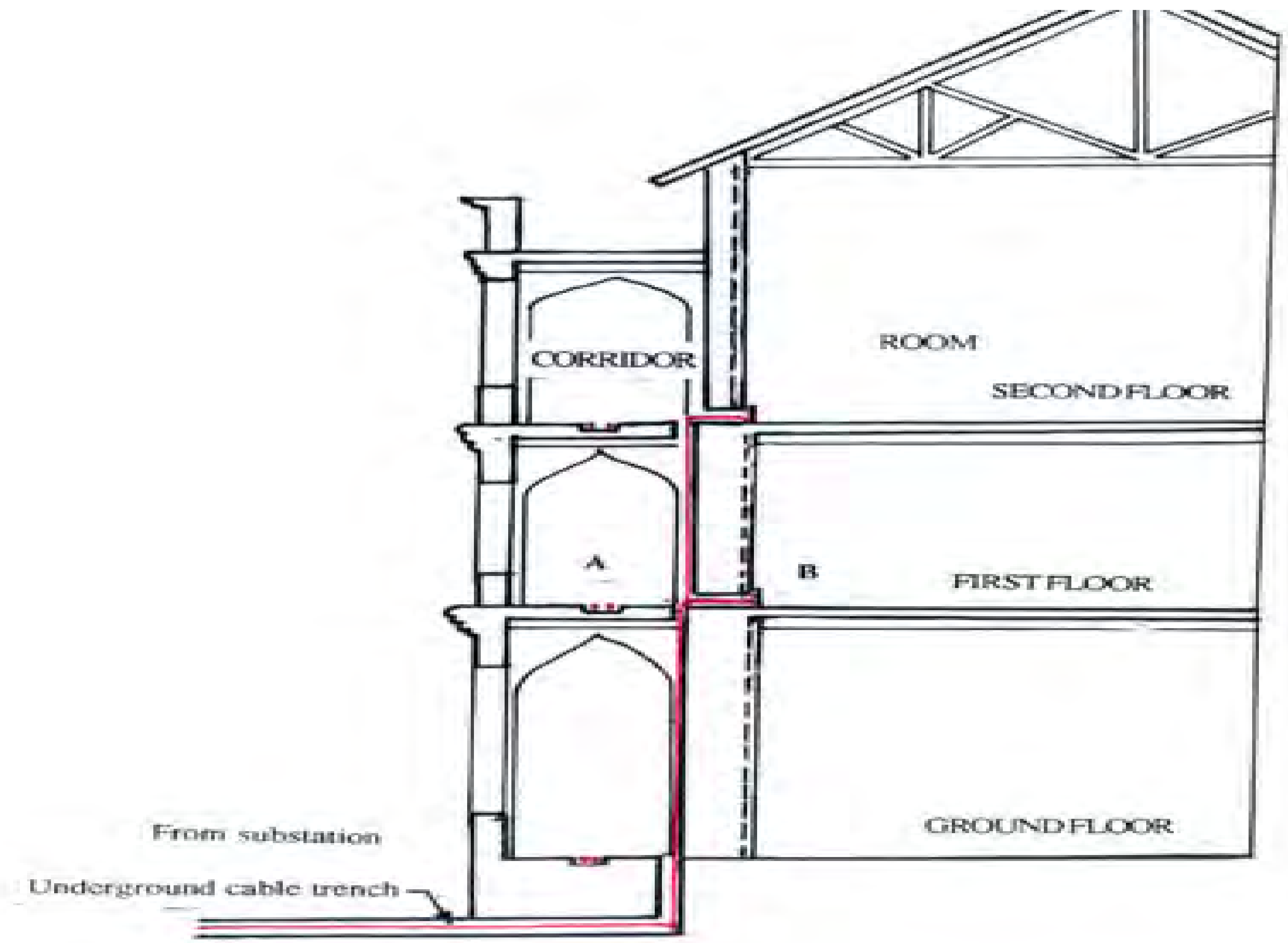
SCHEMATIC ELECTRICAL LAYOUT

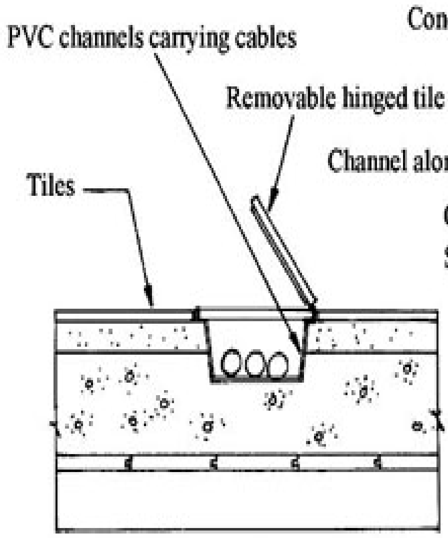


FIRST & SECOND FLOOR PLAN

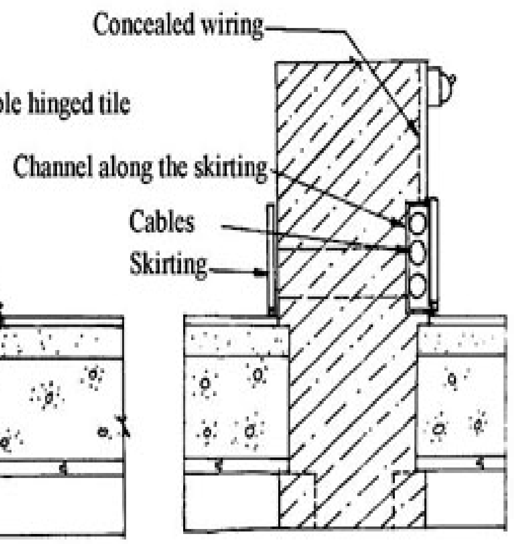
SCHEMATIC ELECTRICAL LAYOUT

N

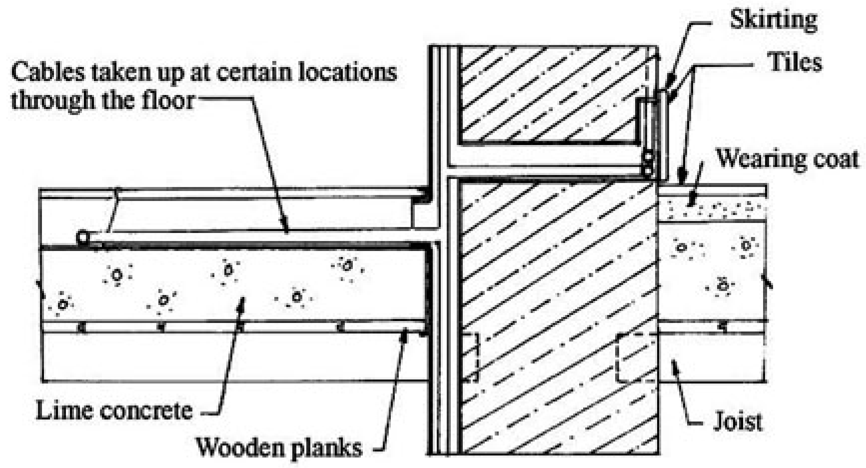

CORRIDOR
ROOM
SECOND FLOOR
A
B
FIRST FLOOR
GROUND FLOOR
From substation
Underground cable trench



DETAIL A



DETAIL B



DETAIL C

CORRIDOR

3.4.5 (ii) Water supply distribution

It was observed during the survey that the distribution of water supply is done in stages as per increased demand, resulting in induction of storage tanks and water supply distribution pipes on the terrace area. At places, the pipes and fittings were leaking continuously.

Remedy 1

The whole of the water supply to the plumbing apparatus is required to be redesigned and the distribution should be done through 2 centralised overhead tanks and a well designed terrace loop system using non corrosive pipes having ultra violet rays stabilising properties.

Remedy 2

Introduction of hydro-pneumatic system supplying water from the pressurised pump direct from the suction tank, and utilising the overhead tanks as reserve standby supply in case of the failure of pumps or electrical supply. However this option is costlier, the difference in costing being approximately 160 to 180% in comparison to Remedy 1.

Internal water supply: Internal water supply inside the toilets also need total restoration as the pipes used for feeding the apparatuses are very old.

If the water supply from the overhead water storage tanks are fed to the toilets through non-corrosive polyethylene conduits U.V. stabilising properties, the internal water supply should be also of the same standard. Such conduits are widely and wisely used throughout the world for longer life of plumbing systems.

The piping should be concealed as exposed piping is always subject to tempering and damage. The internal plumbing should be either of 99.9% percent pure copper pipes of 0.9 mm thickness and of bendable quality, minimising joints and avoiding the tempering.

Vertical external drainage system: Vent, rainwater pipes etc. are also very old and needs replacements in some cases.

Remedy

The same should be replaced by cast iron pipes and fittings with molten lead joints; P.V.C. pipes having smoother inner surface and rubber ring joints, can also be recommended considering the costing and the smoother surface as compared to the C.I. pipes.

The totality of the best plumbing always should be supported by the best quality of waterproofing and finishing material of flooring and dado.

Present water supply is from the various overhead water tanks on the terrace, whose capacity together is almost 90,000 litres used by 3600 staff members and visitors.

Randomly placed supplementary water tanks with perennially leaking pipes cause concern of roof leakage and additional unnecessary dead loads systematic rearrangement is required.

The building can be served by the two existing large overhead water tanks and the remaining tanks becoming redundant.

Existing water supply distribution

3.4.5 (III) PLUMBING/SANITATION

Toilets in the building were originally meant to be located in the small corner rooms. As the needs grew, the toilets were added ad-hoc on upper floors without considering the feasibility of the plumbing system.

Some of the toilets are now situated in the centre of spaces, thus causing ventilation and plumbing problems. The pipes run down the building, piercing through the timber floors at many places which has led to leakages. The plumbing is also disturbing and destroys architectural elements such as the corner turrets above the entrance car porch. (Toilets for the main meeting rooms are incorporated within the turrets on the second floor). The toilets need to be re- located, so that the plumbing services can be provided without visually disturbing the facade.

The present plumbing pattern is not only unorganised, but is also visually disturbing as exposed pipes are seen in the main circulation corridors and on the main facade of the building. Some pipes are seen to be running along the floor on the second floor where the toilets are situated in the centre of space.

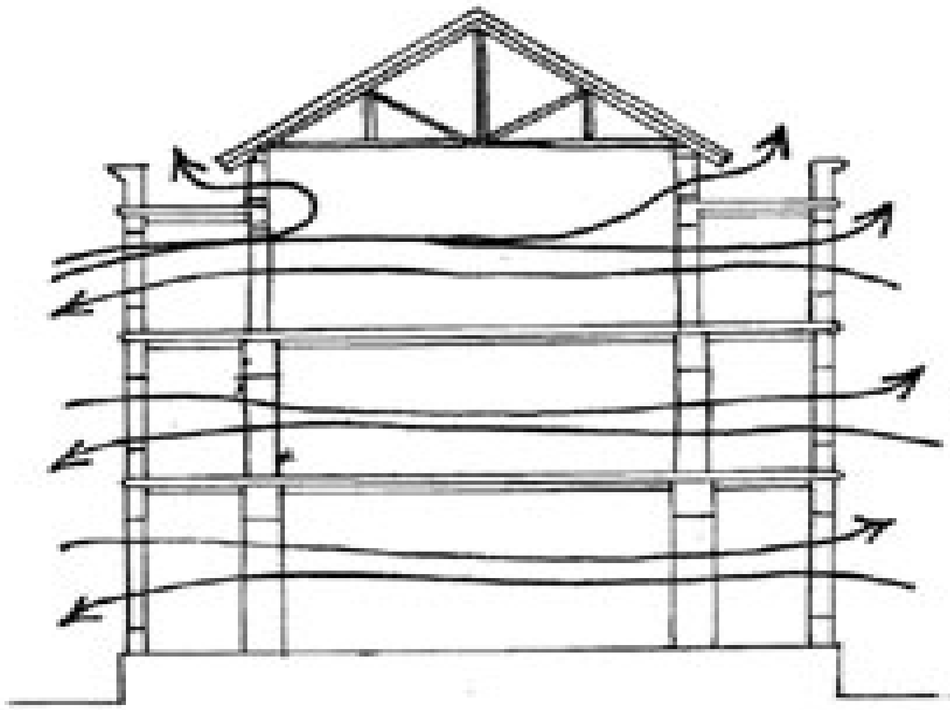
A detailed plumbing plan has to be prepared for the building with a thorough mapping of all the water outlets, rain water discharge pipes and other plumbing fixtures. It is observed that the position of the water tanks all along the flat areas of the terrace causes excess dead load, hence showing distress in the timber joists on the second floor. These should ideally be accommodated within one overhead tank fulfilling the water requirements for the entire building.

Existing water supply distribution

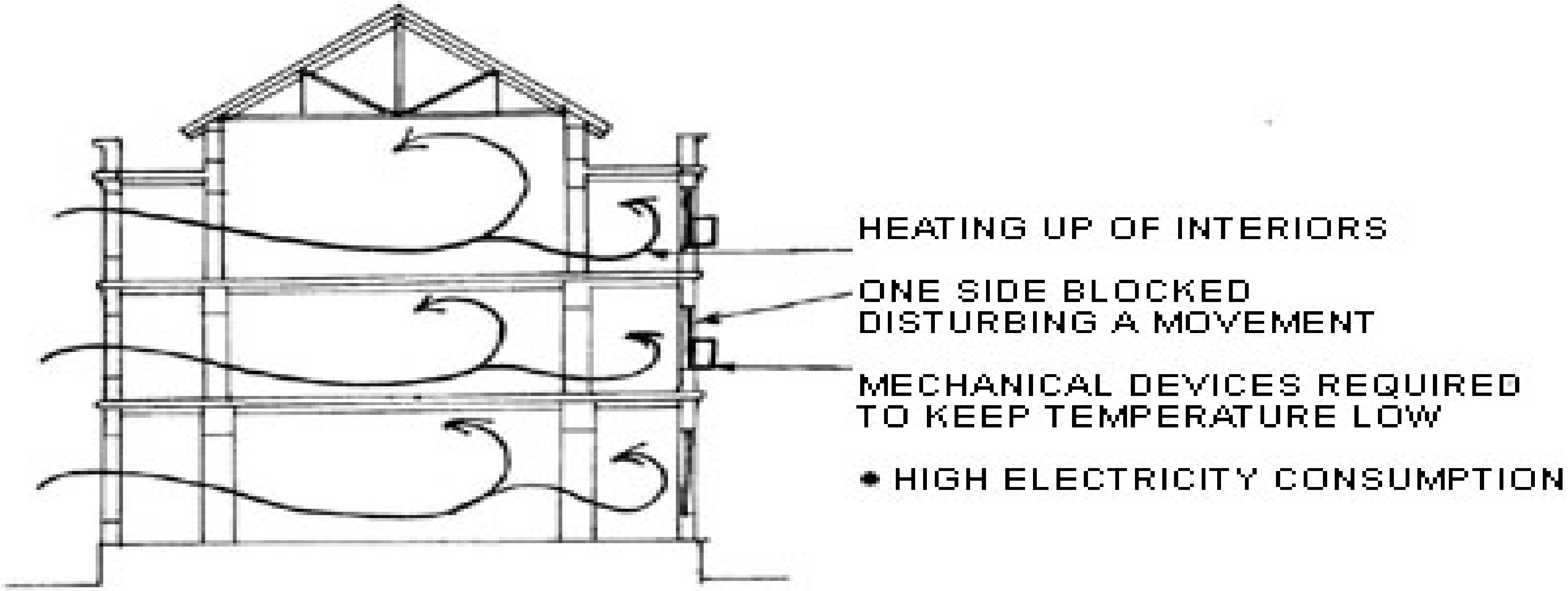
3.4.5 (IV) Air conditioning

A.C. Window units shall be replaced by split A.C. units in the long run

Existing air-conditioning system



NATURAL AIR MOVEMENT



IMPACT OF ENVIRONMENT

3.4.5 (V) FIRE-FIGHTING

FIRE FIGHTING SYSTEM

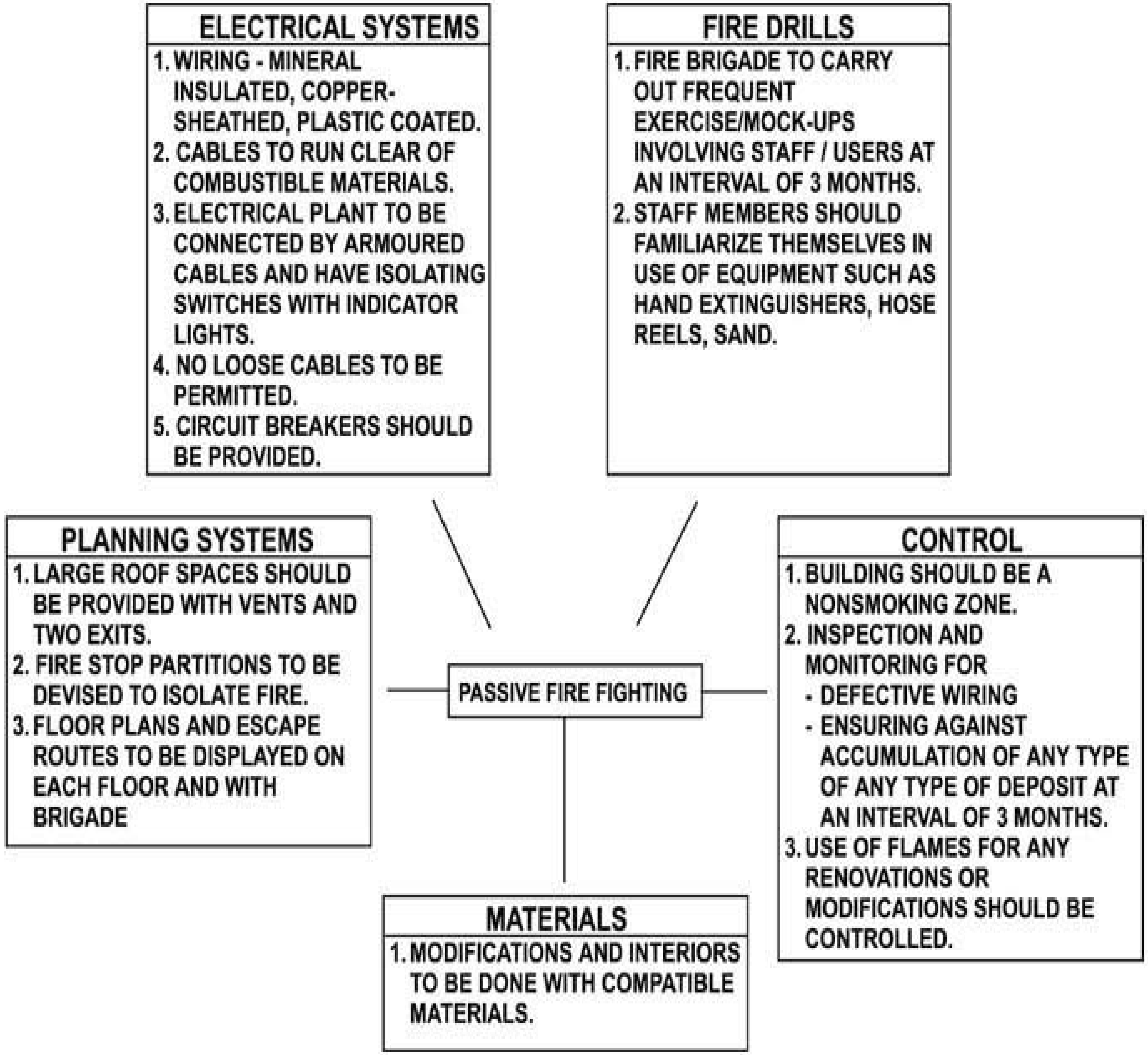
PASSIVE FIRE FIGHTING
(PRECAUTIONARY MEASURES)

1. ELECTRICAL SYSTEM
2. PLANNING
3. MATERIALS
4. CONTROL
5. FIRE DRILLS

ACTIVE FIRE FIGHTING
(FIRE CONTROL)

1. SECURITY
2. DETECTORS
3. ALARM
4. EXTINGUISHERS
5. FIRE HYDRANTS
6. ESCAPE ROUTES

Fire-hazardous areas


ELECTRICAL SYSTEMS
1. WIRING - MINERAL INSULATED, COPPER-SHEATHED, PLASTIC COATED.
2. CABLES TO RUN CLEAR OF COMBUSTIBLE MATERIALS.
3. ELECTRICAL PLANT TO BE CONNECTED BY ARMOURED CABLES AND HAVE ISOLATING SWITCHES WITH INDICATOR LIGHTS.
4. NO LOOSE CABLES TO BE PERMITTED.
5. CIRCUIT BREAKERS SHOULD BE PROVIDED.
FIRE DRILLS
1. FIRE BRIGADE TO CARRY OUT FREQUENT EXERCISE/MOCK-UPS INVOLVING STAFF / USERS AT AN INTERVAL OF 3 MONTHS.
2. STAFF MEMBERS SHOULD FAMILIARIZE THEMSELVES IN USE OF EQUIPMENT SUCH AS HAND EXTINGUISHERS, HOSE REELS, SAND.
PLANNING SYSTEMS
1. LARGE ROOF SPACES SHOULD BE PROVIDED WITH VENTS AND TWO EXITS.
2. FIRE STOP PARTITIONS TO BE DEVISED TO ISOLATE FIRE.
3. FLOOR PLANS AND ESCAPE ROUTES TO BE DISPLAYED ON EACH FLOOR AND WITH BRIGADE
PASSIVE FIRE FIGHTING
CONTROL
1. BUILDING SHOULD BE A NONSMOKING ZONE.
2. INSPECTION AND MONITORING FOR
- DEFECTIVE WIRING
- ENSURING AGAINST ACCUMULATION OF ANY TYPE OF ANY TYPE OF DEPOSIT AT AN INTERVAL OF 3 MONTHS.
3. USE OF FLAMES FOR ANY RENOVATIONS OR MODIFICATIONS SHOULD BE CONTROLLED.
MATERIALS
1. MODIFICATIONS AND INTERIORS TO BE DONE WITH COMPATIBLE MATERIALS.

ACTIVE FIRE FIGHTING (FIRE CONTROL)

SECURITY
- 24 HOURS SECURITY SHOULD BE PROVIDED CONSIDERING THE IMPORTANCE.
- IT SHOULD BE WELL EQUIPPED WITH ADVANCED COMMUNICATION SYSTEMS

EXTINGUISHERS
VARIOUS EXTINGUISHERS ARE :
1. WATER
2. Co_2
3. DRY CHEMICAL POWDER
4. INERT HALOGEN GASES

- LAST VARIETY IS GENERALLY RECOMMENDED DUE TO ITS EFFICIENCY.
- PORTABLE EXTINGUISHERS SHOULD BE PERIODICALLY TESTED & REPLACED EVERY 2-5 YEARS

DETECTORS
VARIOUS TYPES AVAILABLE :
1. OVER HEAT DETECTOR
2. VISIBLE SMOKE DETECTOR
3. FLAME DETECTOR
4. HEAT DETECTOR

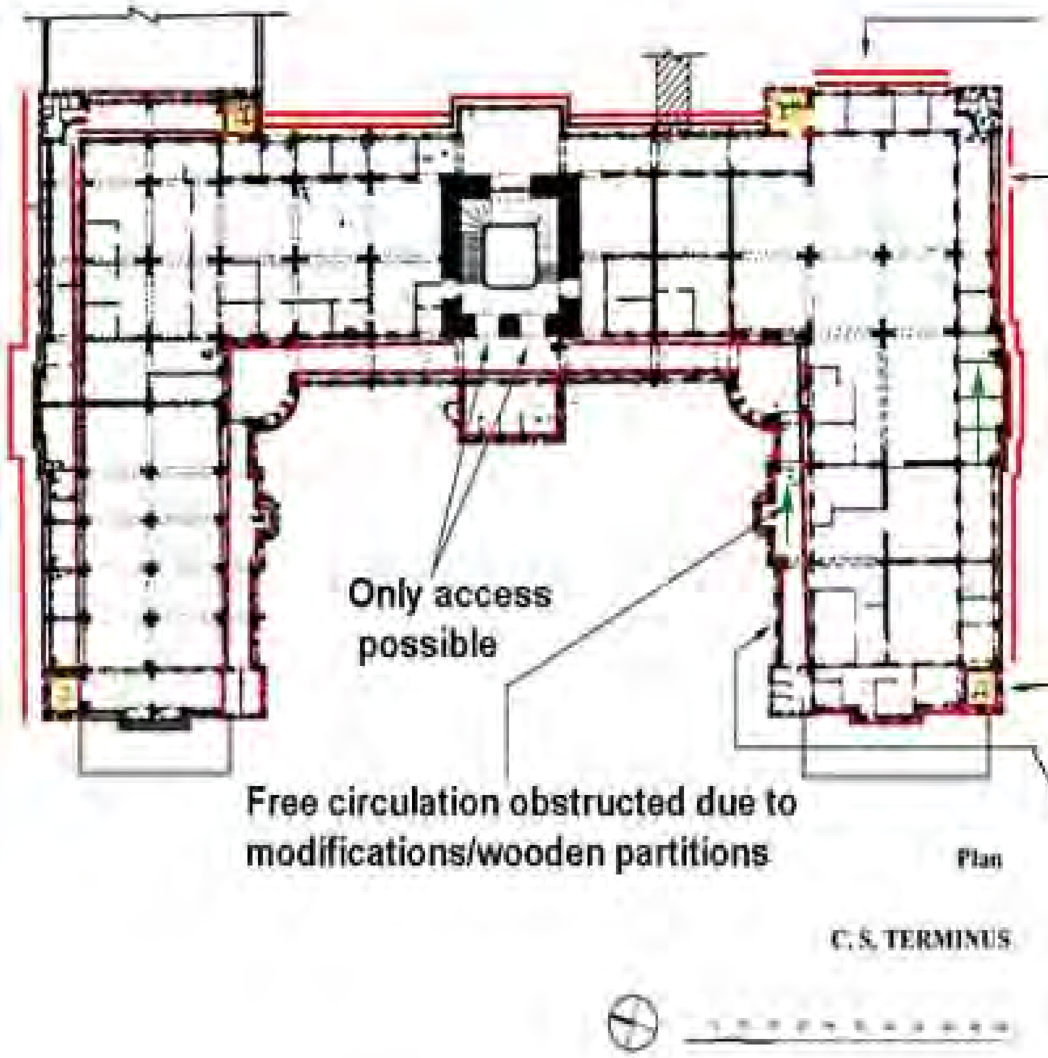
FIRE HYDRANTS
- THESE SHOULD BE PROVIDED BOTH INSIDE AND OUTSIDE THE BUILDING, WHERE IT WILL BE ACCESSIBLE TO THE FIRE BRIGADE
- FOR ROOF SPACES, TOWERS, DOMES, SPIRES-HYDRANTS CAN BE SERVED BY DRY RISING MAINS

ALARM
1. MANUAL
2. ELECTRONIC

ALARM SYSTEM SHOULD BE COMBINED WITH AN EFFICIENT INTERNAL TELEPHONES SYSTEM WITH A DIRECT LINK TO THE FIRE STATION

ESCAPE
IN CASE OF FIRE, ACCESS LADDERS AND ALTERNATIVE ROUTES SHOULD BE PROVIDED

POSSIBLE FIRE HAZARD



Open wiring

MATERIALS

1. Limestone lining (converted in to quick lime due to heat and stake lime due to water)
2. Wood in large quantity

Plank	Joist	Beams
bums quickly 150325.55 sq.ft.	4"x6" 6820 Nos.	10"x12" 47 Nos.

3. Timber Staircases
   High risk of carrying fire to upper floor
4. Tarpaulins used for waterproofing in large quantity
5. Papers storage in excessive quantity

3.4.5 (VI) LANDSCAPING AND PARKING, SIGNEAGE AND GRAPHICS

This is appropriate on the rear side of the building (East) where new buildings will be dismantled to protect the building in a befitting manner.

Historical buildings need to be presented appropriately to the visitors. The plan recommends designing of a set of signeage and graphics (such as signboards, display systems, posters and advertisement hoardings). The same is a vital key to the success of the conservation programme in the long run.

Existing landscaping on the west side

Incongruous additions for parking

Prevailing signeage in the concourse area

3.5.1 ESTIMATION OF WORKS AND BILL OF QUANTITIES

Sr. no.	Items/General Specifications	Quantity	Unit	Amount (Rs)
ENABLING WORKS				
1	Erecting scaffolding on all sides of the building	110,100	sft	3,303,000
2	Erecting scaffolding at the central dome	40,000	sft	2,200,000
3	Erecting scaffolding on pyramidal roof, spires	40,000	sft	1,600,000
4	Erecting scaffolding for replacement of stone incl. jacks, pulley	15	nos.	75,000
DISMANTLING WORKS				
5	Removal of tar felt from window openings	76	nos	76,000
6	Removal of vegetation growth(15 sft./spot) .	1,300	sft	78,000
7	Removal of external drainage pipe(existing)	1100	rft	33,000
8	Removal of loose and dead mortar in stone joints in walls	15200	rft	76,000
9	Removal of loose and dead mortar in stone joints in Dome	7000	rft	105,000
10	Removal of broken floor tiles in the floors of the corridor	27000	sft	405,000
11	Removal and relocation of *Godrej* almirah to reduce dead load from floors and stacking everything properly	26,000	sft	100,000
12	Removal of oil paint from wall	3,000	sft	135,000
13	Removal of old wooden partitions	20,000	sft	300,000
14	Removal of AC units & ducts water tank and its stacking etc. complete	30	nos.	30,000
15	Removal of Mangalore tiles and inspection of roof boards, ribs, rafters etc. and stacking the useful material for re-use	60000	sft	3,000,000
16	Removal of old Bitumen felt & other water proofing treatments.	12000	sft	960,000
17	Removal of loose mortar /plaster and its disposal from site etc. complete	2000	sft	40,000
18	Opening of ventilators.	400	sft	14,000

Sr. no.	Items/General Specifications	Quantity	Unit	Amount (Rs)
19	Opening of Infilled arches Size.(8X10 & 4X5) without damaging surrounding decoration and floor etc.	180	nos	100,000
20	Removal of old decayed lime mortar & other material and its disposal from site etc. complete	1150	sft	13,800
21	Removal of broken parts of valley	2000	rft	100,000
22	Dismantling hard board false ceiling incl. frame work and removing the wooden bends carefully and stacking the material etc. complete	2000	sft	100,000
23	Dismantling of 3 structures on the east side of main building by mechanical means and removal of debris.	95000	sft	5,700,000
36	Repairing & replacing of battens	4000	rft	600,000
STRUCTURAL REPAIRS				
24	Repairing and replacing of joists of size 6"x3" and fixing	9,000	rft	9,000,000
25	Providing frosted glass in ventilators.	400	sft	22,000
26	Repairing & refixing of Valley	2,000	rft	200,000
27	Providing and fixing of new roof tiles in missing area	20000	nos	400,000
28	Terrace joints between flat & slope roof	4,000	rft	160,000
29	Water proofing area	12,000	sft	1,560,000
RESTORATION WORKS				
30	Inspection and restoration of lightning conductor	1	nos.	100,000
31	Area under hard staining, lime & Malad stone	145,000	sft	6,525,000
32	Area of white lime stone over dome	30,000	sft	1,350,000
33	Remaining area of Malad and lime stone	70,000	sft	2,450,000
34	Restoration of missing elements, Pinnacles etc.	55	nos.	550,000
35	Restoration of stained glass	250	sft	1,125,000
36	Restoration of Baluster	85	nos.	68,000
37	Restoration of Gargoyles	5	nos	75,000

Sr. no.	Items/General Specifications	Quantity	Unit	Amount (Rs)
38	Applying anti-termite treatment to wood member and roof truss, doors and window	125,000	sft	2,500,000
39	Replacement of stone matching with the material and profile & fixing red stone & other stones for height less than 3' & diameter 1' 6" max.	15	nos	270,000
40	Providing and fixing new tiles matching with the old in the corridor	27,000	sft	5,400,000
41	20 mm thick lime plaster at all heights (1:2) and (1: 1.5)proportion with fine rendering and finishing including cost and conveyance of all materials and labour charges etc. complete.	1150	sft	138,000
42	12 mm thick and 6' teak wood planks as false ceiling with tongue and groove joint incl. cost and conveyance. of all materials and labour charges etc. complete	4000	rft	480,000
43	Providing Mangalore tiles roofing by using old usable tiles dismantled, supplying identical old tiles where ever necessary etc. complete.	600000	sft	45,000,000
44	Supplying and fixing best teak wood to door frame with necessary repairs to the frame as per existing design with brass oxidised heavy duty hinges with matching screws, and labour charges etc. complete	400	rft	268,000
45	Supplying and fixing best teak wood doors single or double leaf with necessary repairs as per existing design with tower bolts, latches etc. and labour charges etc. complete	550	sft	467,500
46	Supplying and fixing best teak wood for window frame with necessary repairs as per existing design with tower bolts, latches etc. and labour charges etc. complete	3,000	rft	900,000
47	Supplying and fixing best teak wood for windows single or double leaf with necessary repairs as per existing design with tower bolts, latches etc. and labour charges etc. complete	3,600	sft	1,620,000

Sr. no.	Items/General Specifications	Quantity	Unit	Amount (Rs)
SERVICES INSTALLATION				
48	Electrical works including removal, designing, temporary arrangements and installation.			15,000,000
49	Sanitary works including removal, designing, temporary arrangements and installation			10,000,000
50	Landscaping including removal, designing and execution			600,000
51	Plumbing including removal, designing, temporary arrangements and installation			10,000,000
52	Fire- fighting including removal, designing, temporary arrangements and installation			750,000
53	Solid waste disposal including removal, designing, temporary arrangements and installation			500,000

Sr. no.	Items/General Specifications	Quantity	Unit	Amount (Rs)
FINISHES				
54	Painting to wood work for rafters, purlins etc. for Manglore tile roofing, false ceiling etc. two coats with red wood primer after thorough scraping and sandpapering the existing surface incl. cost and conveyance. of all goods and materials, labour etc. complete	60000	sft	720,000
55	Re-pointing in Lime stone in lime mortar similar to the original	6,200	rft	111,600
56	Re-pointing in Malad stone in lime mortar similar to the original	9,000	rft	189,000
57	Re-pointing in Dome from outside in lime mortar similar to the original	7,000	rft	280,000
58	Protective coating on parapet wall	7,500	rft	375,000
59	Varnish in Door 6x9 & 9x9	16,000	sft	240,000
60	Varnish in windows 5'x5',& 3'x7'	8,500	sft	127,500
61	Varnish polish over wooden false ceiling	3000	sft	3,000
62	Painting to woodwork 3 coats with approved/matching colour and shade of ready mixed synthetic enamel paint, interior first grade, after thoroughly scraping and sandpapering the existing incl. providing and applying one coat of wood primer complete.	180000	sft	4,500,000
63	Painting M.S. grill in 3 coats with approved colour and shade of ready mixed synthetic enamel first quality exterior grade metal paint complete for finished item of work one coat primer + 2 coat paint	400	sft	10,000
64	Painting Cast Iron. grill in 3 coats with approved colour and shade of ready mixed synthetic enamel first quality exterior grade metal paint complete for finished item of work one coat primer + 2 coat paint	900	sft	27,000
64	White wash to all internal walls including sandpapering, surface preparing and cleaning the surface and protecting the surrounding decorative surfaces and stone wall etc. complete.	48000	sft	720,000

Sr. no.	Items/General Specifications	Quantity	Unit	Amount (Rs)
CONSULTANTS				
65	Structural	10%		Lumpsum 1,000,000
66	Services	10%		
67	Solid Waste disposal	10%		
68	Archaeologist & Musueologist	10%		
69	Art Historian	10%		
70	Visualiser & Graphic designer	10%		
71	Landscape consultant	10%		
72	Main consultant	5%		
			TOTAL	**144,925,400**

3.5.2 LONG TERM BUDGET FOR MAINTENANCE PROGRAM

DURATION	1998 - 2000	2000 - 2004	2004 - 2008	2008 - 2012	2012 - 2016
Short term					
Immediate	10,75,94,000	-	-	-	-
Urgent	1,39,68,400	-	-	-	-
Soon	1,63,70,500	-	-	-	-
LONG TERM					
Later	-	840,000	900,000	-	-
Periodic	5,000,000	10,000,000	5,000,000	5,000,000	2,500,000
Total = 15,00,00,000.000 (Fifteen Crores)					

SHORT TERM WORKS

SR. NO.	Items/General Specifications	Amount
A) Immediate		
1.	Erecting scaffolding on all sides of the building	3,303,000
2.	Erecting scaffolding on pyramidal roofs, spires	1,600,000
3.	Removal of tar felt from window openings	76,000
4.	Removal of vegetation growth (15 sq. ft./spot)	78,000
5.	Removal of external drainage pipe (existing)	33,000
6.	Removal of Mangalore tiles and inspection of roof boards, ribs, rafters, etc. and stacking the useful material for re-use	3,000,000
7.	Removal of old Bitumen felt & other water proofing treatments	960,000
8.	Removal of loose mortar / plaster and its disposal from site, etc.	40,000
9.	Opening of ventilators	14,000
10.	Removal of broken parts of valley	100,000
11.	Repairing & replacing of battens	600,000
12.	Repairing and replacing of joists of size 6" x 3" and fixing	9,000,000
13.	Repairing & refixing of valley	200,000
14.	Providing and fixing of new roof tiles in missing area	400,000
15.	Terrace joints between flat & slope roof	160,000
16.	Water proofing area	1,560,000
17.	Restoration of missing elements, pinnacles etc.	550,000
18.	Restoration of gargoyles	75,000
19.	Applying anti-termite treatment to wood member and roof truss, doors and window	2,500,000
20.	Providing Mangalore tiles roofing by using old usable tiles dismantled, supplying identical old tiles where ever necessary complete.	45,000,000
21.	Electrical works including removal, designing, temporary arrangements and installation.	15,000,000

SR. NO.	Items/General Specifications	Amount
22.	Sanitary works including removal, designing, temporary arrangements and installation	10,000,000
23.	Plumbing including removal, designing, temporary arrangements and installation	10,000,000
24.	Fire - fighting including removal, designing, temporary arrangements and installation	750,000
25.	Solid waste disposal including removal, designing, temporary arrangements and installation.	500,000
26.	Painting to wood work for rafters, purlins, etc. for Mangalore tile roofing, false ceiling etc. two coats with red wood primer after thorough scraping and sand papering the existing surface including cost and conveyance of all goods and materials, labour etc. complete.	720,000
27.	Protective coating on parapet wall	375,000
28.	Consultants : *a)* Structural *b)* Services *c)* Solid waste disposal *d)* Archaeologist & Musueologist *e)* Art Historian *f)* Visualiser & Graphic designer *g)* Landscape consultant	1000000
	Total	10,75,94,000

***B)* URGENT**

1.	Erecting scaffolding at the central dome	2,200,000
2.	Erecting scaffolding for replacement of stone including jacks, pulley	75,000
3.	Removal of loose and dead mortar in stone joints in walls	76,000
4.	Removal of loose and dead mortar in stone joints in dome	105,000
5.	Removal of AC units & ducts water tank and its stacking etc.	30,000
6.	Opening of infilled arches size (8 x 10 & 4 x 5) without damaging surrounding decoration and floor etc.	100,000

SR. NO.	Items/General Specifications	Amount
7.	Removal of decayed lime mortar & other material and its disposal from site etc. complete.	13,800
8.	Providing frosted glass in ventilators	22,000
9.	Area under hard staining, lime & Malad stone	6,525,000
10.	Area of white limestone over dome	1,350,000
11.	Remaining area of Malad and lime stone	2,450,000
12.	Inspection, restoration of lightning conductor	100,000
13.	Restoration of baluster	68,000
14.	Replacement of stone matching within the material and profile including material & fixing red stone & other stones for height less than 3' & diameter 1'6" max.	270,000
15.	Re-pointing in Lime stone in lime mortar similar to the original	111,600
16.	Re-pointing in Malad stone in lime mortar similar to the original	189,000
17.	Re-pointing in dome from outside in lime mortar similar to the original	280,000
18.	Varnish polish over wooden false ceiling	3,000
	Total	**1,39,68,400**
***C)* SOON**		
1.	Removal of broken floor tiles in the floors of the corridor	405,000
2.	Restoration of stained glass	1,125,000
3.	Removal of oil paint from wall	135,000
4.	Dismantling hard board false ceiling incl. frame work and removing the wooden bends carefully and stacking the material etc.	100,000
5.	Dismantling of 3 structures on the east side of main building by mechanical means and removal of debris.	5,700,000
6.	Providing and fixing new tiles matching with the old in the corridor	5,400,000
7.	20 mm thick lime plaster at all heights (1:2) and (1: 1.5)proportion with fine rendering finishing incl. cost and conveyance, of all materials and labour charges etc. .	138,000
8.	12 mm thick and 6' teak wood planks as false ceiling with tongue and groove joint including cost and conveyance of all materials and labour charges etc. complete.	480,000

SR. NO.	Items/General Specifications	Amount
9.	Supplying and fixing best teak wood for window frame with necessary repairs as per existing design with tower bolts, latches etc. and labour charges etc. complete.	900,000
10.	Supplying and fixing best teak wood for windows single or double leaf with necessary repairs as per existing design with tower bolts, latches etc. and labour charges etc. complete.	1,620,000
11.	Varnish in door 6' x 9' & 9' x 9'	240,000
12.	Varnish in windows 5' x 5',& 3' x 7'	127,500
	Total	**1,63,70,500**

LONG TERM WORKS

SR. NO.	Items/General Specifications	Amount
***A)* later**		
1.	Removal and relocation of *Godrej* almirah to reduce dead load from floors and stacking materials properly	100,000
2.	Removal of old wooden partitions	300,000
3.	Supplying and fixing best teak wood to door frame with necessary repairs to the frame as per existing design with brass oxidised heavy duty hinges with matching screws, and labour charges etc. complete.	268,000
4.	Supplying and fixing best teak wood doors single or double leaf with necessary repairs as per existing design with tower bolts, latches etc. and labour charges etc. complete.	467,500
5.	Landscaping including removal, designing and execution.	600,000
	Total	***17,35,500***
***B)* Periodic**		
1.	Painting to woodwork 3 coats with approved/matching color and shade of ready mixed synthetic enamel paint, interior first grade, after thoroughly scraping and sandpapering the existing including provision and application of one coat of wood primer complete.	4,500,000
2.	Painting M.S. grill in 3 coats with approved color and shade of ready mixed synthetic enamel first quality exterior grade metal paint complete for finished item of work one coat primer + 2 coat paint	10,000
3.	Painting Cast Iron grill in 3 coats with approved color and shade of ready mixed synthetic enamel first quality exterior grade metal paint complete for finished item of work 1coat primer + 2 coat paint	27,000
4.	White wash to all internal walls incl. sandpapering, surface preparing and cleaning the surface and protecting the surrounding decorative surfaces and stone wall etc. complete.	720,000
	Total	***52,57,000***

3.6 USE

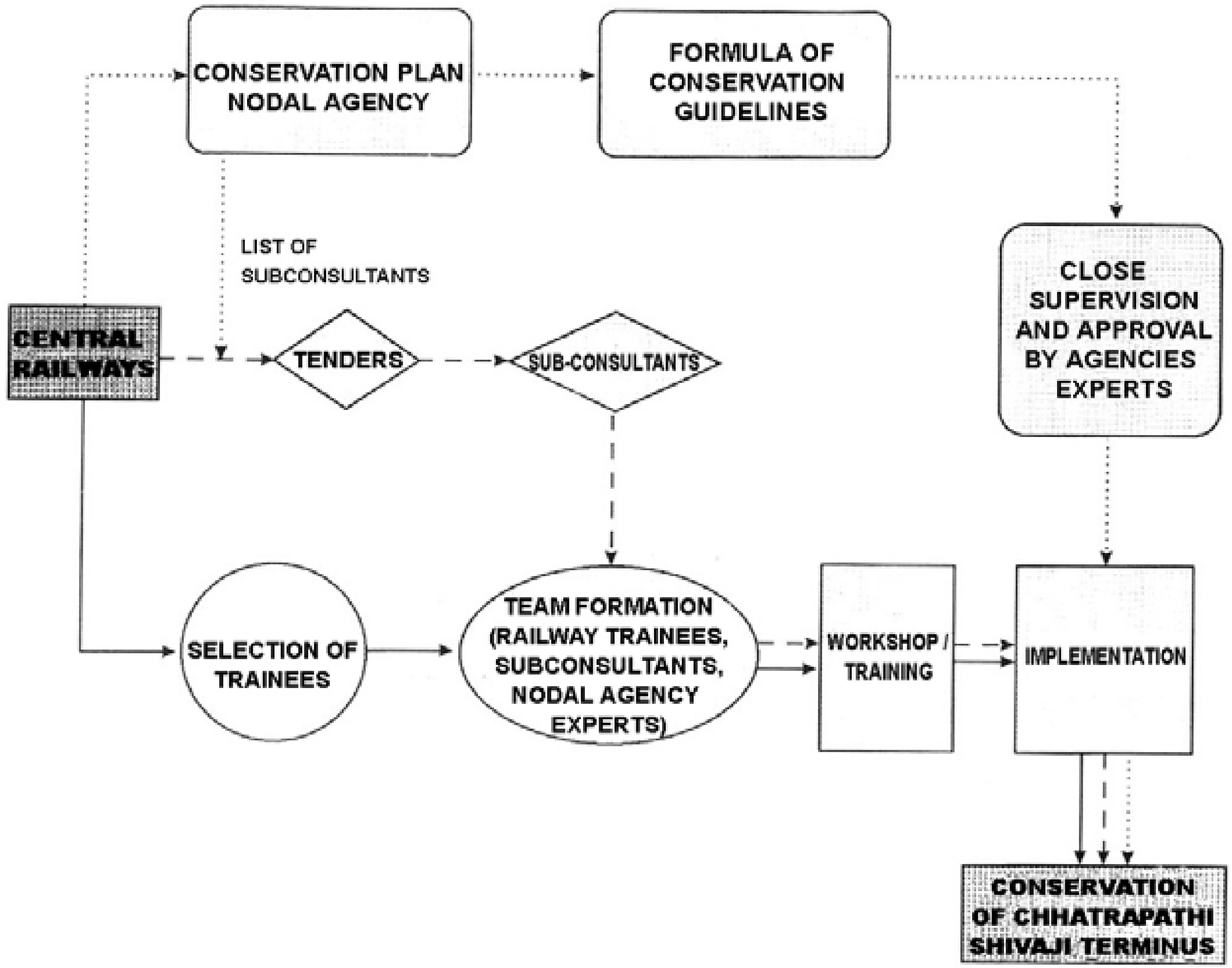
Original planning of the structure clearly shows due consideration given to climatic considerations. Corridors were planned as semicovered areas for adequate circulation in hot and humid climate. This area surrounds the whole structure. The original function of the building is still retained but subsequent changes not envisaged in the earlier design have directly affected the condition of the building today.

Original structure had an area of 60,400 sq. ft. for administrative use and 5000 sq. ft. for services for 680 intended users. Current statistics of areas and users itself explain to great extent the condition of buildings 1800 users are using this structure which is thrice the intended occupancy. This increase has demanded more space which directly resulted in consumption of corridor areas, thus disturbing original pattern of structure of movement. Mezzanines are also created for meeting demand of large areas. Thus number of toilets, water tanks, electrical points were added as and when required, and not always discretely

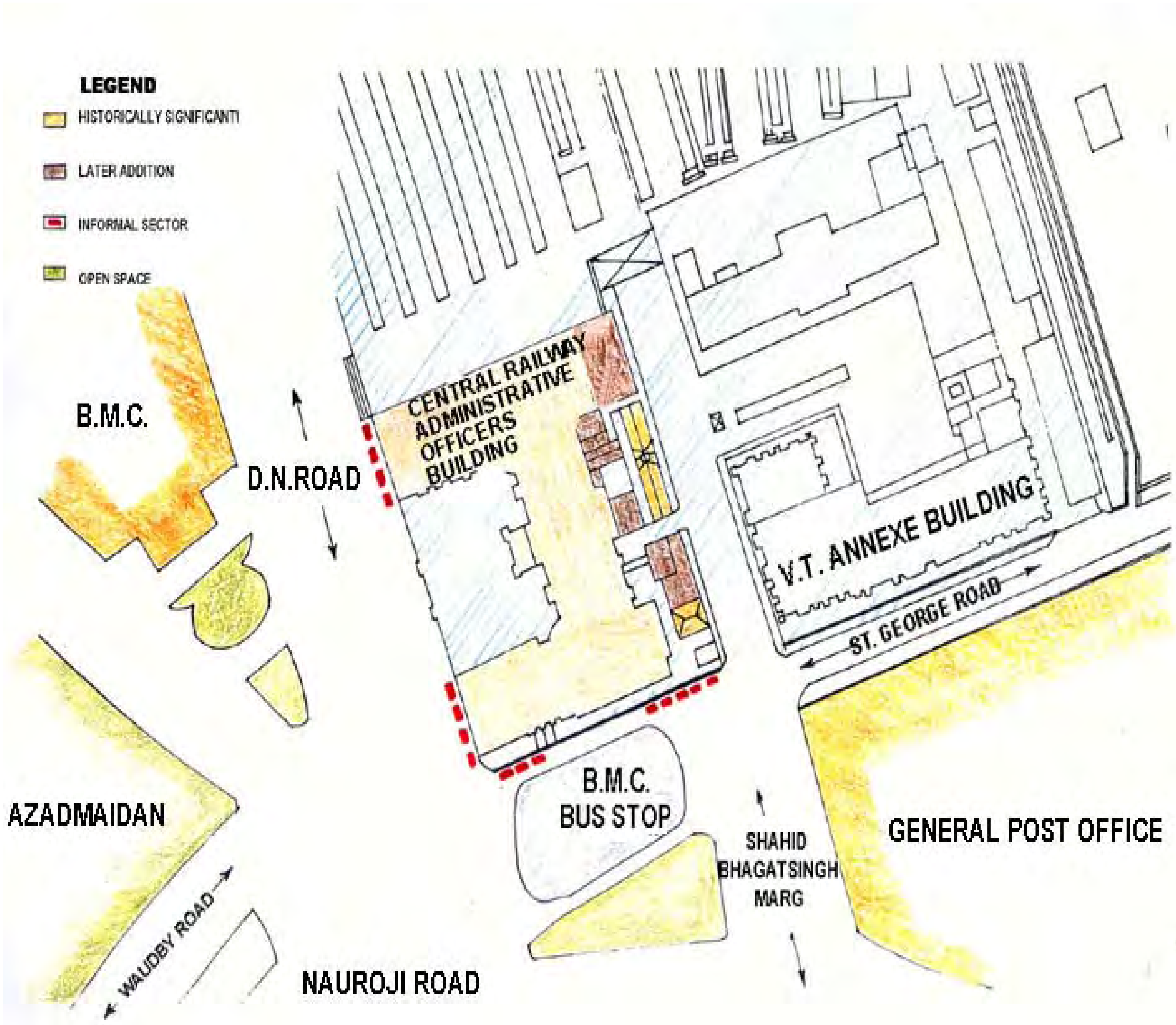
Due to such sporadic changes, synthetic, polymeric materials leading to heterogeneous interiors. Heavy structural alterations for hoisting lifts, mezzanine floors, creating toilets were carried out after contrasting to the original construction. These are some of the use oriented causes of deterioration of the structure

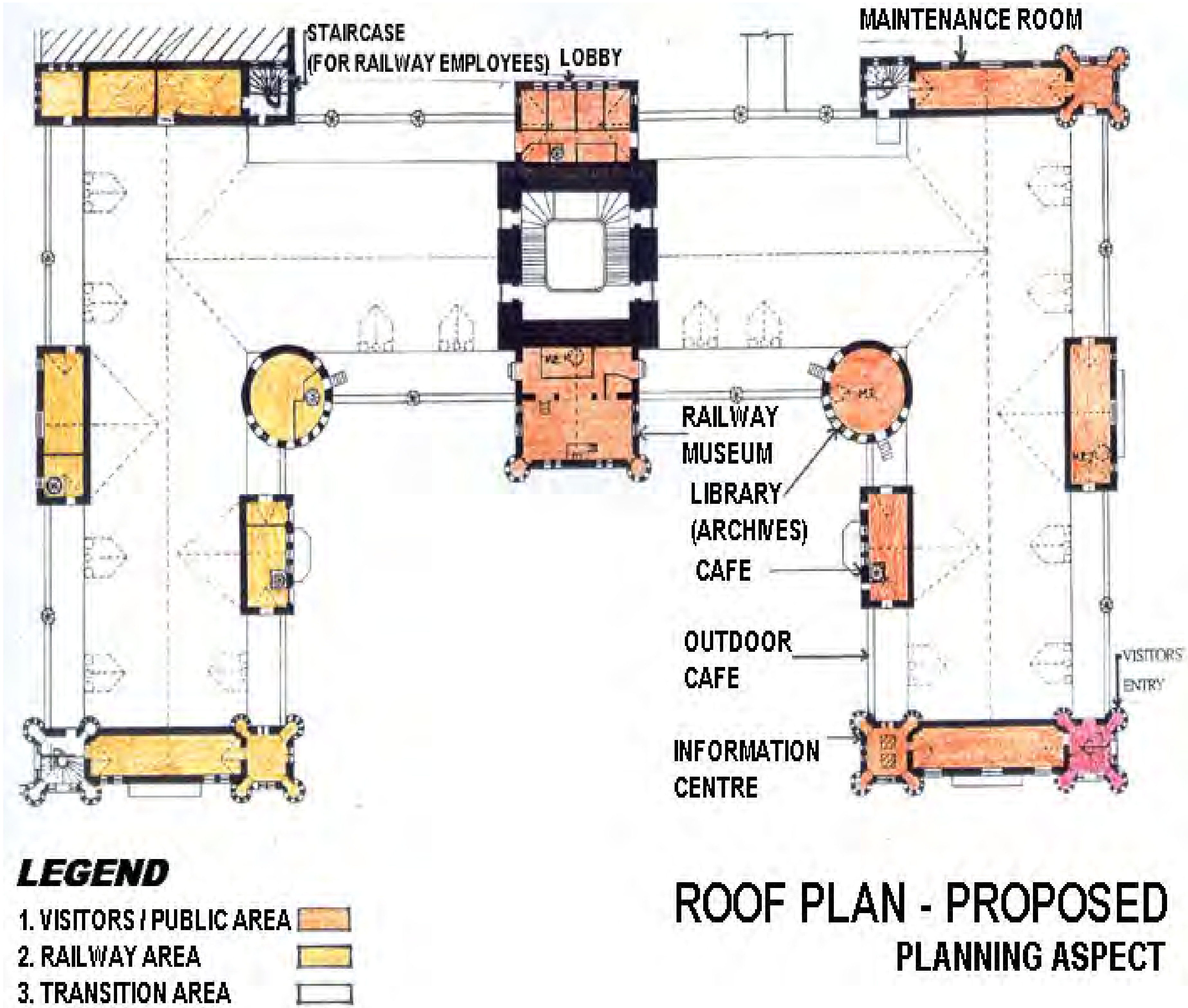
Pattern of the use of spaces needs to be redesigned to suit the building and its functions. A rationalisation of staff strength to limit the same to about 700 will go a long way in reducing stress on the building. It is proposed that all incongruous additions around the main building is cleared and entire building is fully exposed. All the spaces must be used appropriately and the plan proposes a manpower reduction by C.S.T. authorities. Also, the plan envisages use of all the staircases and roof spaces for defined purposes. This will also serve as fire escapes in emergency.

SPACE – COULD BE EFFICIENTLY USED



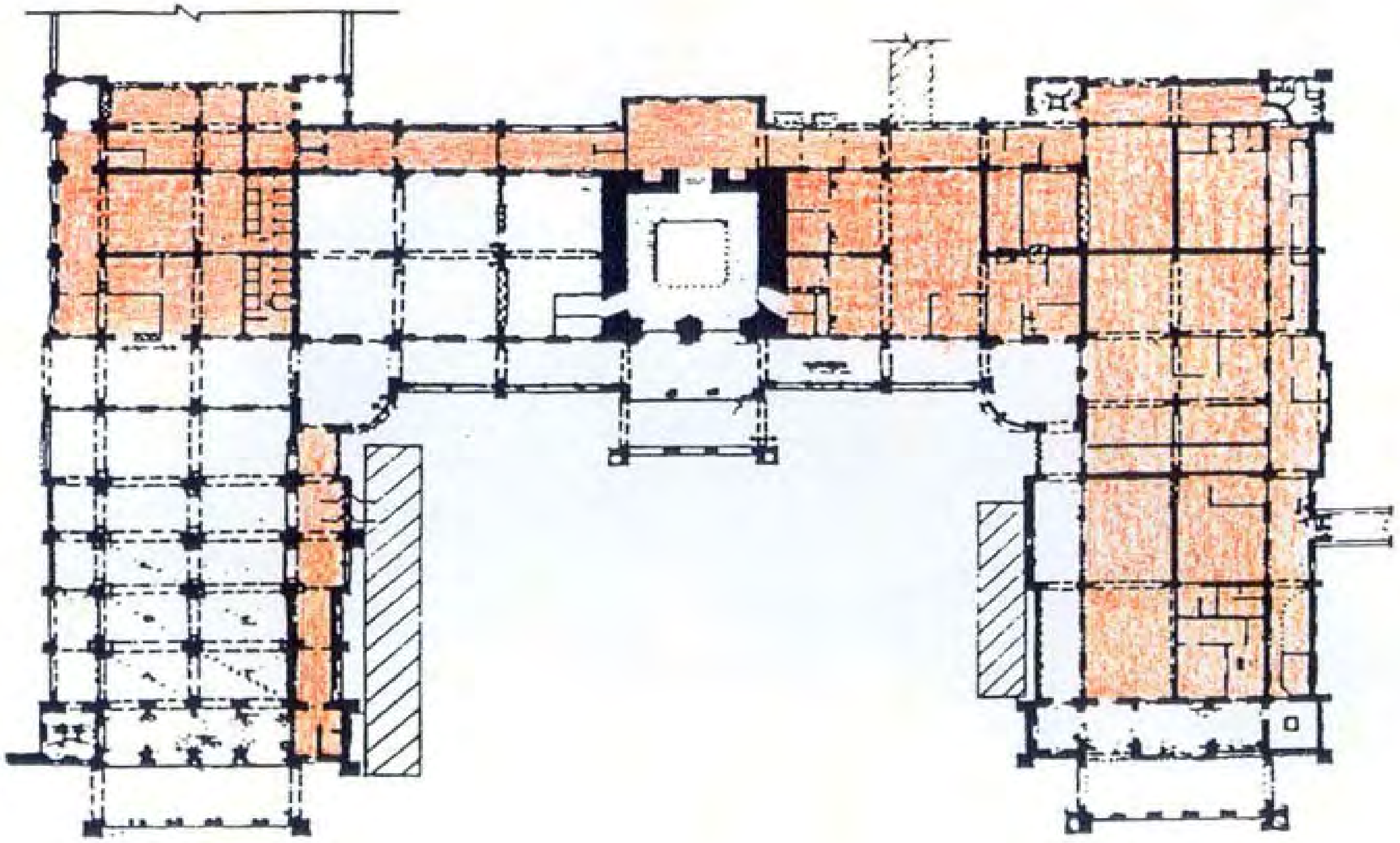
Central Railway authorities will appoint the nodal agency to execute the work maintaining the authenticity of the building to International Standards of Excellence


LEGEND
HISTORICALLY SIGNIFICANT
LATER ADDITION
INFORMAL SECTOR
OPEN SPACE
B.M.C.
D.N.ROAD
CENTRAL RAILWAY ADMINISTRATIVE OFFICERS BUILDING
V.T. ANNEXE BUILDING
ST. GEORGE ROAD
AZADMAIDAN
B.M.C. BUS STOP
SHAHID BHAGATSINGH MARG
GENERAL POST OFFICE
WAUDBY ROAD
NAUROJI ROAD



ROOF PLAN - PROPOSED
PLANNING ASPECT

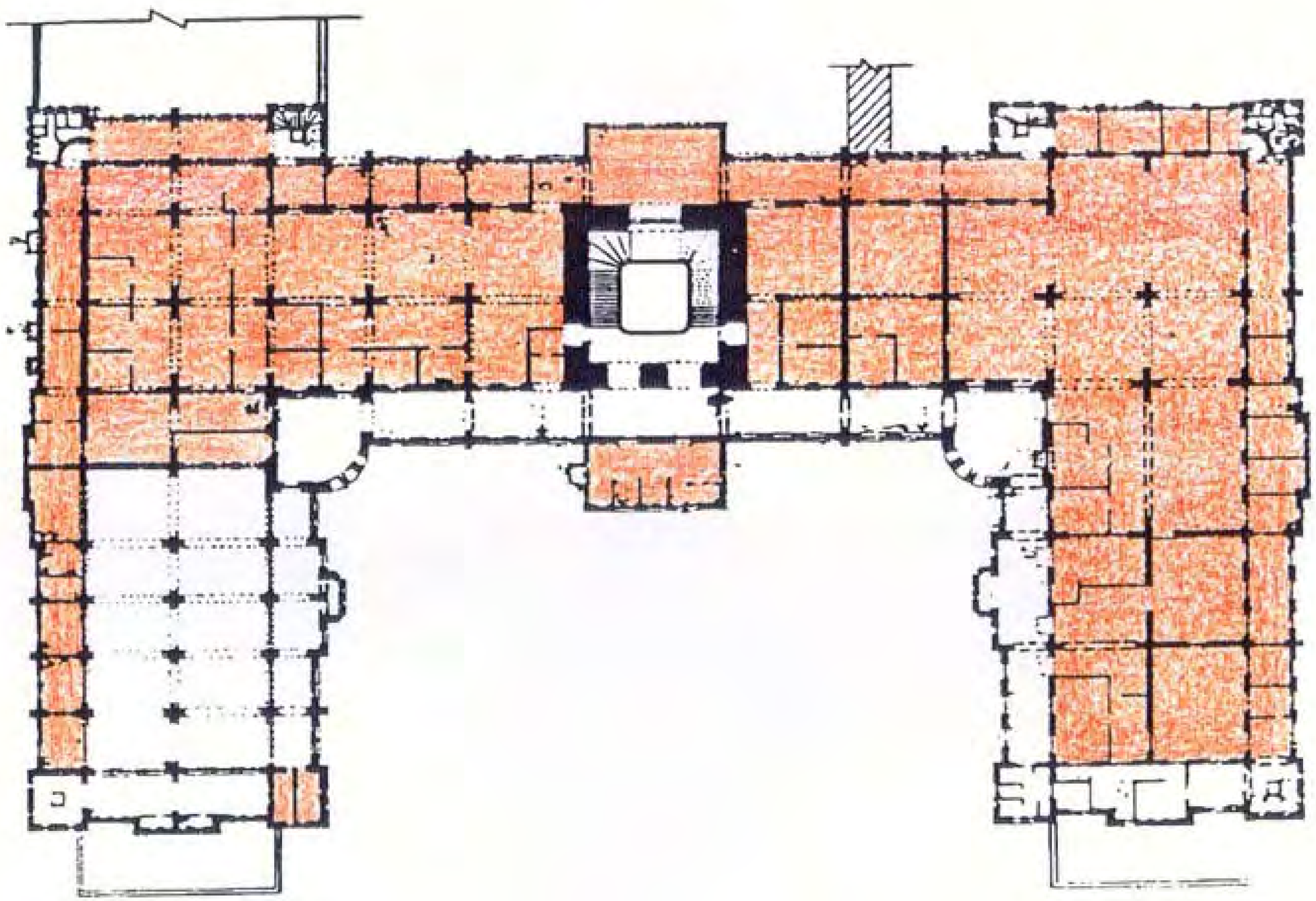
AREA STATEMENT: -



Ground Floor Plan

C S TERMINUS

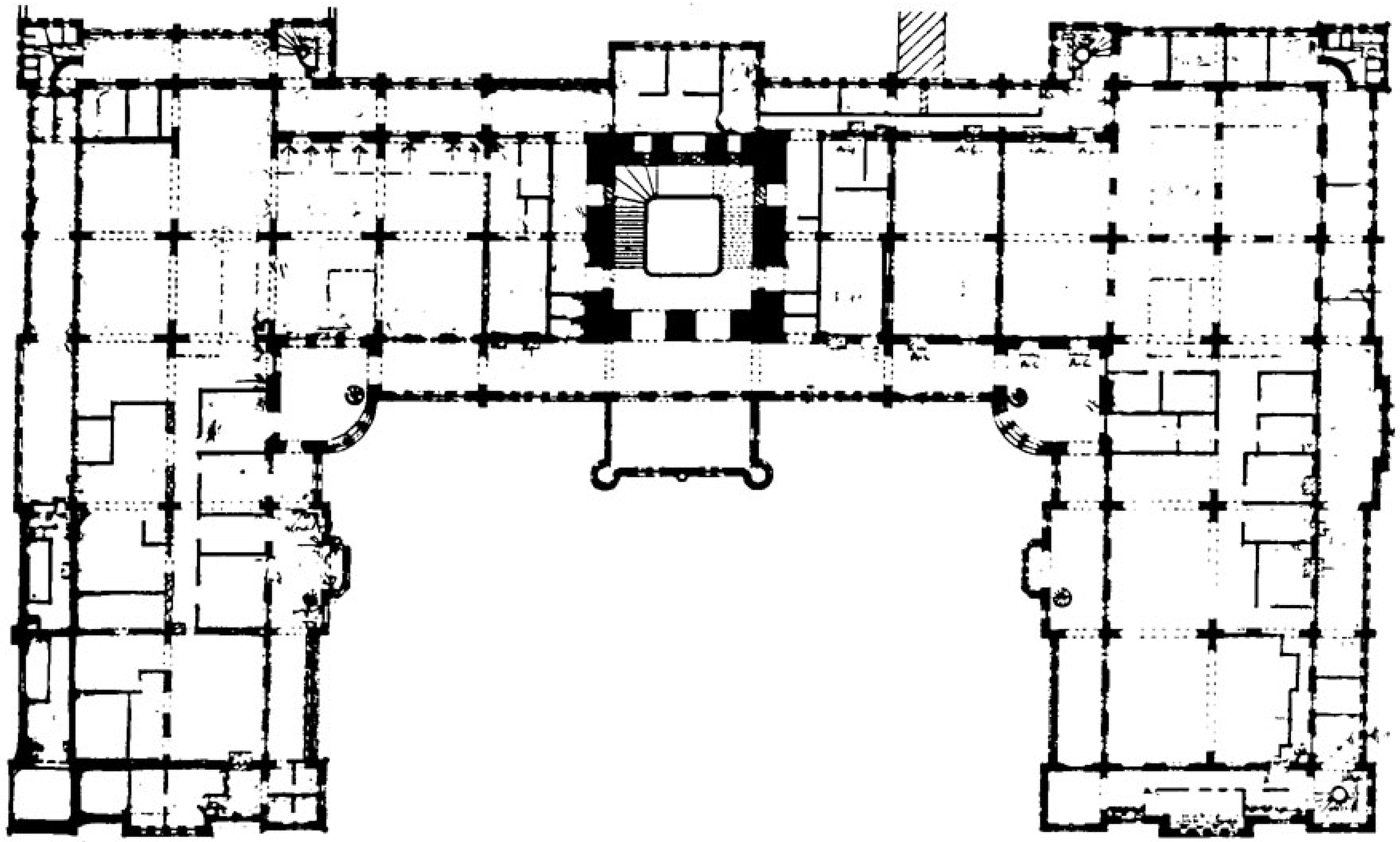
GROUND FLOOR
EXISTING POPULATION : 100 Nos.
ALLOWED POPULATION : 240 Nos.



FIRST FLOOR
EXISTING POPULATION : 465 Nos.
ALLOWED POPULATION : 200 Nos.

First Floor Plan

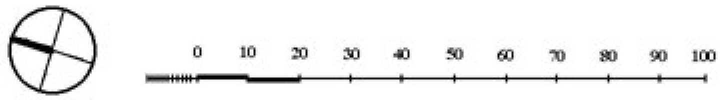
C S TERMINUS



Second floor Plan

C.S. TERMINUS

SECOND FLOOR
EXISITING POPULATION : 350 NOS.
ALLOWED POPULATION : 240 NOS.



CHAPTER 4

CONCLUSIONS

4.0 Conclusion

The surveys and analysis have clearly indicated that while the structure itself has survived well the use of the building needs to be carefully relooked and sympathetically treated.

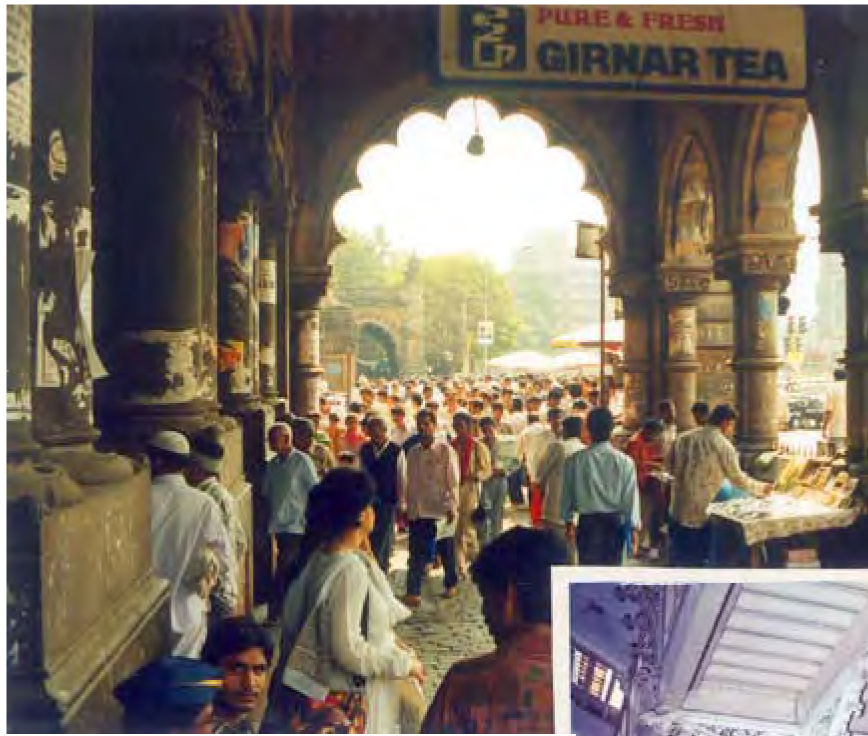
There is a an unequal and overjustified distribution of people in the building that has caused it severe distress. Building services that have been incrementally added over the years have come to failure joints and need total renewal and modernisation.

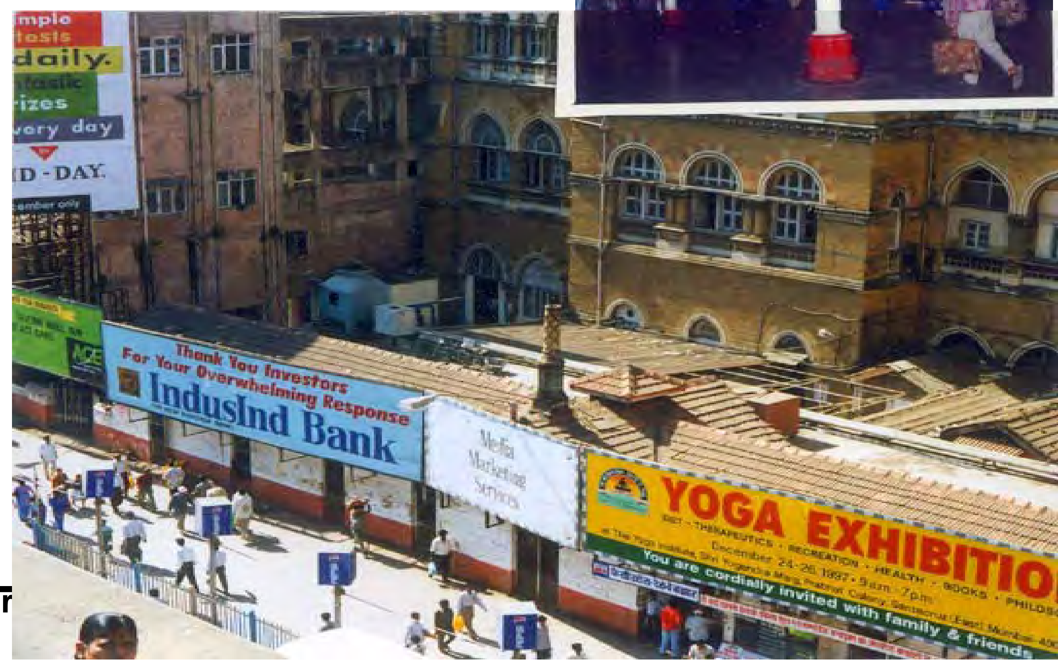
Common mistakes of repairing old buildings with unsympathetic, untested materials need to be looked into; awareness of the maintenance team regarding the traditional; methods used in old buildings has to be upgraded by training programmes, workshops and visits.

The overall environs of the building needs to be upgraded to be able to conserve the monument by shifting the squatters from the edge of the site, dismantling of unwanted later additions and maintaining the architecture.

The pollution levels surrounding the national monument is beyond all permissible levels. For long term conservation the problem has to be addressed. Pedestrianisation of surrounding access of C.S.T. building (with exceptions) is a long term solution from every point of view.

Maintenance of heritage structures has already become a specialised task and it is proposed that the same should delegated to a separate agency for most practical results.





Incongruous additions and signage

ANNEXURES

INTRODUCTION TO ACC CONSERVATION CELL

The Research & Consultancy Directorate (RCD), of The Associated Cement Companies Ltd., is involved in several technical activities related to the construction industry. It houses the Architectural & Structural Conservation Cell manned by qualified conservation professionals, backed by in-house scientists and engineers with multidisciplinary background.

Started in 1992, the Cell has accomplished projects of merits in India. The following is a brief list of projects handled by the cell:

I. Specialised Mist cleaning of the stone facade of the Basilica of Bom Jesus (a world heritage monument), old Goa, 1994. This project was done in co-ordination with the Archaeological Survey of India.

II. Roof repairs with respect to water seepage of Durbar Hall of the Asiatic Society of Mumbai (Town hall), Grade I listed building. An innovative technology has been deployed for the project with measured success 1996.

III. Comprehensive restoration programme for David Sassoon Library & Reading Room, Grade I Listed Heritage Building, Mumbai. ACC Conservation cell was involved in all aspects of the project (Concept to implementation), except electrical and plumbing works.

V Comprehensive restoration of the 125-year old Sir Ronald Ross Institute of Parasitology building, heritage building in Secunderabad, for INTACH and the British Council Western Division, 1997

VI Mist cleaning of the Turner Morrison Building, Green Street, Mumbai, Listed heritage building. The scope of the work included mist cleaning of stone facade.

VII Dismantling and re-erection of part of the heritage structure, Khoja Jamatkhana Sanatorium, Grade II Heritage building, Bandra (1908). The job involved moving the front composite stone wall and stone porch to an altered location in the site (to gain coverage).

VIII External restoration works for Contractor Building, Ballard Estate, M/s Shapoorji Pallonji Data Processing Co. Ltd. (1910). The work included external structural rehabilitation of the stone brackets, slabs, cleaning and lime colour wash.

IX Stone cleaning of Bhatia Hospital facade, Tardeo. (1932); paint removal, cleaning of stone wall, hydrophobic/antigraffitte treatment.

X External works for Saligao Church, Goa, Government of Goa, Department of Tourism (17th Century); durable paint application / lime washing.

XII Mist cleaning of Bombay House, Tata's H.Q. building stone facade, Fort Heritage Building (1900); stone cleaning and hydrophobic treatment.

XIII Heritage Publicatons for MMRDA Heritage Society ; compilation of technical publications.

Besides these we have conducted several public seminars and research projects in this line. Our cell is also involved in several projects of rehabilitation of structures for prestigious clients in the private and public sector.

PHOTOMICROGRAPHS OF STONES USED IN CST HERITAGE BUILDING

PHOTOMICROGRAPHS OF STONES

Four samples of stones (building stone for administration office of CST Station - Mumbai) were collected from various structures of the building and were analysed under transmission light microscope for their petrography. The observations, photomicrographs and sample nos. are as given below:-

1] CCS/721/MS-002/97 (Malad stone)

2] CCS/721/MS-003/97 (Malad stone)

These two rocks are similar in nature and hence described together (Plates I, II & III)

Texture -Equigranular medium grained, Hard & compact, non-porous.

Mineralogy - Na-Feldspar & K-Feldspar - predominant (Albite) (Orthoclase) Quartz -25%

The feldspar are weathering to amorphous or fine grained clay.

From the texture and mineralogy, the rock is classified as syenite (Plutonic, felsic igneous rock. Similar to granite, except that it contains much less quartz and mafic mineral such as hornblend, biloite etc. and is much richer in feldspars).

3] CCS/721/RS-004/97- **Redstone** (Plate V, VI)

Texture - Medium to coarse grained sandstone with angular to subangular quartz grains, cemented together by brown amorphous clay/Fe oxide. The rock is hard and compact.

Mineralogy - Quartz and few feldspars sand grains.

Clay and brown Fe oxide as cement.

From the texture and mineralogy, the rock is classified as coarse grained sandstone or grit, a sedimentary rock.

4]CCS/721/WS-005/97 - Whitestone (Plates VII, VIII)

Texture - Oolitic, fossiliferous limestone (sedimentary).

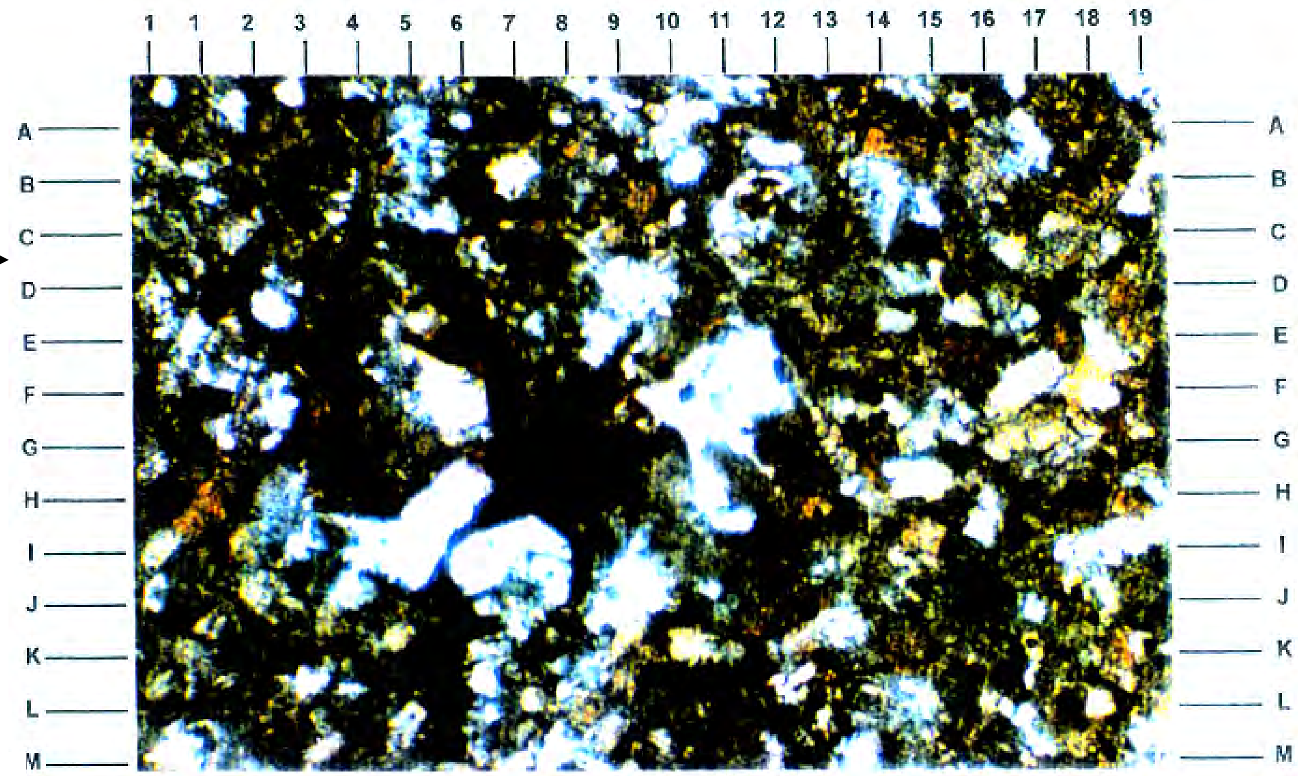
Mineralogy - Calcite - Occurs are microcrystalline (< 4 mm) as well as coarser (10-20 mm) crystals.

Photomicrographs enclosed.

PHOTOMICROGRAPHS
OF CST STATION BUILDING

A

PLATE -I - SAMPLE CCS/721/MS-002/97 - MALAD STONE SYENITE
EXHIBITING EQUIGRANUALAR FELDSPAR AND QUARTZ GRAINS - XPL, X32



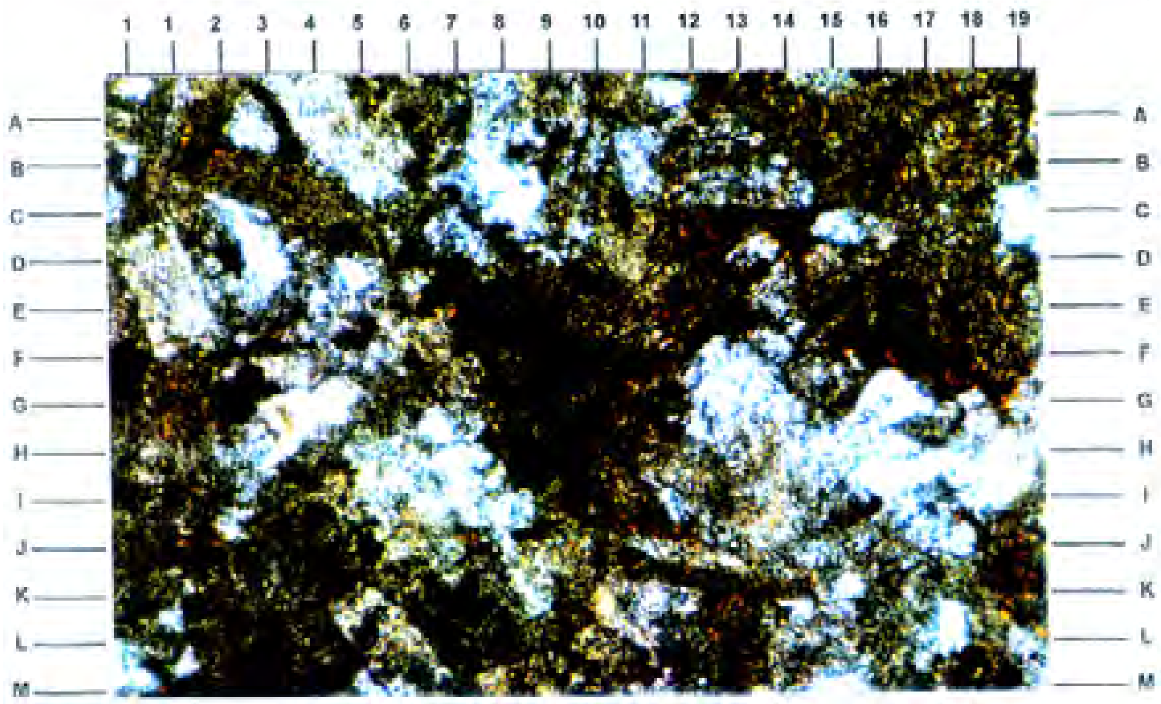


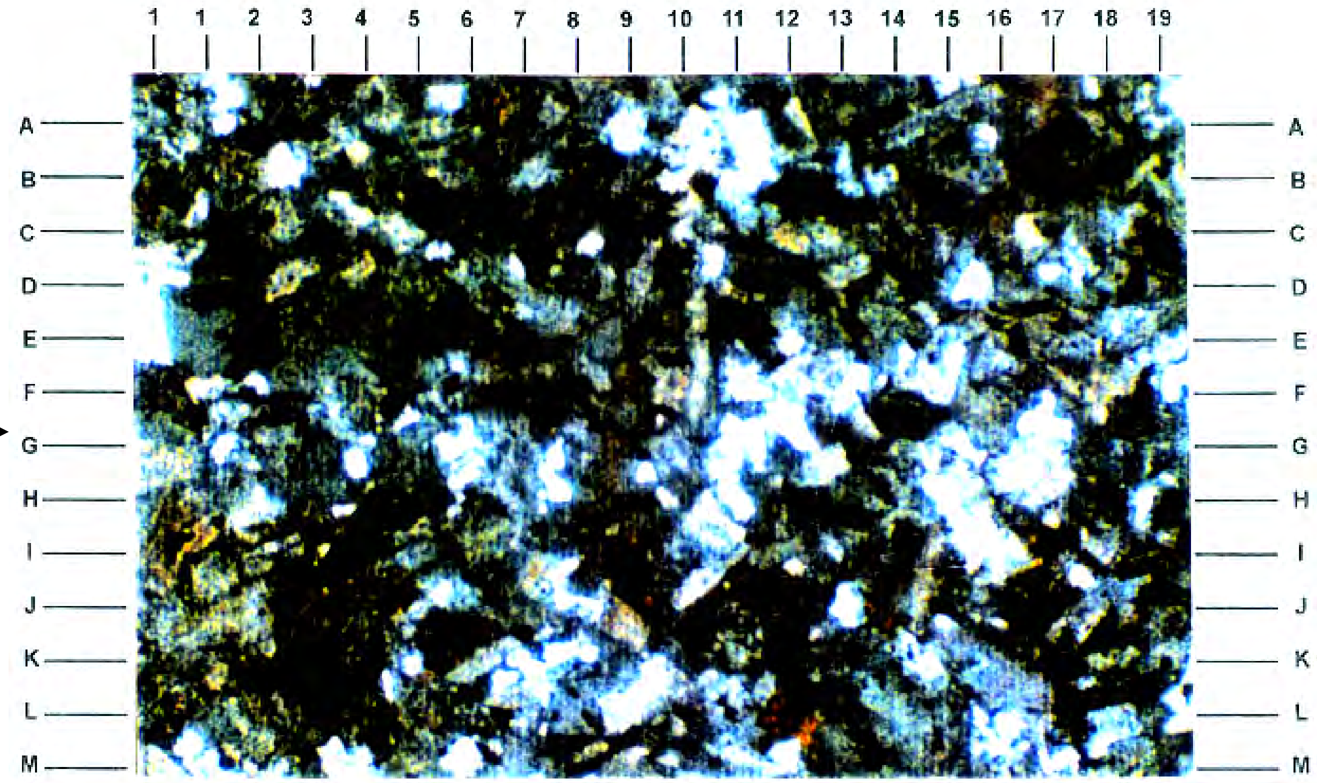
PLATE -II - SAMPLE CCS/721/MS-002/97 - MALAD STONE CLOSER VIEW OF THE ABOVE SAMPLE - XPL, X4

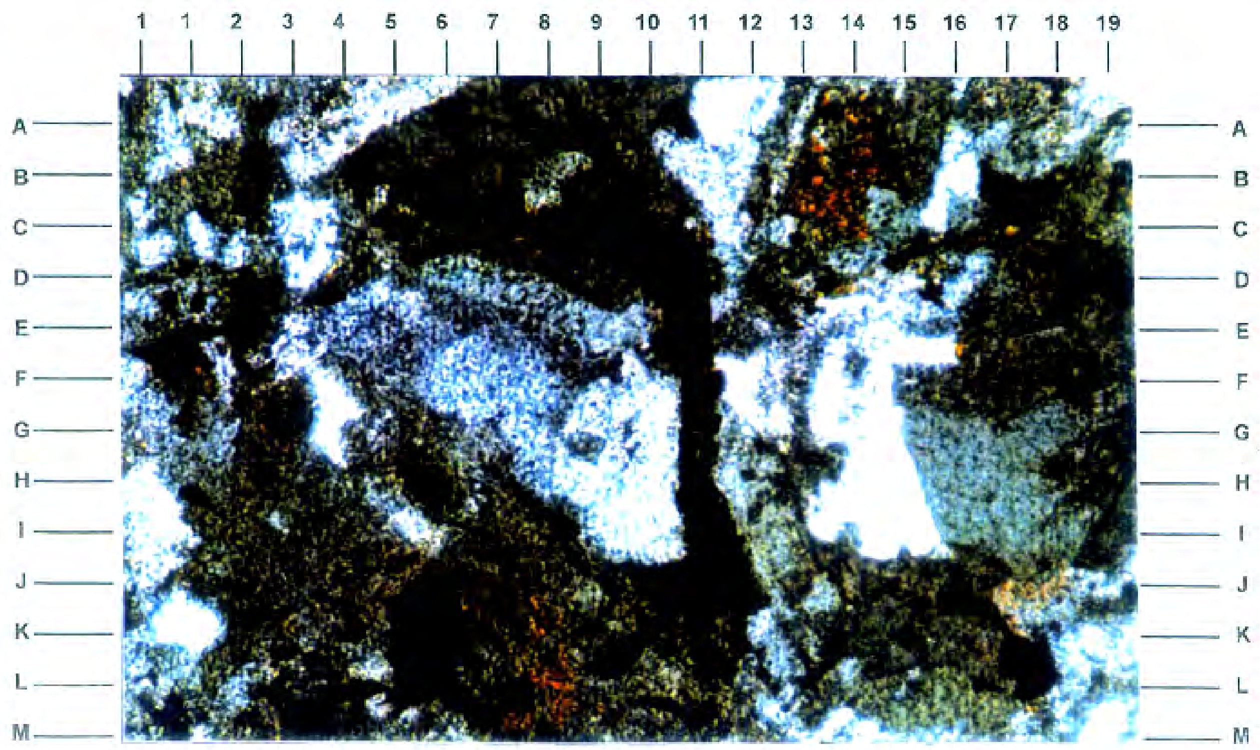
Scale

PHOTOMICROGRAPHS OF CST STATION BUILDING

A

PLATE -III - SAMPLE CCS/721/MS-003/97 - MALAD STONE SYENITE EXHIBITING EQUIGRANUALAR COMPACT TEXTURE XPL,X16





B

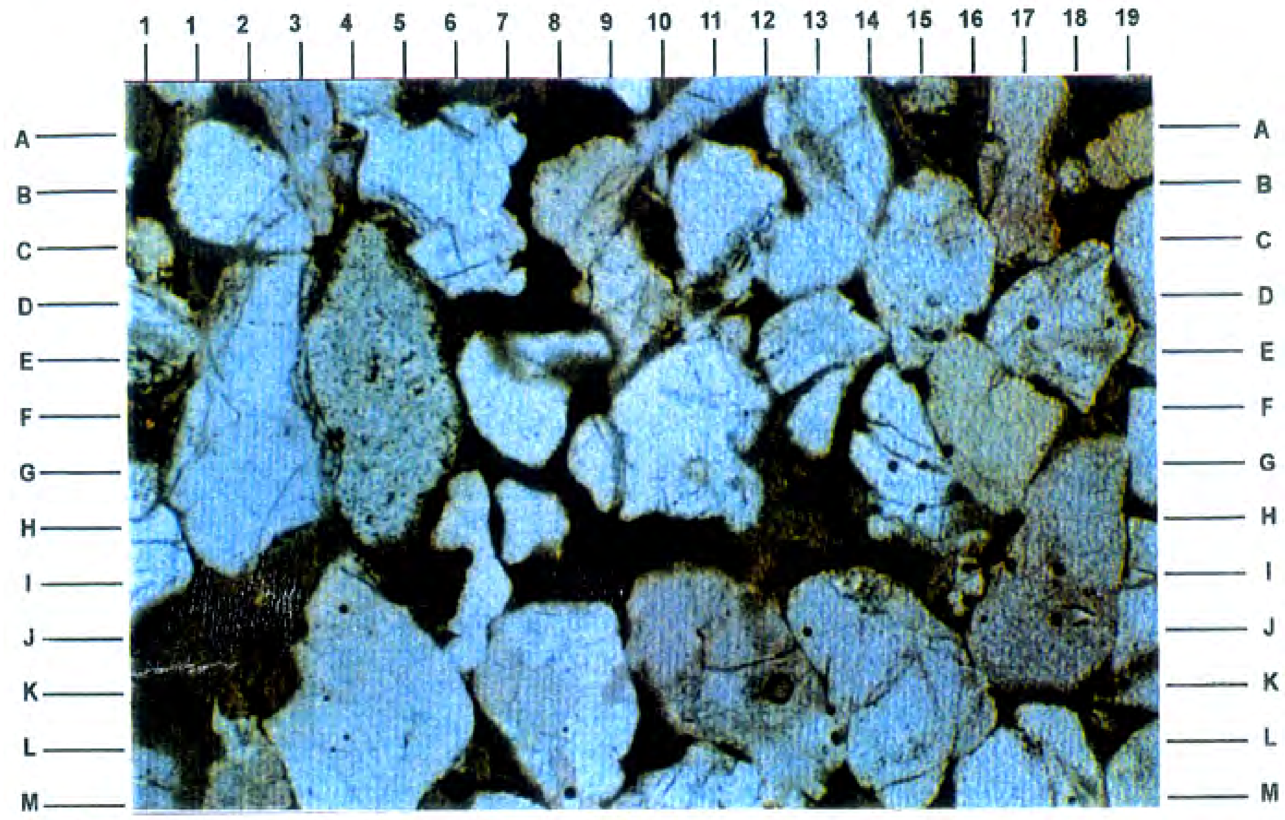
PLATE -IV - SAMPLE CCS/721/MS-003/97 - MALAD STONE CLOSER VIEW OF THE ABOVE SAMPLE - XPL, X40

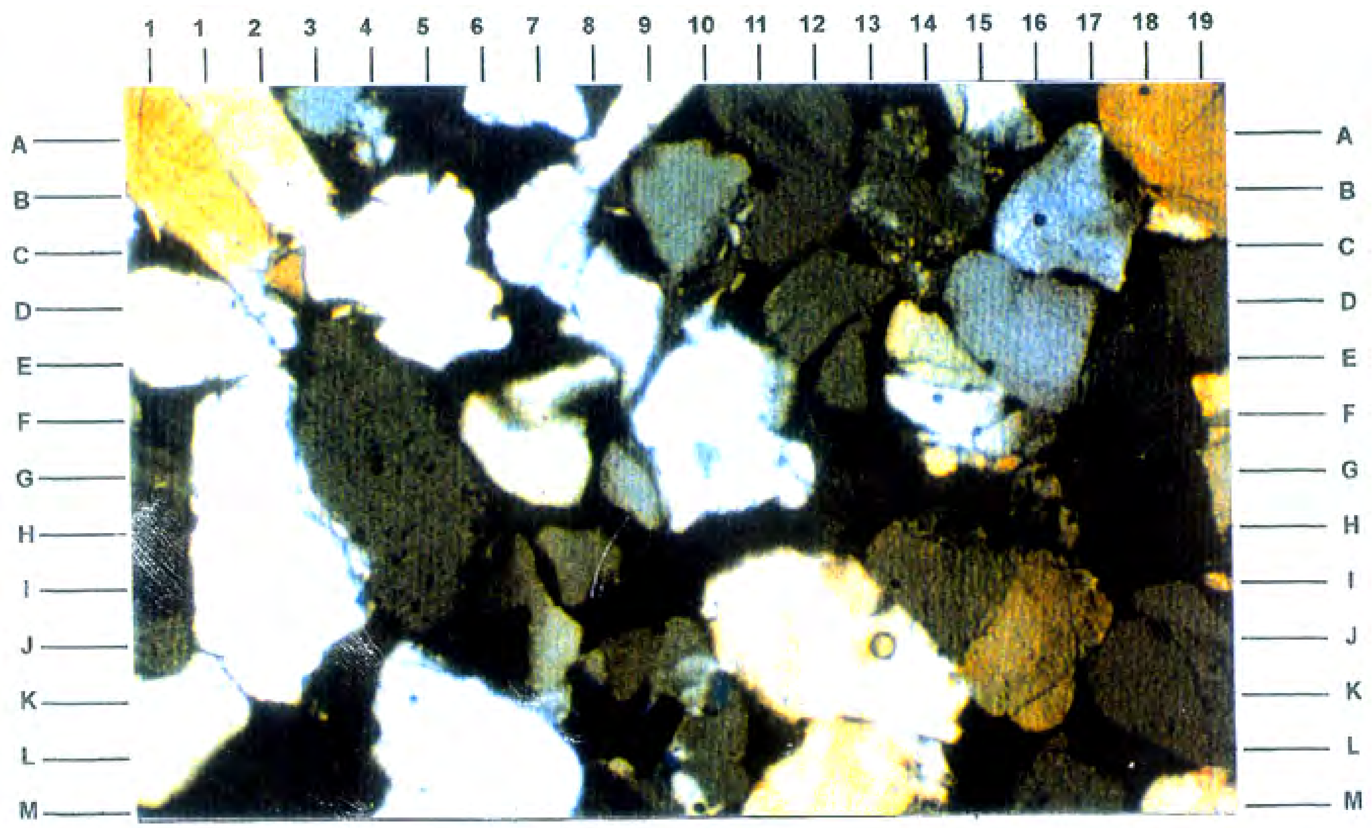
Scale

PHOTOMICROGRAPHS OF CST STATION BUILDING

A

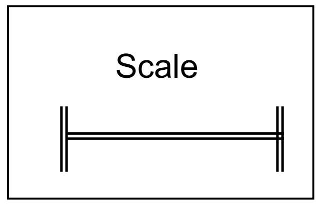
PLATE -V - SAMPLE CCS/721/RS-004/97 - REDSTONE COARSE GRAINED SANDSTONE WITH SUBANGULAR QUARTZ GRAINS AND BROWN CLAY / FE OXIDE CEMENT - PPL, X16



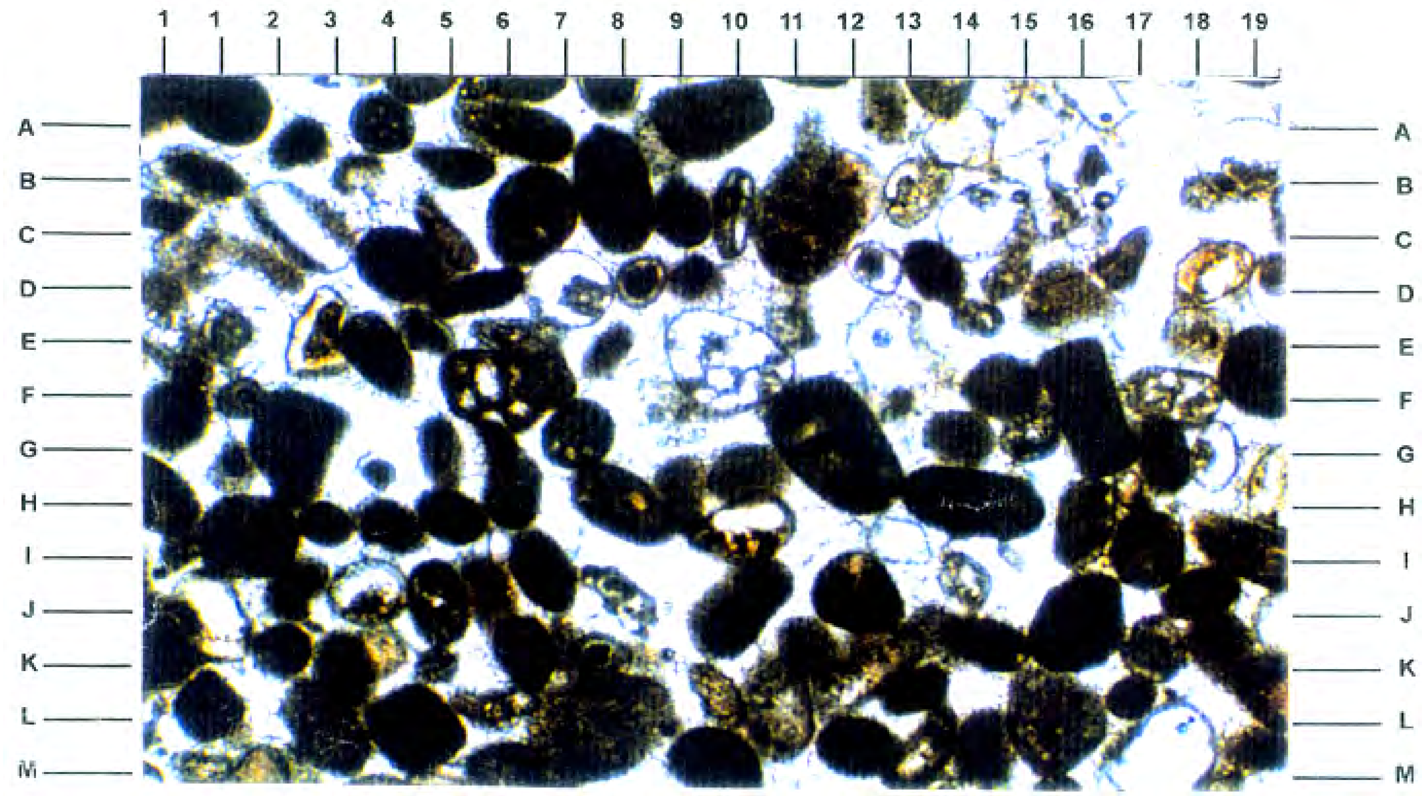


B

PLATE -VI - SAMPLE CCS/721/RS-004/97 - REDSTONE SAME VIEW AS ABOVE IN CROSS POLARISED LIGHT

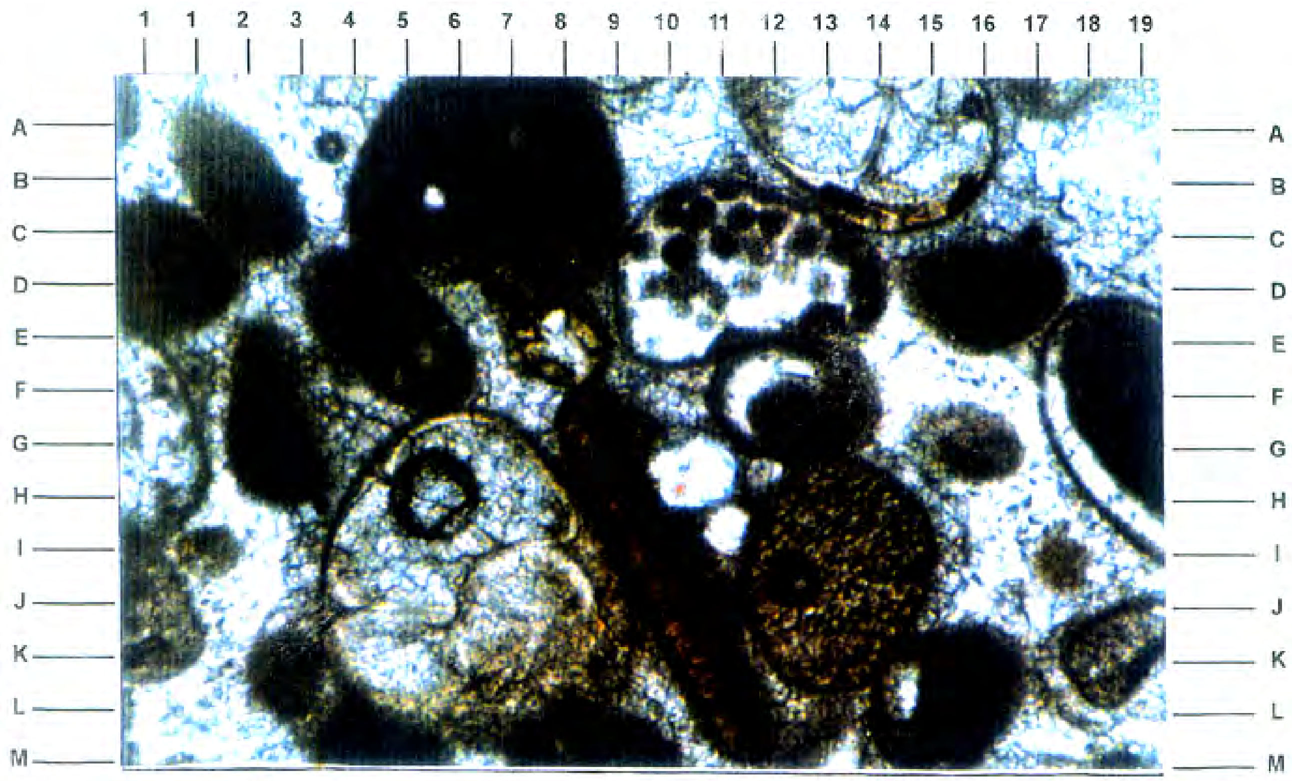


PHOTOMICROGRAPHS OF CST STATION BUILDING



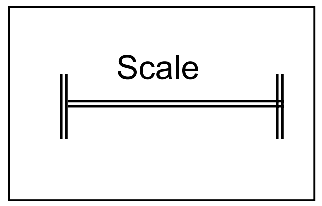
A

PLATE -VII - SAMPLE CCS/721/WS-005/97 - OOLITIC FOSSILIFERROUS LIMESTONE EXHIBITING MICROCRYSTALLINE OOLITES CEMENTED BY COARSE CALCITE CRYSTALS - XPL, X16



B

PLATE - VIII - SAMPLE CCS/721/MS-005/97 - WHITE STONE CLOSER VIEW OF THE ABOVE SAMPLE, XPL, X40



Detailed survey

Stained glass

There are eight stained glass windows located in the central octagonal tower above the main staircase of the building. These, which are in rich blues, ruby, white and amber, are of a very high standard in both concept and execution Each window is of two parts (upper and lower) which are divided by a horizontal stone transom and surmounted by a circular tracery containing a cinquefoil of stained glass. The key diagram shows the location of the windows and the division of the panels.

Lower panels

The lower section of each light below the transom is an outward opening hung casement. All eight panels were replaced a few years ago by single sheets of fibreglass with the design in full colour embodied within the medium itself. The design is a more simplified version of the upper panel and there are many mistakes in terms of pattern and location of elements.

Several of these panels are already coming loose from the metal frame and should be re-secured. The frames of the opening panels are originals, but the locking devices have broken and been replaced with an inappropriate design. The panels do not lock well and are not water tight and hence during monsoon all the storm water fills in like a pool in the balcony walkway at stained glass level and had to be bailed out as it almost overflowed into the central well.

The frames need to be secured with locking devices in atleast three places instead of one central position, to prevent warping and water seepage. These lower panels are barely seen from the floor level, being hidden by the balustrade. However, considering it is a grade I building, the fibreglass panels, though cheaper in cost look highly inappropriate and must be replaced with stained glass work to match the design of the upper panels.

Upper panels

These upper lights were until recently very fine windows in reasonable condition, which would not have required much attention. However, in the recent past, a major stone cleaning program was undertaken to do epoxy filling of the stone pointing to the interior of the dome. During the course of this work, severe damage was done to the windows, which were penetrated through to provide secure fixings for scaffolds! All the windows are broken at distinctly symmetrical points. Had these holes been confined to pieces of glass only, the broken pieces could have been replaced in situ but in most cases the surrounding lead is also badly damaged which will require all affected panels to be removed for repair. The panels are tied to the crossbars by copper wire. The crossbars are in a fairly good shape but are slightly rusted and is buckling in some places. Some of the side supports have moved away and in places the adjacent supporting stone has cracked. The broken glass has been replaced by black patches and in some places by plain glass. The windows 1,2,3 & 4 are of one design, which has the insignia of the Great Indian Peninsular Railway. The windows 5,6,7 & 8 are in another design, which is more intricate, where the GIPR insignia appears above a heraldic shield. The sketches below document the condition of each window.

Report on stained glass

The building possesses a central octagonal tower above the main staircase which contains eight stained glass windows, richly coloured and of very high quality. They were examined from sill level both internally and externally.

Each window is of two lights which are divided by a horizontal stone transom and surmounted by a circular tracery containing a cinquefoil of stained glass. Each light is 24” in width, the height of the lower tier being 9 feet and the approximate height of the upper tier 14 feet

The windows are contemporary with completion of the terminus (18) and are believed to be have been made at the nearby College of Art and Architecture where Kipling’s father was the principal. The windows are in rich blues, ruby, white and amber and are of very high standard in both concept and execution. There are only two basic designs which alternate in the windows.

In both designs the insignia of the Great Indian Peninsular Railway appears together with an heraldic shield which varies from window to window. One design features an elephant in the upper half and a steam locomotive in the lower, while the other contains roundels with the letters GIPR within them.

Condition

The lower section of each light below the transom is an opening side hung casement. These have undoubtedly been well used in the past but with continual opening and shutting have inevitably deteriorated. All eight panels were replaced a few years ago by single sheets of fibreglass with the design in full colour embodied with the medium itself.

It must be said that in the absence of true stained glass repairers at the time, these panels while being by no means accurate replicas of the original stained glass are an extremely creditable effort within the confines and limitations of the glass fibre medium. However several of these panels are already coming loose from the metal frame and should be re-secured as a matter of urgency lest they be blown out in the strong wind. These lower panels are barely seen from floor level, being hidden by balustrade but the upper panels which can be seen are a source of great concern. The upper lights were, until recently very fine windows in reasonable condition which would not have required much attention. There is only minor buckling and the painted work is good. However, within the past year a major stone cleaning programme was undertaken on the exterior during the course of which severe damage was done to the windows which were penetrated to provide secure fixings for scaffold. Each of the sixteen lights now have substantial holes. Had these holes been confined to pieces of glass, only the pieces could have been replaced in situ but in most cases, the surrounding lead is also badly damaged which will require all affected panels to be removed for repair.

Recommendations

If the holes are not covered promptly as a temporary measure, rain will penetrate the building in a major way and start deterioration of the interior.

It is suggested that small pieces of acrylic sheet, only slightly bigger than the hole, be applied externally with a silicone sealant only and not any permanent adhesive such as epoxy resin. Once this is done a more detailed examination can be made and a programme established to enable proper repairs to be carried out within the next two to three years as part of scheme of training for India-based restorers and conservators.

While accepting the fact that the prime purpose of the Terminus is to move one and a half million passengers each day, it is important to stress that the building is one of the most magnificent and most important examples of mid 19th century architecture on the sub-continent and internationally and that every effort should be made to repair the recent damage and prevent further loss, the glass being a vital and integral part of the tower, the focal point of the edifice.

We were privileged to meet the General Manager of the Western Division of the Indian Railways to whom we expressed our concern and to whom a copy of this report should be sent.

Report prepared by Alfred Fisher F.M.G.P., F.R.S.A., an
International expert on stained glass

Ground floor

Star Chambers: The Star Chambers which was designed to be the most public room of the Main building has weathered quite well despite heavy traffic.

The column bases that were originally in Malad stone have been clad in Kadappa, that appears incongruous as against the other finishing stones used.

The original flooring has been re-laid with ceramic tiles which do not seem capable of withstanding the heavy traffic and also do not blend well visually with the other finishes used.

The ticket booths have been located in the south face and not where it was originally planned for - in the east face. The materials used for the partitions are extremely incongruous and could be re-done to integrate more aesthetically. The possibility of re-locating the ticket booths to the east bay should be looked into as this would allow better ventilation to the Star Chambers. It would also maintain the symmetrical spatial balance of the Star Chambers.

The balconies on upper level have been boarded off insensitively and in a temporary fashion.

Seepage is noticed above the arches in bay 5-E.

The sign boards for advertisement and general signage location and finishing etc. need to be done more sensitively as this is a Grade 1 building.

Electrical cables and wires criss-cross haphazardly along the walls and through the arches, and need to be re-routed in an orderly fashion.

The stone arches are stained by dripping paint, thus stones need to be cleaned.

Though the lighting has been incorporated sensitively, it seems to be under-lit.

The original dado in Minton tiles requires cleaning.

Small detailing elements of the wrought –iron balusters in the balconies above are broken, and need to be replaced.

Oriel windows within the Star Chambers which are meant for ventilation have been covered up by fans.

The north east extension on the ground floor has been added, probably at the same time as the Main building block, as the architectural detailing seems original. However the upper floors seem to have been added later.

The lifts have been inserted on either side of the main central staircase, by dismantling part of the floor to create a continuous shaft.

Many temporary additions have been added along the eastern edge adjoining the building as tin sheds. Also some permanent additions for parking sheds have been added in the central open space destroying the spatial ambience of the building, especially its front facade. They block the ventilation and light to the Star Chambers on the ground floor level. These sheds are made of RCC which do not blend with the architectural style of the building.

South wing veranda has been totally enclosed by grills and the entrance to the street has also been closed in. Hence there is no relation to the street, thus squatter settlements / hawking zones have developed around it.

The bay G-1 shows signs of major leakage, and the ceiling seems to be in precarious condition as the timber joists appear weakened.

There are number of spots which show leakage due to improper plumbing, as toilets have been inserted ad-hoc in the floors above. These leakages occur where pipes pierce through the timber floors.

Rising damp is also one of the main problems in the ground floor. Moisture on this account has surfaced on the peripheral walls of the structure, may be on account of the absence of a damp proof course. This is especially so in G-15.

Many of the balusters on the ground floor verandas are also cracked or broken, or chipped due to wear and tear and excessive usage. The limestone used seems to have weathered badly.

Many of the columns in the Entrance arcade (G1 & G3), have minor cracks, and need consolidation.

The electrical wiring and conduits criss-cross across the spaces in a haphazard manner affecting the architectural ambience. This happens throughout the building as electrical services have been added and upgraded in the building at different stages, and not thought of as a whole.

Flooring which has been re-done in the south wing (G-32) is badly areas where the flooring has worn out, and shows large areas where the flooring has been patched temporarily.

Toilets have been added within the centre of the rooms without any external walls. This causes ventilation and plumbing problems while also causing seepage onto the adjacent wall.

Areas with distress are as follows:

G5B Splitting of end joists, caused due to excess load from the terrace on the first floor level.

G1 Entrance porch shows signs of heavy leakage from the terrace above. The joists seem to be in bad condition.

First floor

Corner staircases – Fs1, Fs3 are in a bad condition and need urgent repair. These are not usable and are currently used as dumping areas. It is desirable to make these staircases functional, as they would ease the communication between the different levels.

Temporary sheds have been created between the skylights on the terraces of the concourse. These are incongruous additions and should be located elsewhere.

All verandas along the periphery of the building which were originally meant to be used for cross movement and to provide light and ventilation while still offering shade from the rain and sun are now enclosed. These spaces have been incorporated by blocking off the openings, by creating windows over the stone arches.

F14 - Toilets created within the corner turrets over the porch cause leakage. This is not a good place to locate the toilets, as besides leakages the pipes running across the front porch destroys the beauty of the architectural detailing of the porch.

Distress is observed in :

20D The arch opening leading to the pantry does not seem structurally sound. This arch may need to be propped up urgently and repaired immediately.

10D, 10E, 10H: Arches of the veranda, above the balusters are badly weathered and are chipping off. The balusters are also weathered to a large extent. These may cause structural harm to the building and need to be looked at closely.

F 19 Columns of the circular veranda also show distress. These have chipped near the base with big chunks of stone pieces falling off.

Second floor

The spiral staircases leading from the second floor to the attic rooms (S36 & S21C) are missing, thus, resulting in the under-utilisation of the attic areas.

Leakage is observed along the periphery of the building, especially on south side veranda and in the Eastern veranda (S18C & S25) Most of the leakages on the second floor are observed in areas with flat terraces, as these areas need adequate waterproofing.

Distress is observed :

S8 On the arches and columns of the bay window on the west facade, the column stone has cracked completely through up-to the central core. It has probably been caused due to the expansion of the rusted central iron anchor.

S10J On the timber joists of the roof, maybe due to over loading.

S17 In the ceiling.

S21D In the timber joists in corridor. The joist ends seem to be badly weathered and need to be repaired immediately. Cracks are observed in the columns holding the arches. This may be due to excess dead load of tanks situated on the flat terrace immediately above it.

S35B In end joists which are weathered, and need immediate attention.

S25D In the arch of niche in the central staircase.

Attic floor

Flooring in the rooms of the attic seems incongruous.

All window frames and shutters, including all the slit window, of the corner turrets need consolidation and repairs as they are in extremely bad condition. All the doors of the attic rooms, opening into the terraces need to be repaired to make them water-tight.

The stair ready from the flat terraces to the circular rooms are in a bad shape, and are temporary. These stairs need repairing in most places, to enable safe and convenient transition between the different levels.

Almost all spaces on the attic level are either vacant or seem to be under-utilised. This happens either as the stairs leading to these attic spaces have been removed. In cases where they are in wood, they are in a bad state of deterioration and need urgent repairs.

Leakage problems are noticed in all the rooms on the attic level near the openings. This is due to the window frames and shutters, which are found to be in a bad condition, allowing water to enter through them.

The timber boarding seem to be in good shape, and so are the structural members of the trusses. However this timber seems to have wood boring insect attack, in many places and needs to be treated.

Truss members embedded within the stone masonry are damaged at few places, due to seepage and need attention.

Terraces/roof

Tanks situated on the flat areas of the terraces cause a number of problems, mainly by way of extra load that they cause. This is especially so since they have been placed without much thought to the load bearing capacity of the areas where they are located. The frequent load changes caused by filling and emptying of the tanks is a cause for the distress seen in many places.

Also, areas under the tanks cannot be waterproofed properly, thus aggravating the leakages. The flat terraces also need to be waterproofed thoroughly, after the tanks are removed.

As the tanks are noticeable in the front facade from the road, they are visually disturbing, upsetting the visual character of the elevation. The water supply could be consolidated from two points above corner square rooms in the Eastern facade by increasing the capacity of the present water tanks to suit the requirements of the entire building.

The decorative pinnacles in limestone which crown the domes, and the other elevation features, are badly weathered and stained. Many of these pinnacle end tips are missing. This is often because the iron dowels anchoring them to the masonry have rusted and expanded, hence cracking the stone and causing it to displace.

Tiles need annual, pre-monsoon re-adjusting, to correct the position of the same.

In case the replacements of tiles are required, dimensions matching old tiles should be procured from the market. Many of the grooves of the new tiles do not match with the older tiles, hence enabling water to penetrate within.

The flat terraces have been waterproofed using tar ever year. The areas under the tanks and cooling towers and the air-conditioning units are rendered inaccessible and thus the slopes of the waterproofing are not laid out clearly.

It is the flat terraced area which has maximum leakage problems, and hence the water proofing needs to be done for the entire terrace at one stretch after removing all the tanks and the air conditioning units to get correct slopes.

The junction between the sloping tiled roofs and the attic rooms show leakage. Leakage is often observed from the junctions of the frames of the attic room doors, especially as the frame end touching the floor are badly weathered and need to be replaced and repaired immediately. Ventilators opening onto the terrace level have been blocked as the water enters into the building through these. The tar used for waterproofing is often splashed across the side-walls and over the stone quite untidily.

The cooling towers which are presently situated on the flat areas of the roof can be comfortably eliminated by using easily available split air conditioning units, which can be located discretely and held in place by stands. Temporary sheds for housing machines for pumps, air-conditioning switches etc., which are now situated on the flat terrace areas should also be eliminated and incorporated elsewhere at a more appropriate location.

Dome

The surface of the dome is not easily accessible, and has hence been only visually surveyed. The dome is made of lime stone blocks. The main dome has a slight change of curvature at about one-thirds the height from the bottom and this junction has been a source of water seepage.

Overall the dome seems to be in structurally sound condition, and quite water-tight. It does not have heavy leakage, though there is some seepage from a few points.

Leakage is noticed near the decorative frieze, where the stone used could probably be softer and hence more porous. Also the frieze tends to hold the water thus aggravating the problem.

The openings to the balconies at the base of the dome need to be made water tight, as during the monsoon the wind driven rain enters into the dome from these openings, causing the water to accumulate within. The balconies need to be sloped outwards more efficiently, so that water does not accumulate, preventing seepage problems.

Openings

Openings are mostly in the form of arches along the verandas. Windows are found only on the corner blocks and the turrets or the attic rooms. The verandas continue to be maintained only on the west facade on all the floors. The verandas on the north, south, and east sides, on all the floors have been converted into enclosed rooms and incorporated within the office spaces. Thus all the stone arch openings are partly or wholly partitioned off and converted into windows with frames which have been added later. Some of these arches are completely in-filled with masonry, and hence lose complete relation with the outside or adjoining spaces.

As the ground floor veranda on the west side along the street has been completely enclosed with the west side entrance being sealed off, the veranda has completely lost it’s relationship with the street. The pavements immediately outside the building have been taken over by hawker settlements who have created lean-to sheds against the Main building. Hence the building has completely lost its frontage from the west side along the street.

All internal arches within office spaces remain open as planned, except for a few (as shown in the drawings), which are indicated as – Arches in-filled.

Openings in the form of windows are only in the form of decorative elements, or slit windows as seen in the turrets. Almost all the window frames need consolidation.

Doors: Original T.W. doors are seen intact in most places. All doors follow a similar detailing which has been picked up from the tre-foil openings from the architectural detailing. Almost all fanlights are in-filled or blocked to accommodate A.C. units. Others are covered with ply. Very few continue to reveal the original design of the fanlight.

Ventilators, on the terrace level, used for lighting and ventilation in the second floor, are now completely blocked and tarred off. These need to be adequately water tight and made functional.

Staircases

Grand central staircase forms the central circulation core of the building. It is in an excellent condition and is maintained well. The dado made in Italian marble, needs cleaning and consolidation. The Italian marble at certain places shows cracks, which need to be consolidated. The treads and risers, of basalt stone are in a good condition, and the balusters are intact.

The niches and squinches, within the walls of the staircase are being well utilised and are in good condition, with original materials to be seen. These need to be better protected and more efficient bird barriers need to be provided.

Corner stairs

Generally the corner staircases are not in a bad condition. They may not be accessible from one floor level to the other in all cases. E.g. S2 and S4 cannot be used between ground and first floors due to the absence of the stairs on the ground floor. These can however be used between the 1st and 2nd floor.

Also S1 is absent on the first floor and thus cannot be used either between 1st and ground or between 1st and 2nd

All corner staircases leading from the second floor to the attic level are in a dilapidated condition and cannot be used. These are now used as dumping spaces and are partitioned off at the attic level. They have suffered heavy seepage causing deterioration. This is due to the heavy leakage from the terrace openings which need to be water tight.

S1 Ground floor cannot be accessed as it is completely blocked by a public telephone booth. All openings leading to this staircase at the ground floor level have been blocked off hence rendering it inaccessible from the ground level. On the first floor, S1 is absent and thus cannot be used. On the second floor, S1 is in a bad condition and cannot be used to access the attic floor.

S2 From the ground floor this staircase also cannot be accessed as the openings leading to it are blocked. The stairs seem to have been removed between the first and ground floors. At the first floor, the stairs seem to be sloping / tilting towards the inner well, and needs consolidation. Some seepage is seen on the north wall. At the second floor, the staircase cannot be used to access the attic, but can be used to transit between first and second floors.

S3 Staircase at all levels in a fairly good condition, except between the second and attic levels. This staircase on the ground floor is poorly ventilated due to the presence of the temporary sheds situated on the east - side of the building.

Seepage is seen around the staircase on the second floor.

S4 Stairs are absent on the ground floor. At the first floor, the staircase seems to be in a good condition. It can be used to transit between first and second floor.

Second floor staircase is in bad condition and surrounded on all sides by walls with heavy seepage. Treads and risers are completely broken.

Elevations

North elevation

The north elevation of the main building is hidden behind the concourse building and could be visually inspected only from the terrace of the concourse. At the concourse level, hoarding and ducting board up the arched openings.

The first floor has many temporary sheds built almost leaning against the north facade. The openings at the second floor need consolidation The arched openings of the north-east corner block are cracked and need attention as they show signs of distress.

South elevation

The south elevation is facing the main street, but is totally lost from public view at the ground level as the hawker sheds are built leaning against the south facade. Even the entrance from the south side to the street has been completely boarded off. The veranda spaces, which have been enclosed, are used more as stores than active spaces interacting with the street. On the upper floor part of the arched openings have been in-filled in masonry.

The balusters of the first floor veranda are cracked and need repairs. The mortar joints of the masonry in the central wing seem to be opening and need repair. Hoardings put up against the facade also deface the street side facade.

The stone masonry seems to be stained darkest along this facade probably as this is facing the south side which gets the heaviest wind driven rain. The tanks on the terrace also detract the architectural beauty of the building.

East facade

This facade has maximum additions and extensions made to the original facade, probably as it is the back side of the main building. However it enjoys an equally important frontage as the main out-station is adjoining this facade.

The east facade at the street level is almost completely blocked from public view from the street as many tin sheds created as temporary sheds by the Railways, continue to occupy this space.

The extension added to the north–east block is quite incongruous. Every attempt must be made to make it relate

SUMMARY OF INSPECTION

The factors that have led to decay are identified after having studied the building in detail. The main cause of deterioration can be generalised as due to one or a combination of the following factors.

Additions and alterations

Over the years, the spatial configuration of the CSTMB has changed as new functions were introduced within the building. These resulted in the additions being made to the existing building, in the form of extensions, or temporary sheds; toilets and pantries were created within the building on upper levels, new sanitation and plumbing systems were introduced. Partitions have been introduced to define new areas.

Additional space requirements led to the verandas, which were meant for circulation, being enclosed and included as part of the office space. Even mezzanine floors have been introduced within the larger spaces.

Structures to provide shaded parking were added within the front compound of the building. These are constructed rather insensitively and destroy the ambience of the open space and also the front facade of this Grade 1 building.

Additions to the electrical and plumbing services were also made in a similar haphazard nature and this is not only visually disturbing, as they criss-cross across the finely detailed elevation but also damage the building. The toilets and washing areas cause water seepage problems.

Many additions, in form of sheds that were created as temporary structures have become quite permanent in nature as they are designated for long term uses. Most of these structures are in the east face adjoining the Main Building. A thorough evaluation of the space requirement needs to be done so that these can be incorporated in the existing spaces available within the building. These sheds block the light and ventilation to the spaces within.

In order to restore the physical and aesthetic integrity of the building, it is necessary to evaluate all these additions and introduce a rational system for regulating the design and location of these alterations.

Extensive usage and reuse

The use of the CSTMB has changed over the years and the building now has to adapt itself to the new and heavier space usage pattern in the office areas as well as heavy traffic in public spaces like the Star Chambers. The floor finishes and ventilation system has to be upgraded to withstand the heavier traffic.

Extensive and insensitive usage of spaces and overloading also cause damage to a historic building. The over loading of the terraces due to haphazard addition of water tanks and cooling towers has resulted in the distress of the timber joists in the veranda below. Some of the columns of the arches in the veranda also show distress that could be due to the same.

Leakage

Leakage is a major problem throughout the building. The leakages are not so much from the sloping roof but are from the junctions where the sloping roof and the walls meet. The flat areas are the cause for most of the leakage. Water also seeps in through the junction of the terrace door frames which are corroded. Water tends to collect inside as the openings leading to the terraces are not water tight, and the level differences inadequate.

The heavy southwest monsoon rain is wind driven and causes water to penetrate through the mortar joints and door or window frames. This has caused weakening of most of the wooden joist ends, and the door and window frames.

The verandas were designed to protect the interior spaces from the onslaught of the south-west monsoon. Now that the verandas are enclosed, the ventilation to the inner spaces is poor. Also the spaces created within the verandas suffer from water seepage as the windows fitted within the arches cannot be fitted in tightly.

Rising dampness is another problem affecting the building which is noticed on its periphery. This could happen on account of absence of damp proof course (a common problem in historic buildings). Capillary action causes efflorescence in masonry when the water dissolves the soluble constituents of the stone or the mortar.

Solar radiation causes the surface temperature of buildings to rise considerably, causing thermal expansion in some of the construction materials used for joinery. This may result in surface cracks and opening up of mortar joints in the building and this has been observed on the elevations, which are constantly exposed to the sun. The terrace areas are most prone to thermal expansion cracks.

Weathering of the stone

Rain is the most destructive natural agent for weathering and decay. Water penetration causes blistering and flaking of plaster and stone, especially soft stone like the white limestone used in the decorative elements. The water also causes the iron used in anchoring the stone elements to rust and hence expand, leading to cracking of the stone element. The acid rain in Mumbai, which contains sulphur, also has an abrasive effect on the stone. This is a major problem in all the elements with limestone.

The action of wind causes weathering in stone, wood and mortar. This is seen extensively in the building facades, especially on the south - west face that bears the brunt of the westerly monsoon. Wind also tends to have an abrasive action, when carrying dust and abrasive particles and tends to have a ‘sandpaper’ effect on limestone elements such as balusters, plasters etc. The polluted winds in Mumbai have led to the staining of the stone surface, especially intensely on the walls of the west and south - west face.

Wind and rain along with the atmospheric pollution has affected the limestone badly. The limestone features, especially where it is in most exposed areas like the pinnacles on the domes or the cornice, are quite darkly stained and the surface of the stone is brittle. This needs attention.

Disorganised services

A rational plan is required to organise the services. At present, the electrical and plumbing services have been incorporated without any specific order. Over time these services have been upgraded or improved sometime in parts. There are no clearly demarcated service shafts or ducts to carry these services vertically.

The lifts have been introduced next to the stairwell by dividing a part of the structural bay. The toilets or pantries have been introduced without thought to how the plumbing system would work with the building design. Hence, at some places toilets are found inserted with no exterior ventilation. Moreover, the location of the toilet varies from one floor to another. Sometimes the toilets are located next to the cabin of an important office, but no consideration is given to how the plumbing will run along the elevation. The tanks and the air-conditioning cooling towers are located on the terrace without any thought to eccentric loading they may cause. The water supply is made complicated with many different tanks supplying to the individual toilets.

Hence a clear master plan is definitely required to take care of the entire services which include the electrical system, plumbing and sanitation, the fire regulations and air conditioning system. The planning of the building follows a simple format, symmetrical to the central staircase core. Hence the layout can be redesigned very efficiently to create service ducts and toilets at central locations like the modern office layouts. The building has been designed ideally for an open office plan.

The offices of the future are going to be increasingly computerised. Hence a good system to carry the wires up from the main meters and distribute transversely across each floor has to be designed to adapt the building for the future requirements.

Intended use of the building

F.W. Stevens was not only an architect who designed and built magnificent facades. His vision extended into the placement and planning of the interior spaces as well. A closer look at the plan of his Grand Indian Peninsular Railway Terminus building will show his attention to every aspect of planning to ensure that the building not only looked good but performed well.

Stevens could easily have located his building to face the south, continuing the north-south axis of the railway line and orienting the building towards the commercial centre of the Fort district. In fact the open space to the south of the site, now occupied by a public garden would have formed the ideal forecourt for the complex. Instead he designed a ‘C’ shaped building, enclosing a courtyard of its own and oriented the ‘C’ to face the west. This orientation is ideal from a climatic point of view, for it exposes the maximum frontage of building to the prevailing west winds, so essential for comfort in Mumbai. It also was a bold town planning gesture. Acting in tandem with the municipal head office building (also designed by Stevens), it created a plaza of its own that is today the most prominent hub in the city rivalled perhaps only by Flora Fountain.

As we look more closely at the plan, we see that it consists of large central halls flanked by broad verandas. The verandas served several purposes. They were the corridors linking various parts of the building and being broad and exposed made for excellent public waiting spaces. They were also intended to function as climatic buffers between the outside weather and the working environment within. They helped control the sun, kept out the rain and cooled the breezes blowing through the building. They also worked in favour of the architect by providing him the face and depth of building on which to give free expression to his architecture without being encumbered by the need to protect and preserve the spaces immediately within. (Sadly most of these verandas no longer function the way they were designed to. Most of the side and rear verandas have been converted to office spaces and the open arcades and railings have been screened off by the insertion of windows. These tend to distort the essentially open character of the veranda and block the light and ventilation to the interior space beyond.)

The large interior hall-like administrative spaces planned by Stevens, anticipate in a way, the open style office plans of the future. The large floor to ceiling heights meant that partitions and cubicles, if any, would have been of low height allowing the free movement of air in the open space below the ceiling. Over the second floor level the central rooms are capped by sloping roofs which rise above the flat roofed terraces over the adjoining verandas forming clear storeys. These were then fitted with ventilators to allow light to enter and hot air to escape from the halls below. This is yet another example of Stevens’ awareness and his response to local climatic conditions. (Today most of the ventilators are either completely covered over, blocked off or fitted with air-conditioning machinery. In some places the large floor-to-ceiling heights have prompted the insertion of a mezzanine floor, obstructing the free flow of air and marring the aesthetics of the grand interior spaces.)

At the terrace level, various rooms are placed at strategic points along the periphery. These rooms punctuate the terraces and add variation to the skyline. Although interconnected via the terraces, the architect had provided independent spiral staircases to each of these terrace rooms from the second floor verandas below, so that they are accessible under cover, in any kind of weather. It reflects yet again the architects' attention to detail.

The most prominent feature of the building is the large central dome which covers the grand central staircase. This vast magnificent space with its single volume from floor to dome and its impressive cantilevered staircase spiralling around the open well, was certainly designed to impress and overawe the visitor. However, it is more than just a fancy piece of architecture. The central volume was designed to act as a large ventilation shaft to the building. It was ideally located in the space between the front and rear verandas. The architect then planned corridors on either side of the shaft which connected the front and rear verandas and designed a number of large openings from the corridors and rear veranda to look onto the stairway and bring fresh air into its interior. The dome which towered above the surrounding roofs was provided with eight large openable stained glass windows in the lantern section below the dome itself. Fresh air passing across this space at the upper levels would draw up the heated air from below. Thus the central stair space was in effect designed to function as a large flue to keep the interiors of the building ventilated. (Over time, the openings onto the central shaft were all sealed off, most form convenient storage spaces today. The side corridors too are blocked by the introduction of lift shafts, cutting off the original connections between front and rear verandas. At the dome level, the stained glass windows do open but have, of necessity, to be kept closed to prevent the entry of pigeons into the dome.)

At the outer ends of his building, Stevens placed four corner blocks, each with a service stair running from the ground floor, upto terrace level. Spaced out at the four corners these stairs were the vertical service links of the building. Their location also made them efficient fire escapes in an emergency. (Today these stairs are in a sad state of neglect. Although there is a strong need to maintain them, particularly as emergency exits, most remain blocked off at various levels, limiting their use as vital safeguards and through connections of the buildings.)

The building has over time had to adapt itself to the growing number of personnel and their requirements and the demands of modernisation. The plan of the building being simple and almost modular, it has been easy to adapt the spaces for the present day requirements.

However after a certain point, addition of services like electrical and plumbing have been made ad-hoc resulting in haphazard and untidy criss-cross of wires and pipes across the beautifully detailed elevation of the building, causing much confusion.

This condition report document the changes that have been made over time and records the way they affect the architectural and structural integrity of the building. Maybe a clear master plan should be evolved based on an understanding of the present condition of the building and the factors which have led to decay, while incorporating the new requirements to adapt CST to face the future.

Details of sanitary fixtures at C.S.T station

Sr. No.	Location	W.C.s	W. Basin	Urinals
1	**G.M. side Second floor**			
	Officer's toilet	4	1	4
	GM's office	1	1	1
	GM's secretary	1	1	1
2	**First floor**			
	Corner side G.M. officers toilet	2	1	2
3	**Ground floor**			
	Gents toilets	2	1	2
	Ladies toilet	2	1	-
4	**Central wing floor**			
	Gent's Toilet	5	3	18
	Ladies toilet	5	2	-
	Board meeting room	1	1	-
	Additional fittings required in board room	1	1	1
	G.M. general	1	1	1
5	**First floor**		3	18
	Gent's Toilet	5	1	-
	Ladies toilet	1		
6	**Ground floor**			
	Gent's Toilet	2	1	5
	Ladies toilet	1	1	-
	C.P.R.O.	1	1	-
7	**C.E. Office side 2nd Floor & 1st floor (combined)**			
	Ladies toilet	2 + 2 = 4	2 + 2 = 4	-
	Officers toilet	4 + 4 = 8	2 + 2 = 4	2 + 2 = 4
	Gent's Toilet	4 + 4 = 8	2 + 2 = 4	9 + 9 = 18
8	**Third floor**			
	Gent's Toilet	2	1	3
	Ladies toilet	1	1	-
	Officers toilet	1	1	1

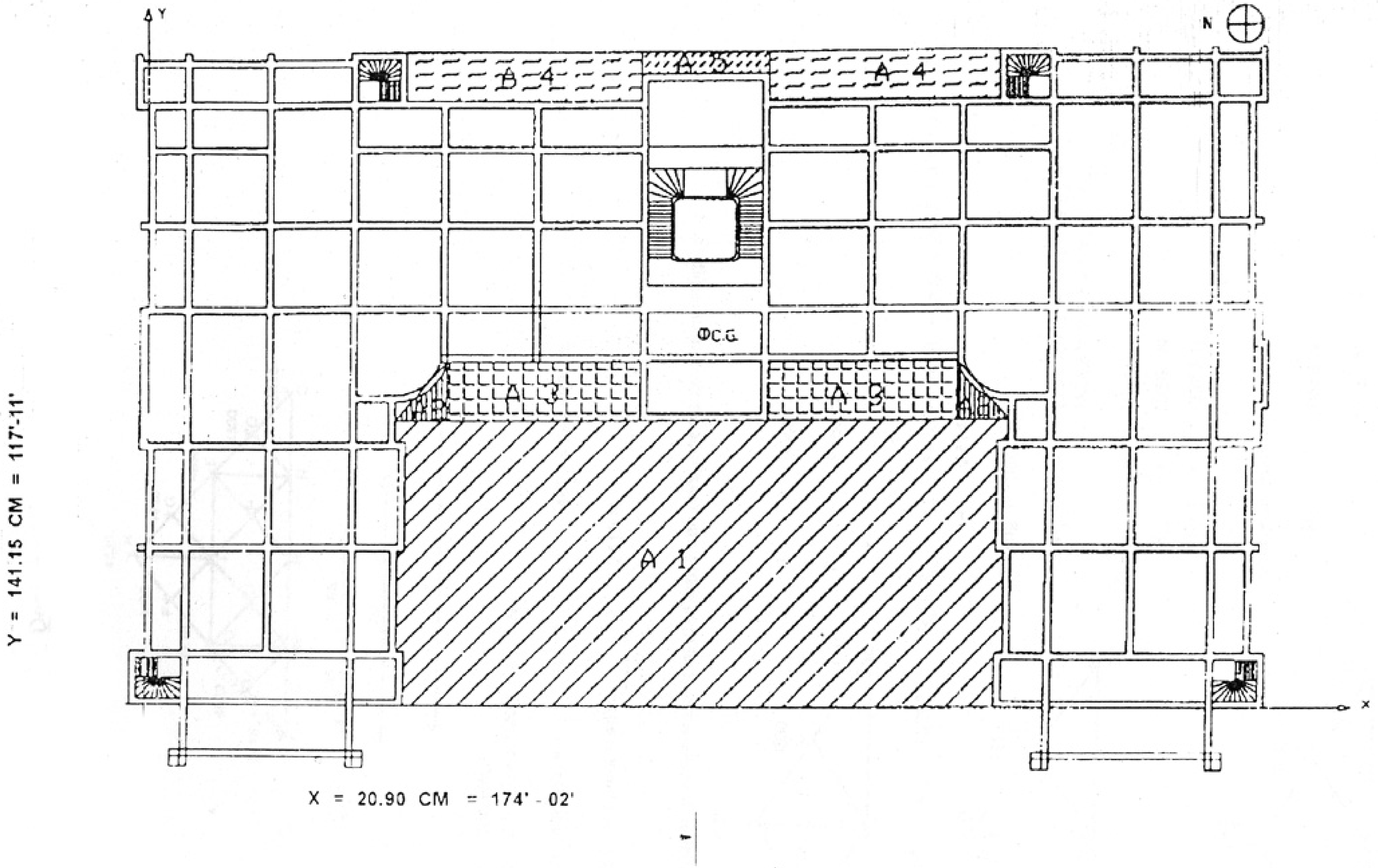
Sr. No.	Location	W.C.s	W. Basin	Urinals
9	Ground floor Sulabh sauchalay	4	2	23
	Motor man	5	8	6
	Ladies toilet	5	2	-
	Dining hall	1	2	2
	G.R.P.	1	2	1
	Total	**68**	**58**	**128**

Details of C.S.T. station obtained from official sources

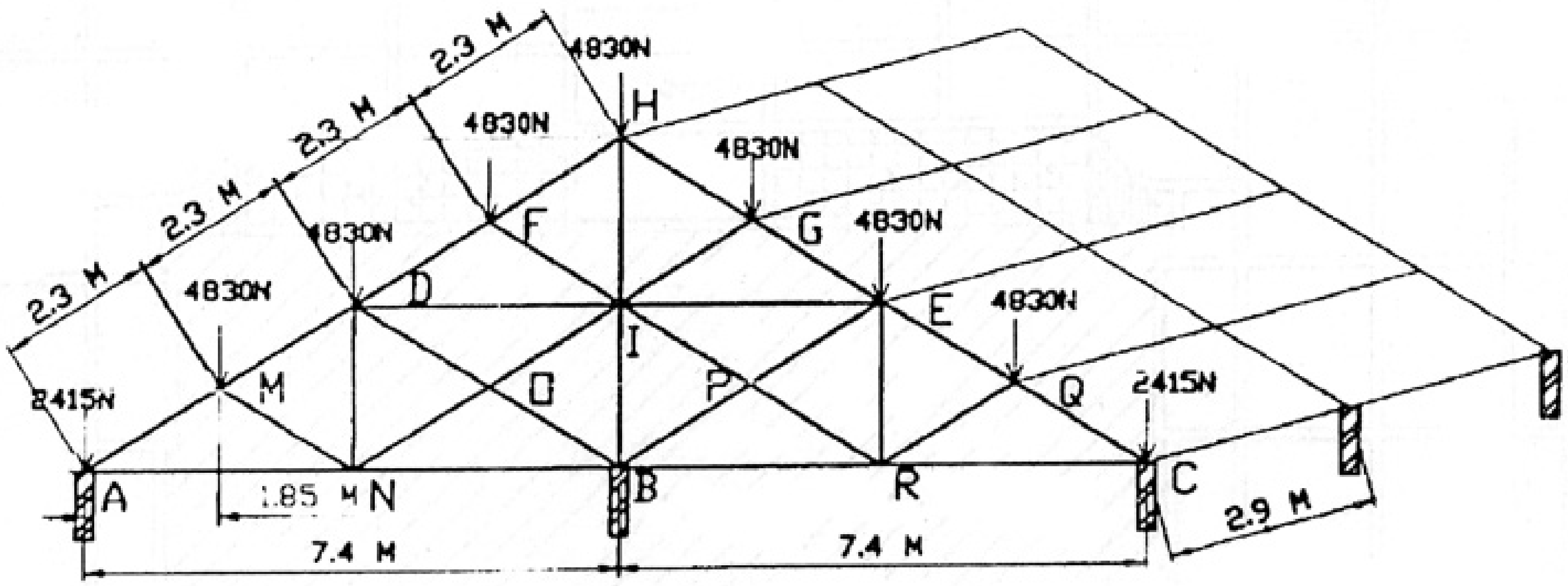
Total commuters using common toilet (known as sulabh sauchalay)	:	Not known
Consumption of water at water drinking stall on platform no 1	:	Not Known
Total staff working for ladies toilet	:	Not Known
Total staff working in main building	:	1900 persons, say 200 out of which 40% staff is working in three shifts therefore the staff to be considered should be 2000 + 800 + 800 3600 persons
Capacities of U.G. storage	:	Near substation 60,000 gallons
		Near platform no. 8, 1,00,000 gallons
No external tanker supply is required	:	
O.H. water storage tanks in north & South wings	:	90,000 litres (11,000 gallons approx.)

Conclusion

No other water supply is required by the existing piping distribution from the O.H. tanks required to be redone theoretically and in a systematic manner.



PLAN SHOWING C.G. OF BUILDING



DEAD LOAD ON TRUSS

Calculations

$$\bar{X} = \frac{A_i \times i}{A_i} = \frac{1038.12 \times 21.2}{1038.12}$$

$$= \mathbf{21.2\ C.M}$$

$$\bar{Y} = \frac{A_1Y_1 - A^1 Y_1 - 2 A_2 Y_2 - 2 A_3 Y_3 - 2 A_4 Y_4 - A_5 Y_5}{A_1 - A_1 - 2 A_2 - 2A_3 - 2A_4 - 2A_5}$$

$$= \frac{1038.12 \times 12.3 - 240.45 \times 5.25 - 2 \times 16.33 \times 11.65 - 2 \times 2.07 \times 11.26 - 2 \times 14.62 \times 24.05 - 3.08 \times 24.75}{1038.12 - 240.45 - 2 \times 10.33 - 2 \times 2.07 - 2 \times 14.62 - 3.08}$$

$$= \frac{10299.956}{728.55}$$

$$\bar{Y} = \mathbf{14.14\ CM}$$

Ground Floor

Column No.	Length (cm)	Width (mm)
1. (a)	189	1(avg.)
(b)	148	1(avg.)
2. (a)	230	0.5 to 0.1
(b)	200	0.2 to 0.8
3. (a)	220	0.8 to 1
(b)	150	0.2 to 0.5
4. (a)	120	0.2 to 0.5
(b)	270	0.5
5. (a)	300	0.5 to 1
(b)	150	0.5
6. (b)	240	0.8 to 1
7. (a)	60	0.8 to 1
(b)	150	0.8 to 1
8. (a)	210	1
(b)	70	0.8
9. (a)	60	0.8 to 1
(b)	30	0.5
10.(a)	105	0.5 to 0.8
(b)	75	0.2 to 0.5
11.(a)	165	0.2 to 0.5
(b)	105	0.2 to 0.5
12.(a)	1.5	0.5 to 0.8
(b)	30	0.5
13.(a)	100	0.2 to 0.5
(b)	120	0.2 to 0.5
14.(a)	60	0.2
(b)	90	0.2 to 0.5
15.(a)	105	0.8 to 1
(b)	112	1
16.(a)	60	0.5 to 0.8

Note : For Suffices a, b & c please refer to the drawing

Column No.	Length (cm)	Width (mm)
(b)	270	0.8 to 1
17.(a)	175	1
(b)	60	1
18.(a)	90	1
(b)	115	0.5 to 0.8
19.(a)	210	2 to 6
(b)	180	0.8 to 1
20.(a)	75	0.8 to 1
(b)		
21.(a)	90	0.8 to 1
(b)	15	0.5
22.(a)	195	0.8 to 1
23.(c)	30	3
24.(a)	30	0.5
(b)	180	2 to 3
25.(b)	30	2 to 3
(c)	225	2 to 3
26.(c)	30	2
27.(a)	90	0.2
(b)	60	0.5
28. (a)	90	1
(b)	100	0.5 to 0.8
29	480 (along peripery)	0.5 to 1

Column No.	Length (cm)	Width (mm)
40.	270	0.5
41.	150	0.5 to 0.8
42.	300	3 to 5
43.	135	0.5 to 0.8
44.	60	0.5 avg.
45.	60	0.2 to 0.4
46.	60	0.2
47.	400	5 to 15
48.	90	0.2 to 0.3
49.	90	0.2 to 0.3
50.	75	0.2 to 0.5

Note:

a. Cracks having a width upto 1mm may be considered to be minor cracks.
b. Cracks having a width above 1mm may be considered to be major cracks.
c. Possible reasons for cracks on Ground floor.

i. Weathering of rocks.
ii. Corrosion of dowel bar

First Floor

Column No.	Length (cm)	Width(mm)
1.	50	0.8
2.	111	1
3.	104	0.8 to 1
4.	50	0.5
5.	83	1
6.(a)	60	1
(b)	185	0.5 to 1.25
7. (a)	65	0.5 to 1
(b)	107	1.25
8.	117	1 to 1.5
9.	120	3

Note:

a) It was observed that a number of cracks on this floor (for column no:4 to column 8) appeared to be grouted. A major crack on column no: 9 needs to be grouted.

b) Possible reasons for cracks on first floor.

Second Floor

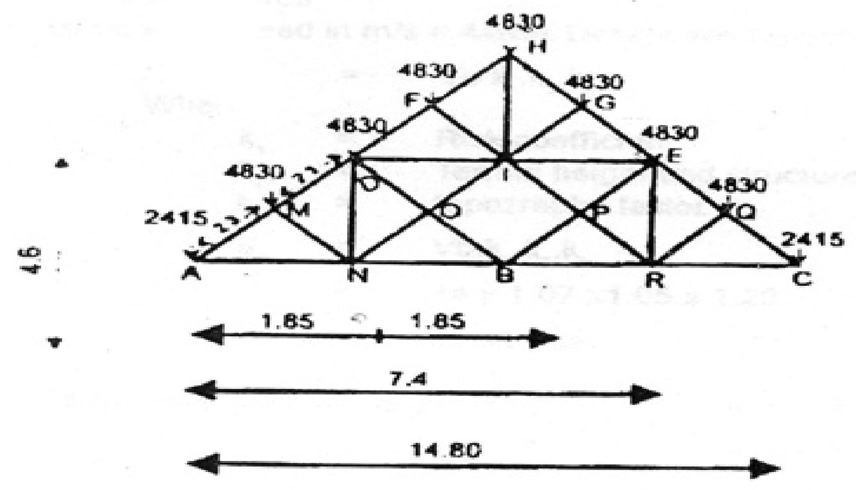
Column No.	Types of Stone	Length (cm)	Width (mm)
1. (a)	Syenite	23	0.5
(b)	Syenite	60	2 to 5
2.	Syenite	40	1
3.	Grit	41	1.25 avg.
4. (a)	Grit	39	1
(b)	Syenite	39	broken
5. (b)		39	broken
(c)		30	4 to 5
6.		59	0.5
7.	Syenite	59	0.3
8.	Syenite	39	0.5
9. (a)	Syenite	70	0.3
(b)	Syenite	17	1
10.	Syenite	32	1
11.	Syenite	40	1
12.	Grit	18	0.2

Note:

a. Possible reasons for major cracks on Second floor
b. Load of water tanks – ceiling tower.
c. Periodic Loading & unloading of water tanks. Load due to second room.
d. Load due to second room
e. Weathering of rocks.
f. Corrosion of dowel bar.

Design of Truss

1. Dead Load.



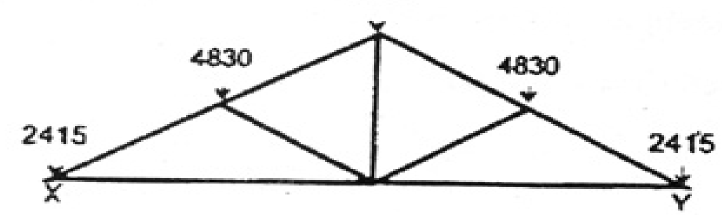
Dead Load = 900 N/m^2

Dead Load = 2.9 x 7.4 x 900 = 19314 N

D.L on each panel point = $\frac{19314}{4}$ = 4828.5 say 4830 N

D.L On end panel point = $\frac{4830}{2}$ = 2415 N

For Simplified calculation entire truss is dinded into three components as shown in figure.



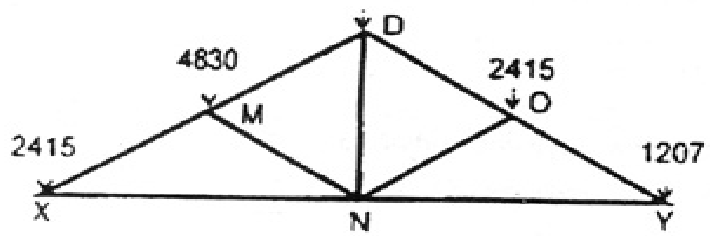
R_x = 9660 N

R_y = 9660 N

(9660 + 2415 + 1207) = 13282

$R_A + R_{B1}$ = 13282 + 4830 + 2415 + 2415 + 1207

= **24149 N**



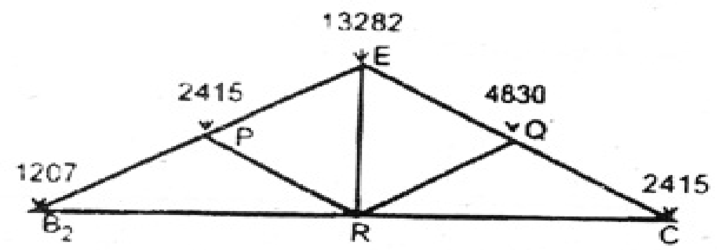
Tauing moment @ A

7.4 R_{B1} = 1207 X 7.4 + 2415 X 5.55 + 13282 X 3.7 + 4830 X 1.85

7.4 R_{B1} = 80414

R_{B1} = 10866 N

R_A = 13283 N



Simicar as truss 2.

R_{B2} = 10866 N

R_C = 13283 N

Finally Reaction of Support

A = 13283 N

B = RB1 + RB2

= 10866 + 10866

= **21732 N**

Reaction Due to	At Support			Load as per Panel point
	A	B	C	
Dead	13283	21732	13283	4830 N
Live Load	5901	9658	5901	2146
Dead Load + live Load	19184	31388	19184	6976
Wind Load (a)	-12720	-20810	-12720	-4625 (uplift)
(b)	4015	8569	4015	+1460 (down ward)
D.L + W.L –(a)	563	922	563	205
D.L. + W.L (b)	13846	22654	13846	6290
Type of Load	**% Load Coming on Support**			**Total Load**
	A	**B**	**C**	
Dead Load	27.5	45	27.5	48298
Live Load	27.5	45	27.5	21458
D.L. + W.C. a	27.5	45	27.5	69756
Wind Load a	27.5	45	27.5	-46250
B	27.5	45	27.5	14599
C	27.5	45	27.5	2048
D.C + W.C a	27.5	45	27.5	5036

Wind Load

For mumbai area.

Basic wind speed in m/s = 44m/s Design wind speed at any height in m/s is given by

V_z = Vb $k_1.k_2.k_3$

Where,

k_1	=	Risk coefficient	=	1.07
k_2	=	Terrain height and structure size factor	=	1.05
k_3	=	topozraphy factor	=	1.20

V_z = Vb.$k_1.k_2.k_3$

= 44 x 1.07 x1.05 x 1.20

= **59.32 m/s**

Design wind pressure is given by = 0.6 $(V_z)2$ N/m2

P = 0.6 (59.32)

P = 2111 N/m2

C) WIND NORMAC TO RIDGE

External wind pressure for slope 30°

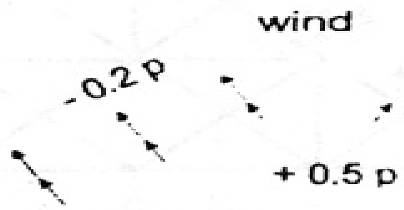
a) On wind ward slope = - 0.1p

b) On leeward slop = - 0.5p

c) Internal air pressure for carge opening = + 0.5P

1. Combined internal and external wind pressure

i When internal air pressure is + 0.5



On windward slope = -(o.1 +0.5) p

= -0.6p

= -0.6 x 2111

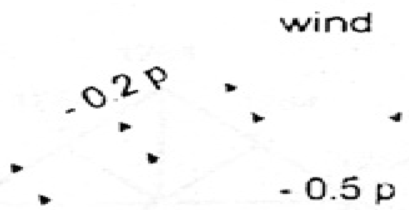
= - **1266 N/m² (uplift)**

On leeward slope = - (0.5 + 0.5) P

= 1p

= - **2111 N/m² uplift**

b) When internal air pressure is - 0.5p



On windward slope = - (0.2 -0.5)p

= +0.3p

= 0.3 x 2111

= 633 N/m² (downward)

On leeward slope = - 0.5p + 0.5p

= 0 N/m²

ii) Wind normal to ridge external wind pr = -0.6p on bothsides.
Combined external and internal pressure is + 0.5p, combined pressure

on both slopes = - (0.6 + 0.5) = -1.1p

= -1.1 x 2111

= **- 2322 N/m²**

b) When internal pressure is - 0.5p, combined pressure

On both slopes = - (0.6 - 0.5)p = - 0.51p

= 0.1 x 211

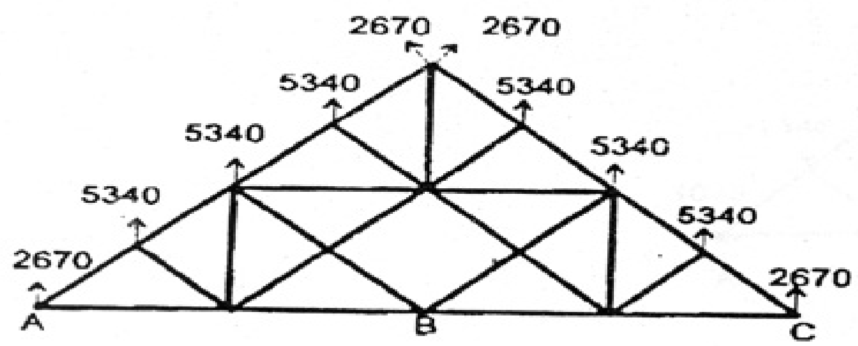
= **- 211 N/m²**

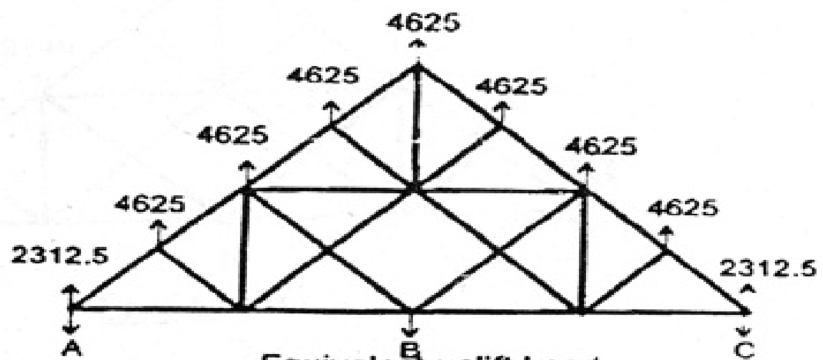
Wind Load on one side of fruss = - 2322 x 9.2

= **- 21362 N.**

Wind Load per panel point = $\frac{-21362}{4}$ = **- 5340 N (uplift)**

Wind Load on end panel point = $\frac{-5340}{2}$ = **- 2670 N**

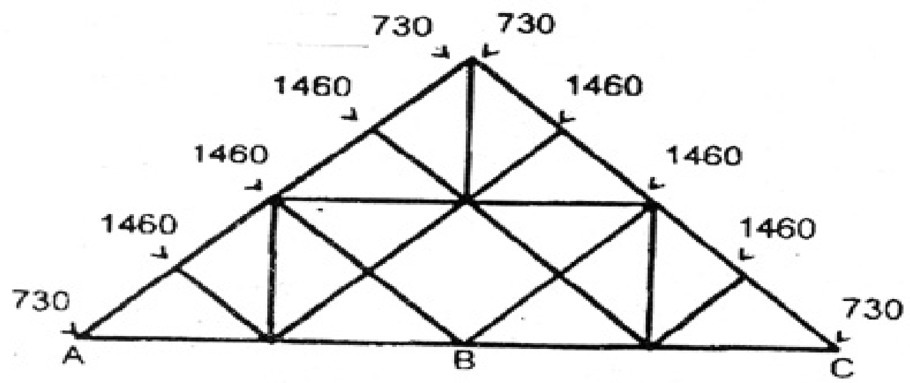


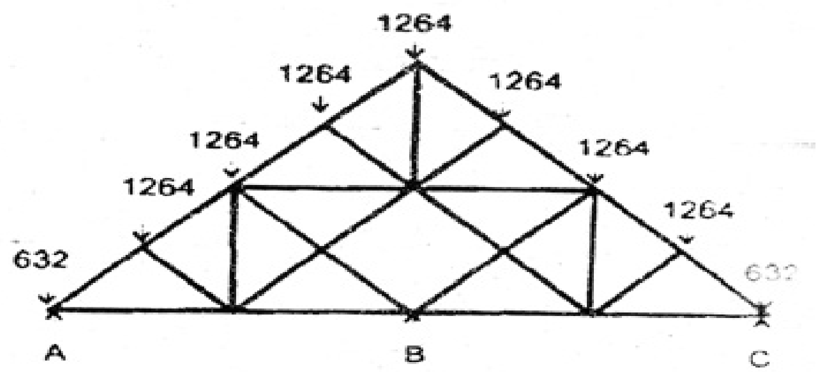


Equivalent uplift Load

Wind Load on each top panel due to downward Load = $\frac{633 \times 9.2}{4}$ = 1455.9 say 1460 N

Wind Load on end panel point = $\frac{1460}{2}$ = 730 N





(2) Live Load

For an angle 10° live Load is 750 N/ m²
slope = 30°

For angle more than 10° live Load is reduced by 20 N/m² for every degree rise

Live load intensity = 750 - (20 x 20)

= 750 - 400

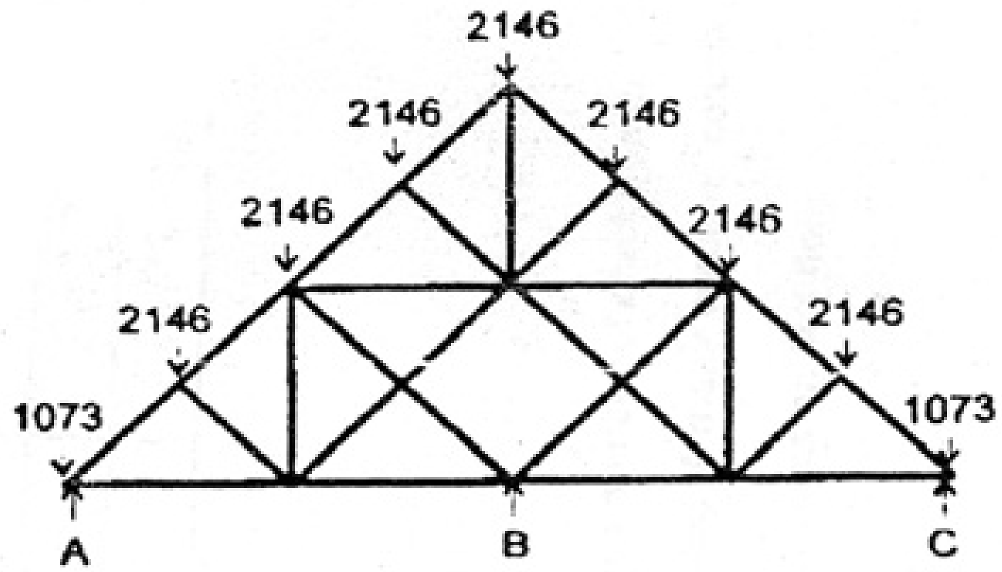
= 350 N/m² < 400 N/m²

minimum live load intensity should not be less than 400 N/m²

$$\text{Live Load on each panel point} = \frac{7.4 \times 2.9 \times 450}{4}$$

= 2146 N.

$$\text{Live Load on end panel point} = \frac{2146}{2} = 1073 \text{ N.}$$



Live Load

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Building Lime

AN INTRODUCTION TO BUILDING LIMES
by Michael Wingate

The purpose of this information sheet is to explain briefly the different forms of lime and their principal characteristics and uses.

Anyone working on historic buildings should be thoroughly familiar with lime as it is central to good conservation practice. It is successfully employed on good conservation buildings jobs, large and small. Using lime does not require rare and complicated skills, but will need a certain amount of care. The method of application of lime based materials is as important as the correct choice of materials however, and our knowledge of old techniques is not yet complete.

Lime for use in repairs comes in various forms each of which has rather different properties. The practical application of lime mortars, plasters, limewash, etc. is dealt with in separate publications. (See bibliography). We hope you will feel sufficient confidence after reading this to use lime products for repairs to traditional buildings.

1 Introduction

The root meaning of the word LIME is "sticky material" Lime was the binder for most historic buildings in most parts of the world. It binds gently, but when used carefully it is exceptionally durable. The pantheon in Rome has a vast dome of lime concrete which has survived since classical times. Where such impressive buildings were made with lime the engineering achievement was a matter of correct geometry rather then exceptional strength of materials.

3 Lime Burning -

Production of Quicklime

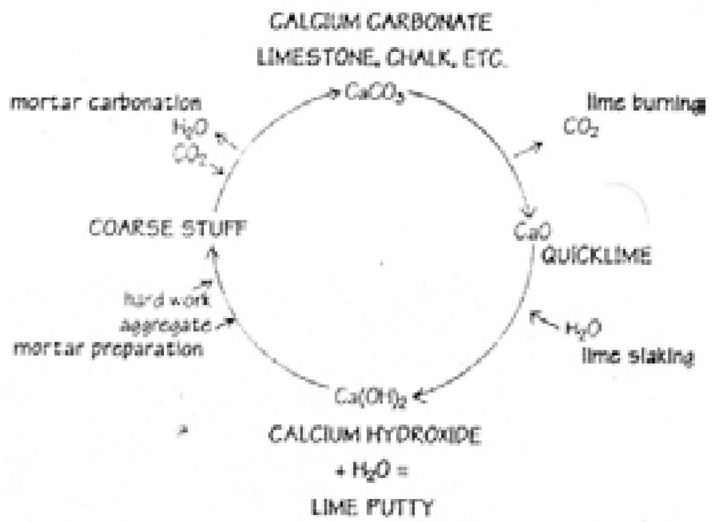
When the calcium carbonate material is heated in a lime kiln, it dissociates to form quicklime (calcium oxide) and carbon dioxide gas. The ability of the quicklime to slake to a fine putty lime and, subsequently, the ability of that putty lime to react with carbon dioxide from the atmosphere (ie. to undergo carbonation), is effected by the temperature regime in the kiln during firing. This ability, which can vary, is called reactivity. Some of the best, most reactive quicklime were formed by the relatively low temperatures achieved in wood fired kilns. This regime is imitated by the best modern kilns which are used to prepare the high specification Basic Oxygen Steel limes.

4 Quicklime - A Lively material

The product of a kiln firing will contain material in various states:

Good, reactive, soft burnt quicklime has traditionally - and best - been selected by hand; the good material will not feel heavy or look wizened or a bad colour. The fresher the better.

Underburnt quicklime contains a core of unconverted carbonate. This can often be seen in old mortar where it acts as part of the aggregate, helping the pore structure of the mortar.



Overburnt quicklime has become less reactive and takes longer to slake. It can spoil finished work through late hydration producing pitting, popping, and unsoundness.

Hard burnt quicklime is also less reactive, but deliberately made so for commercial convenience of handling, transport and storage as quicklime.

Small lime is the kiln residue after the good material has been hand picked. These odds and ends, including overburnt lime ash and unburnt fuel, were used in some areas to make lime-ash floors.

Quicklime which is left for any length of time a moist atmosphere deteriorates by absorbing water and CO2 from the air. The lumps develop loose, dusty surfaces and eventually fall apart. This process is called air slaking or wind slaking and the degraded lime is called fallen lime. It should be discarded.

5 *Slaking*

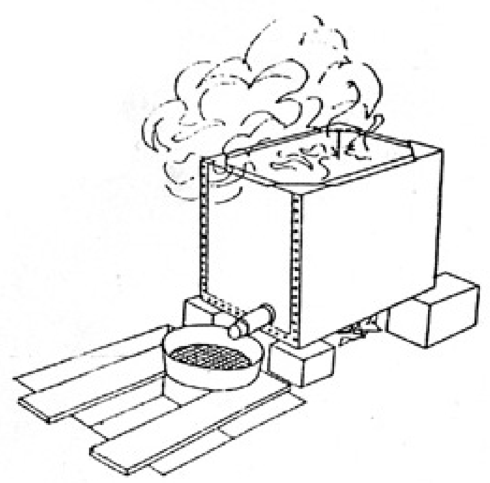
This is the process of combining quicklime with water to produce a workable plastic material. The slaking of quicklime must be organised - and undertaken - with great care and appropriate preparation (see section 14).

A good, reactive quicklime will combine vigorously with water, swelling considerably and generating a great deal of heat.

For complete hydration the quicklime needs to combine with a necessary, but unspecific, quantity of water. In practice, an excess of water should be provided so that the mixture of quicklime and water will form a suspension known as milk of lime which should be the consistency of cream. When the slaking activity has apparently ceased, the milk of lime is then discharged into a lime pit or container, through a sieve, to remove the larger particles of under-burnt or over-burnt quicklime which have not had time to react.

As the milk of lime is left to stand it will separate into a clear solution (lime-water), above an agglomerating mass of putty lime. The putty lime will continue to swell, or fatten, as it absorbs more water physically into its mass. It is necessary to make sure that the putty lime remains covered with water, adding more if necessary.

As the putty lime matures in its container the remaining fine particles of less reactive lime will have time to slake, giving protection against pitting, popping and unsoundness occurring after use in repairs. These defects can be caused by late hydration of imperfectly burnt lime particles in situ if the putty lime has been used without having been left to mature for long enough.



6 *Putty Lime*

The longer a putty lime is kept covered by water to mature the better it becomes.

This is partly because extra time is given for the late slaking of any less reactive quicklime which may have passed the sieve, but also because the lime continues to absorb water into a fatter physical structure. In addition, the longer the maturation, the more tenaciously the putty lime will retain the water it has absorbed.

Plasticity thus increases so that matured putty lime will form itself more intimately around the sand grains when a mortar is mixed, for example. The increased water retention also improves the bonding, between a mortar and masonry by resisting suction from the building. Keep the putty lime for at least a month, covered with water to prevent carbonation. For the finest work it needs to be kept much longer, even for many years.

The putty will become slightly rigid during a long period of storage but plasticity will return, even to a very firm putty lime, when it is "knocked up" (see section 12). **Do not add more water to get plasticity.**

Because of the need to keep the putty lime to mature and also the hazards of slaking quicklime on site, it may be preferable to buy putty lime, ready slaked and mature, from one of the increasing number of suppliers (see separate list).

Do not discard the limewater when using the putty lime; it is a saturated solution of lime which can be used for mortar and masonry consolidation.

7 *Dry Hydrate of Lime*

Hydrated lime should never be used straight from the bag to prepare materials for immediate work.

Dry Hydrate of lime is usually just known as hydrated lime or bagged lime. This is readily available sold in paper sacks through builder's merchants. In the production of hydrated lime less water is used for slaking the quicklime - just enough to complete the slaking function with a small excess which is driven off as steam by the heat of the reaction. This leaves a dry powder which may be ground down to break up the larger particles. The less reactive unburnt core and overburnt quicklime is therefore also included in the product. The process does not produce very fine lime particles so there is less plasticity (see section 6) and ultimately, the less reactive quicklime will slake completely, in situ (see Section 5).

If prepared very carefully, dry hydrate can give acceptable results, though it is unlikely to be used in the best quality work. Its performance (particularly its plasticity) increases markedly if it is allowed to soak for twenty four hours and much longer, if possible. A putty may be prepared from dry hydrate by mixing with water to a creamy consistency and leaving it to stand in a covered container for a few days at least.

8 Hydraulic Limes

Pure limes will not set under water and are known as "non-hydraulic limes".or "air limes". For Hydraulic engineering works - bridges ,damns, harbours and locks - special mmaterial where needed . It was found that certain impurre limes could set under water and this became known as Hydraulic Limes.

The chalks and limestones from whichj hydraulic limes are made contain fine clavey materials . When the hydraulic limes dstone is fired in the klin. The clays combine with the lime to produce , in effect natural cements. These cements in turnm combine with watrer to give a chemical set which does not rely on carbonation from the air to achieve a set as pure lime does.

Hydraulic lime mortars have often been used in an attempt to give "durability" to non-hydraulic construction works, but they can give rise to the same sorts of decay problems as mortars containing modern cements when used for historic buildings, because they become hard and impermeable.

9 Pozzolanic Additives

Similar hydraulic properties, and chemical setting, can be achieved by adding certain pozzolans to a lime mortar. A pozzolanic material contains very finely divided clay-like minerals which have, at some time, been subjected to great heat; for instance, certain volcanic ashes (such as "pozolana" from near Naples), the fly ash PFA from power stations burning pulverised coal, and fine brick dust prepared from lightly burned clay bricks. The reactivity of the pozzolans depends very much on their preparation and storage. Only add pozzolans to mortars just before use. Strongly pozzolanic mortars may - like mortars made from strong hydraulic limes - produce the decay mechanisms normally associated with cement rich mortars.

Pozzolanic materials should be handled with great care as they may be carcinogenic.

10 Magnesian Limes

The metallic element magnesium forms smiliar compounds to those of calcium. Although deposits of pure magnesium carbonate are very rare, the double compound of calcium carbonate and magnesium carbonate,dolonute,is quite common and often occurs in rocks in combination with further calcium carbonate. The magnesian limes formed from such limestones are acceptable for many chemical uses, but for building work there is a problem to be overcome.

The magnesium carbonate covers to magnesium oxide (magnesia - the equivalent of quicklime) at a considerably lower temperature than that needed for converting the calcium carbonate to quicklime. The magnesia thus tends to be overburned and can give rise to all the problems of late hydration. Special care is needed to slake this lime, but the results can be very good.

11 Mortar Preparation

The selection of aggregates is very important. Putty lime will shrink and crack as it dries, which is why no extra water should be added at the knocking up stage. A sharp sand and a well graded aggregate, containing a full range of particle sizes, will help reduce cracking and will enhance the properties of the mortar, particularly its texture, strength and ability to carbonate effectively.

The choice of aggregate should be strongly influenced by the aggregates of the existing work, taking particular note of any chalk, limestone, old reused mortar or crushed bricks as all of these can assist the process of carbonation which gives the good set. They will also contribute to the eventual porosity of the mortar. If possible, study the match of sands and aggregates with a microscope or strong magnifying glass.

Cement based materials rely on additional water or plasticisers to improve their workablitiy but it is beating and chopping that increases the workability of lime. Considerable effort is needed to work the putty lime well around the sand and aggregate grains. A good method is to tread in the aggregate, on a board, while others shovel and turn within a small area. Wellington boots are necessary! Avoid adding extra water here as it will contribute to shrinkage on drying and increase cracking. The same action is achieved mechanically with a roller pan mill.

It is best to premix mortar for the whole of the work - particularly for pointing and undecorated renders - and to store it in convered plastic tubs. The lime and sand can then mature together allowing the lime to work closer with the sand. The material can then be knocked up just before use.

If pozzolanic materials are to be added to the mortar mix, only do so at this knocking up stage.

12 Placing Mortar

Joints must be raked out for pointing but this will not always be necessary before rendering.

The surfaces should be pre-wetted to reduce suction, but should never be running wet - a little suction is necessary.

Mortar must be placed firmly; pointing should be pressed in, perhaps with a pointing iron. Render might be thrown from the edge of a trowel. However, the mortars should not be overworked as the laitence (the very fine lime particles which will dry white) brought to the surface will block the pores and prevent carbonation through the full depth of the material. This not only looks unsightly but also reduces durability. After the initial set has occurred, a bristle brush should be used to "expose" some of the aggregate finish by brushing off any laitence.

13 Protection of Work

For best results, carbonation should be slow and continuous. Carbonation in moist material takes place slowly at a drying front within the mortar. Thus it is best to work from hot sunshine, drying winds and rain with sacking or polythene sheeting. It may help to spray work with a light mist several times during the drying period. When the work is accessed from a scaffold the whole scaffold should be sheeted in.

Lime based materials should be protected from any risk of frost or considerable heat, as the possibility of failure is much increased.

14 First Aid and Safety

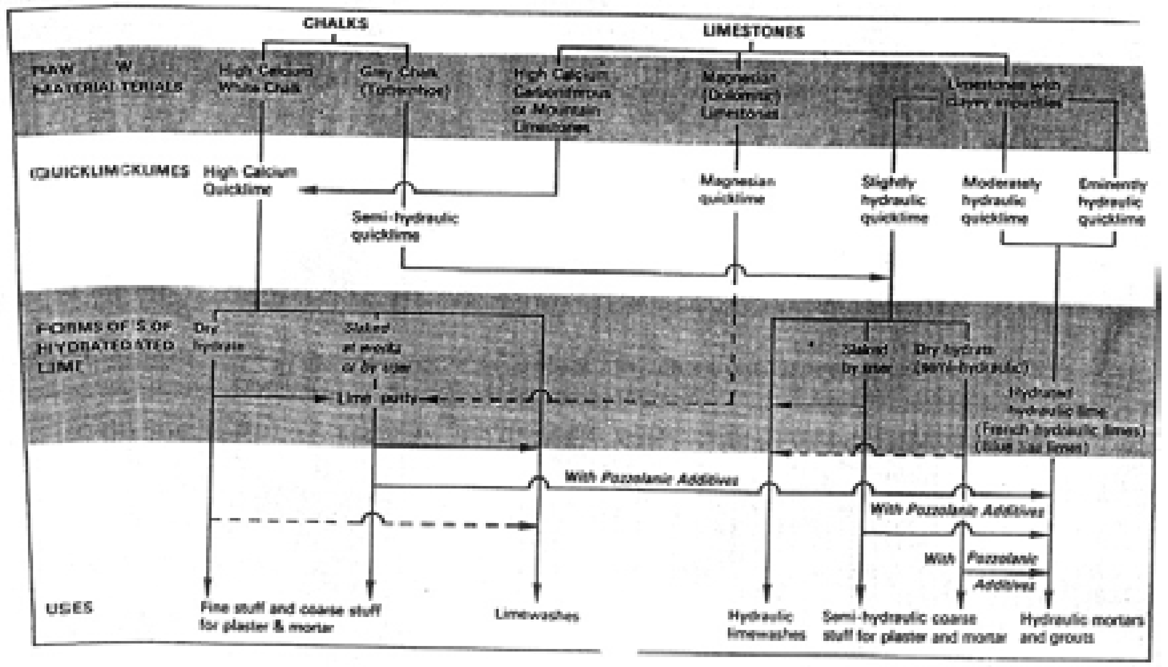
Quicklime is a dangerous material and an employer and his agent are legally responsible for ensuring that anyone handling it or working near it follows safe procedures. Goggles must be worn - quicklime dust in the eyes is the most serious risk - and protective gloves, clothing and boots are also required. Barrier cream should be used on exposed skin and the mouth and nose should be protected from dust. In case of accident, clean water and eye washes should be available first, then medical attention should be sought.

The great heat given off during slaking can present a fire hazard. Quicklime should not be stored on wooden floors and sweepings should not be mixed with wood shavings, sawdust, or other combustible materials.

Putty lime and dry hydrate are much safer to use, but both are caustic and will make skin dry out and crack. Barrier cream is needed and gloves should be worn where possible. Care should be taken to keep lime out of the mouth lungs and eyes.

Suppliers/Analysts/Education

With this leaflet is a separate list of source of lime. Please inform the Society of any changes or further information that comes to your attention.



RELATIONSHSHIPS AND USES OF DIFFERENT TYPES OF LIME. (Chart after Cowper, BRE Special Report No 9; the chart is intended only to give a general idea of the uses of which the different broad types of lime are best adapted and should not be interpreted too literally).

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Information Sheet 8-Tuck Pointing in Practice. Jonathan Carey (SPAB)

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Information Sheet 11-Rough Cast for Historic Buildings. Andrew Townsend (SPAB)

The Society for the Protection of Ancient Buildings
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Information Sheet 1
BASIC LIMEWASH
by Jane Schofield

THE ADVANTAGES

1. Most old buildings (pre 1850 or 50) were built and maintained with lime throughout and limewash works well and sympathetically with them. It is particularly suitable for all limestones, lime renders & plasters, water and daub, cob buildings etc.

2. Limewash allows a building to "breathe" so that any damp which may be present is evaporated away harmlessly and not trapped in the wall to cause problems. Limewash also helps to eliminate condensation.

3. Limewash has a very matt finish, and helps to consolidate and improve the surface of old plaster etc, both physically and visually. It can be made in beautiful colours, and unlike many modern products, it looks even better as it ages. If carefully and properly made, limewash will not brush of onto clothes etc.

4. Limewash is cheap.

THE DISADVANTAGES

1. Making limewash is not as easy as taking the lid off a tin of shop paint.

2. Limewash is unsuitable for hard cement renders, hard modern bricks, or other impervious surfaces e.g. flint. Amateurs would be ill-advised to limewash sandstone unless it has been successfully limewashed before.

3. It can be difficult to match coloured limewash batches. Some pigments in coloured limewash may darken or fade when affected by the weather. (This may actually look very good).

4. Limewashing does not work as well in very quick-drying conditions.

MATERIALS (for suppliers, see page 4)

This material is highly caustic in the presence of moisture protect eyes, hands etc. at all times. Do not store in a damp place or spontaneous combustion can occur keep away from children etc.

This will make a long-lasting & top-quality limewash external and internal use. (Sometime called Lumplime or Burnt lime).

This is the consistency of tooth-paste, but is caustic enough to sting the eyes and roughen the skin. May be stored safely and improves with age.

This is the safest and simplest way to make a good quality limewash.

BAG LIME This comes in powder form and is an inferior material. Tends to cake if shore in a damp place.

This will make a poor quality limewash with a short life; and a tendency to brush off.

A hard clarified animal fat Used in conjunction with quick lime, a small amount of tallow will make an external limewash which will shed some rain water in exposed conditions. Unnecessary for internal use.

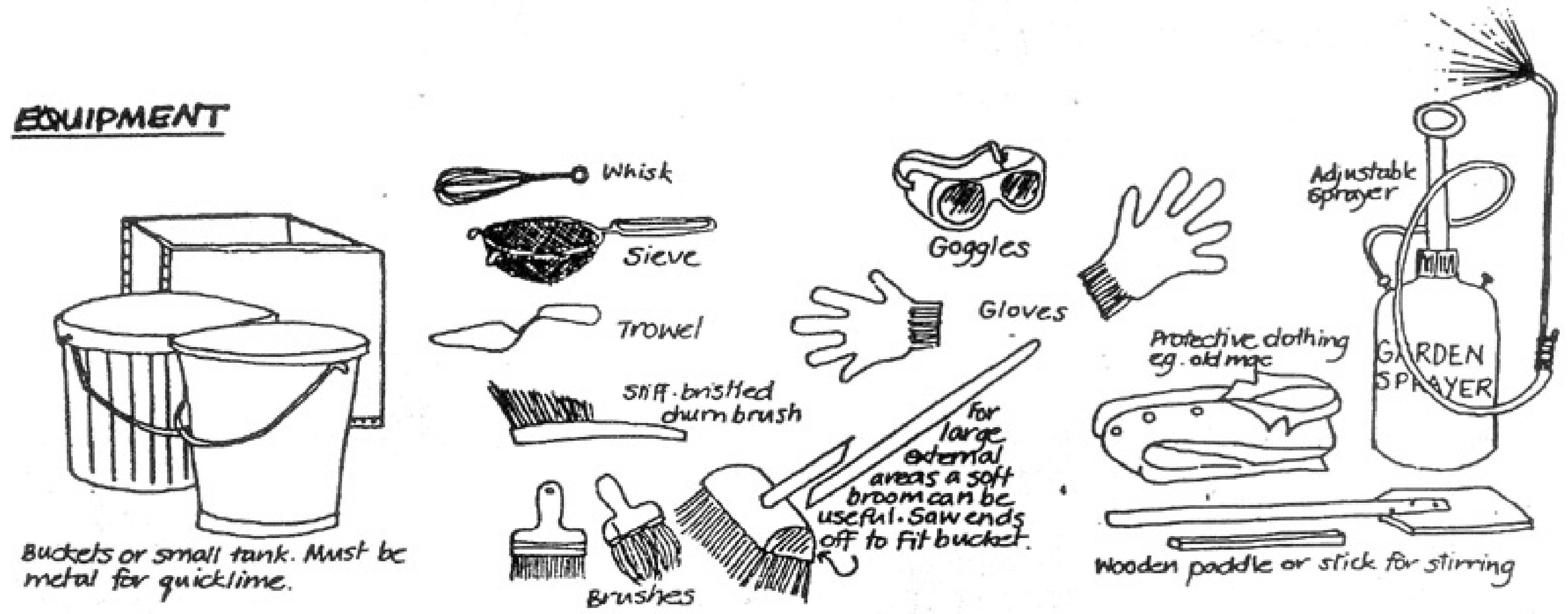
Used in conjunction with putty or bag-lime to improve water shedding properties of external limewash.

Unnecessary for internal use.

Artists pigments are the most expensive, but very good colour.

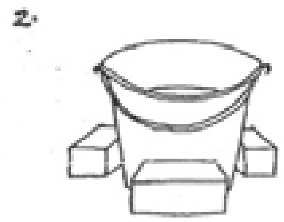
Other pigments are much less expensive. Some are good colours, some awful. Trial mixer are a good idea.

Raddle (sheep dyes) are effective (internally at least) and come in various-colours.



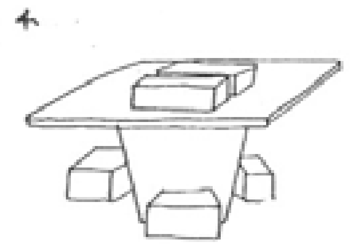
MAKING LIMEWASH WITH QUICKLIME (all quantities are approximate)

1. Assemble all tools, materials and equipment. Have water near at hand. Keep unprotected on lookers at least 15' away. Put on protective clothing and goggles.



Prop a large rustproof metal bucket or small tank securely with bricks or stones. Fill hall full with hot water. Add approx. I pint volume of quicklime, and an egg-sized lump of tallow shredded (if limewash is to be used externally.)

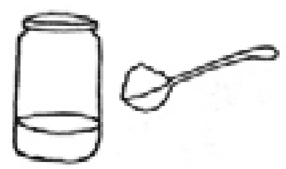
Stand back and allow the mixture to boil furiously until it settles down a bit. Use the paddle to scrape up any lime which has caked at the bottom. If the mixture becomes too thick to stir, then a little more water may be added.



When slaking is completed and all bubbling has crased, cover the bucket securely and leave to cool.

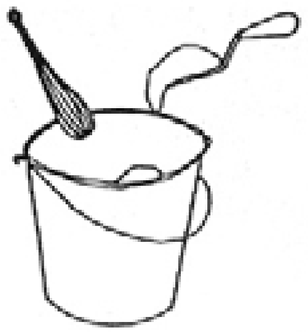
Now follow instructions for limewash from putty lime

5.



If colour is to be used,then mix some pigment with a little hot water in a screw-topped jar,shake well & set aside to stand. The color will then mix more easily into the limewash.

6.

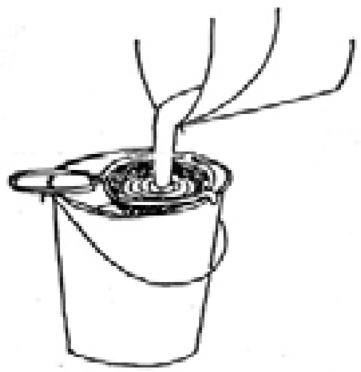


(If home-staked lime is runny,then go straight on to stage 7.) Place about 3 trowelfuls of lime putty into a bucket with a few inches of water and work to a smooth paste with the whisk. Add more water until the mixture is like thin cream.

If using bag lime,mix the water into the lime gradually,beating well to get as through a mix as possible. This is better if it is kept,covered,for 2 or 3 days at this stage.

(for external limewash made with bought putty lime or bag lime,an eggcup full of raw limeseed oil may be beaten in at this stage.)

7.



Pour through sieve into second bucket,working through any lumps,but leaving any grit in the sieve.

If pigment is not to be used then go on to stage 9.

8.

Stir in the pre-mixed pigment.The colour in the bucket should be considerably darker than the end result required: Ie a rich yellow ochre will dry to cream,Too much pigment will reduce the binding power of the limewash. A test for colour can be made on paper and dried quickly in the sun or before a fire as a guide.

9.

Dilute the mixture until it is the consistency of milk and sieve again into the first bucket. This limewash is nowready to use.

A Bucket of limewash should cover the walls & ceiling of an average room with a fairly smooth surface.

USING THE LIMEWASH

Generally, limewash should be applied thinly and be allowed to dry out slowly. A very fine surface can be achieved using putty lime or quicklime provided sleving is careful & thorough and there are several thin applications. This good quality limewash will develop a strong finish and will not brush off on domes etc.

1. PREPARATION : The surface to be limewashed should be brushed or washed free of any loose particles, dust, dirt, lichen etc. if there is much mould grown, the surface may be treated with fungicide. Any deep holes should be pointed in advance with a lime mortar.

2. DAMPING DOWN : This is very important for a good finish. Taking an area of about 4 sq. yards at a tune spray the wall surface with water so that the water in the limewash will not be sucked out immediately it is applied. Old limewash, cob, lime plaster etc. will need more damping down than hard stones.

3. APPLYING THE LIMEWASH. FIRST COAT : Brush the limewash onto the dampened area, working it well into any cracks & joints, but not allowing it to build up too thickly at any point a it will craze on drying at. The limewash will be transparent an application, so care is needed for even coverage. Move to the next area, damping as you go.

4. SUBSEQUENT COATS : Allow the previous coat to dry out completely preferably overnight. Lightly damp down the previous coat before applying the next. three coats at least should be applied in all; more on new external surfaces. After the initial drying out, limewash will continue to harden & strengthen for several weeks.

Sources of Materials

Quicklime and prepared putty lime

See SPAB Information Sheet 9: An Introduction to Building Limes. Quicklime-ask for high calcium lime suitable for limewashing. Prepared putty lime-ask for a high quality pure putty lime.

Bag lime Hydrated lime. This is stocked at nearly all builders' merchants under trade names such as "Limbux" and "Hydralime".

Pigments
Ashfield Traditional, Wetherden Rd, Great Ashfield, Bury St. Edmunds, Suffolk (0135 940396).
Brodie & middleton, 68 Drury Lane, London WC2 (0171-836 3289). H.J. Chard & sibs, Feeder Road, Bristol BS2 OJT(0117 9777681). Cornelissen & Sons, 105 Russell St. London WC1 (0171-636 1045). Fiddes & Sons. Brindley Rd, Cardiff (01222 340323). Foxell & Sons, 57 farringdon Rd, London ECI (0171-405 2487). Hirst Conservation Materials Ltd, Laughton, Sleaford, Lincs (0152 97 517). W. S. Jenkins & Co, Jeco Works, Tariff Rd, Tottenham, London N17 OEN (0181-808 2336).

John T. Keep & Sons, Theobalds Rd, London WCI (0171-242 0313). Kent Blaxhill, see tallow. Liberon Waxes, Mountfield Industrial Estate, Learoyd Rd, New Romney, Kent TN28 8XU (01679 67555).

Nardoni, 46 Lambourne Close, London W3 (0171-352 8626) E. Parsons & Sons Ltd, Blackfriars Rd. Nailsea, Bristol BS19 2DJ (01275 854991).

M. W. Partridge & Co, 60 High St, Hadleigh, Suffolk (01473 822333).

Potmolen Paint, 27 Woodcock Industrial Estate, Warminister, Wiltshire BA12 9DX (01985 213960).

Rose of Jericho at St. Blaise Ltd. Westhill Barn, Evershot, Dorchester DT2 OLD (19535 83662).

Pigments for colouring mortar are available from various builders' merchants. Raddle is available from agricultural suppliers.

Raw Linseed Oil
Any builders' merchants or paints shop.

Tallow
Ask for good quality tallow. Available from some builders' or plumbers' merchants (it may have to be ordered). Animal by-products firms (found in Yellow Pages) usually sell it in large quantities but can sometimes be persuaded to sell it in small amounts (telephone first). Also from.

Kent Blaxhill, 129-139 Layer Road, Colchester, Essex (01206 575171). M.W. Partridge & Co. 60 High St, Hadleigh, Suffolk (01473 822333). Potmolen Paint, see pigments. Seven Valley Stone, Rockridge Farm, Mill Lane, Strencham (01684 297060).

For suppliers in a particular area contact the UK Renderers Association (0181-390 2022).

Also try local ironmongers and slaughterhouses.

The Society for the Protection of Ancient Buildings
37 Spital Square, London E1 6DY
Telephone 0171-377 1644

Scaffolding and temporary works

for historic buildings

ENGLISH HERITAGE

Introduction

Scaffolding and temporary works are a fundamental necessity of any building project and when they are erected in or around an historic buildings it is vital that they do not cause damage.

The basics of scaffolding and temporary works in historic environments are not greatly different from the basics of scaffolding and temporary works to any existing building. However this leaflet attempts to highlight some important points which need special attention if damage to historic fabric is to be avoided.

In the non-historic situation damage caused by improperly erected scaffolding and temporary works, while being tiresome and causing unnecessary expenditure, can often be repaired without serious detriment to the building. Where historic fabric is concerned any damage is permanent; significant detail may be lost or an important facade scarred for ever.

All badly erected scaffolding and temporary works, whether to an historically important building or not, has the potential to allow the collapse of either the scaffolding itself or of the building, with disastrous and possibly fatal consequences. Experience indicates that when things go wrong it is usually owing to lack of attention to seemingly minor details.

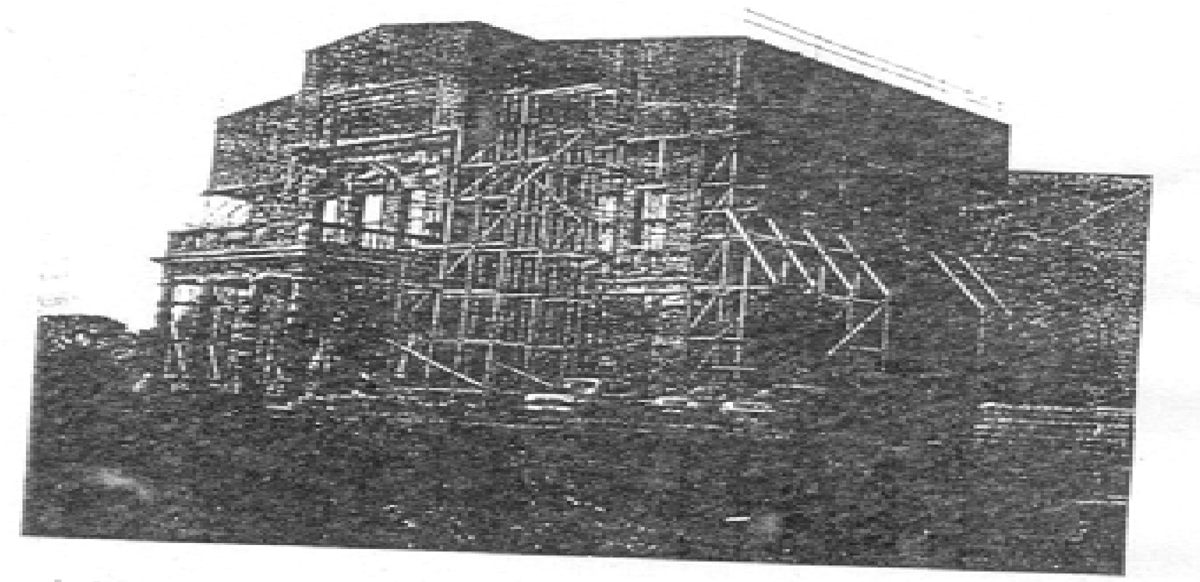
Scaffolding and temporary works must be capable of being constructed without the need for major intervention into historic fabric.

Access scaffolds

'Independent tied' scaffolds will normally be provided to gain access to historic building facades for painting, maintenance, or other work. They consist of two rows of standards (the vertical supports) connected by ledgers and transoms (the horizontal elements). They are termed 'independent' because this type of scaffold derives no vertical support from the building and 'tied' because they must be tied to the building for horizontal stability. Because of the need to avoid damage tying to the facade of historic building can present difficult problems. Longitudinal bracing must be used.

Shoring or support scaffolding

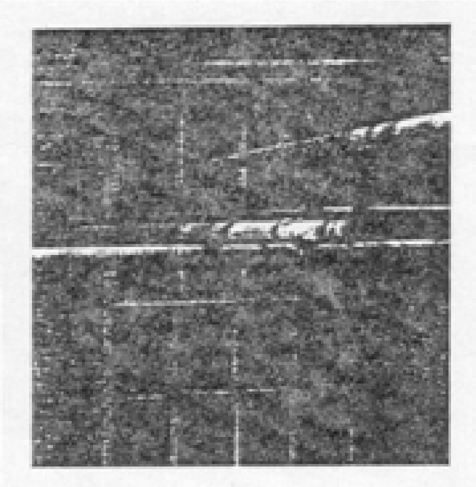
These are temporary works erected either because there is a danger of collapse or because it is necessary to remove some vital supporting member for because it is necessary to remove for renewal or alteration. Obviously the loads to be carried by shoring can be very great and failure can be disastrous causing major damage to historic fabric. Neither access scaffolding nor support scaffolding should be expected to carry out the function of the other unless it has been specifically designed so to do.



Scaffolding as complex as this must be properly designed

Responsibility

The failure of a single telescopic prop supporting a major element of a building under repair could have serious consequences. Therefore, as the dangers do not necessarily relate to the size of the project, the architect or engineer should examine the contractors proposals for all scaffolding and shoring. It must be ensured that schemes are erected so as to conform to those proposals. Care must be exercised to ensure that the contractors responsibility for temporary works is eroded as little as possible. All elements of the permanent works are covered by specification clauses that are often extensive. The same situation is rarely true of scaffolding and temporary works,



Opening the window would have avoided smashing old Glass.

the correct construction of which is equally important. As damage to historic fabric is permanent and must be avoided at all costs, all contract documentation for works to historic buildings scaffolding and temporary works.

Statutory inspections

It is a statutory requirement that all working scaffolds are inspected weekly by a suitable qualified person and that the results of these inspections are recorded in the scaffold register.

Necessary features and common problems

The following are some of the features that can make scaffolding dangerous, unsuitable for its purpose or damaging to historic fabric.

Foundations

The soil should be well rammed to ensure that there are no cavities and timber sole plates at least 230mm x 40mm should be used. Where the ground is not firm or there the length of time that the scaffolding is to remain erected exceeds six months, railway sleepers or similar sized timbers are more suitable. Foundations should always be level and should never be undermined. The foundation and the standard or prop set on it should be concentric to avoid inducing bending moments or eccentric forces. Typical faults include rotten or missing sole plates, foundations dangerously out of level, eccentric or undermined props, and scaffold standards. Piles of bricks and other unsuitable foundations must not be used. Historic buildings often have basements that are outside the periphery of the ground floor and may well be incapable of supporting scaffolding. Sometimes there are below ground water storage tanks that may not be capable of supporting a great weight. If excavations are required to provide proper foundations for scaffolding or temporary works there may be a need to provide archaeological supervision. The foundations for access scaffolding or for a shoring scaffold may not always be at ground level. Sometimes it is necessary to erect such structures on roofs or floors, for example on the aisle roof of a church to gain access to the clerestory wall. In these instances it is importing structure can safely bear the weight and that floor or roof finishes are not damaged.

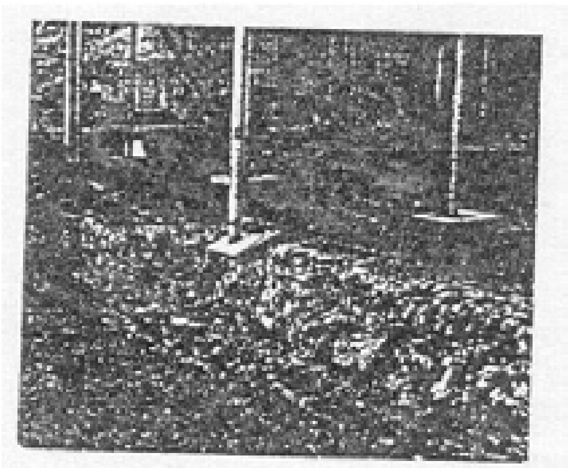
Vertical members

Our of plumb vertical members produce eccentricity of loading within individual members and horizontal forces in the structure as a whole. As historic buildings often have overhanging cornices and other projections correct setting out of the bases of standards needs to be considered in the light of that is directly overhead. Steel baseplates should always be used. Joints in standards should be staggered, that is, joints in adjacent standards should not occur in the same lift.

Ledgers and transoms

These components should always be horizontal. Ledgers should be clamped to the standards with right-angle couplets. Joints in ledgers should be staggered and made with

All scaffolding must be properly founded



sleeve couplers. Transoms should be fixed to ledgers with right-angle couplers or, if not adjacent to a standard, with putlog clips and be at not more than 1.2m centres where required to support boarding. In each bay, one transom should have plastic caps to avoid damage to historic facades. (See also below).

Ties

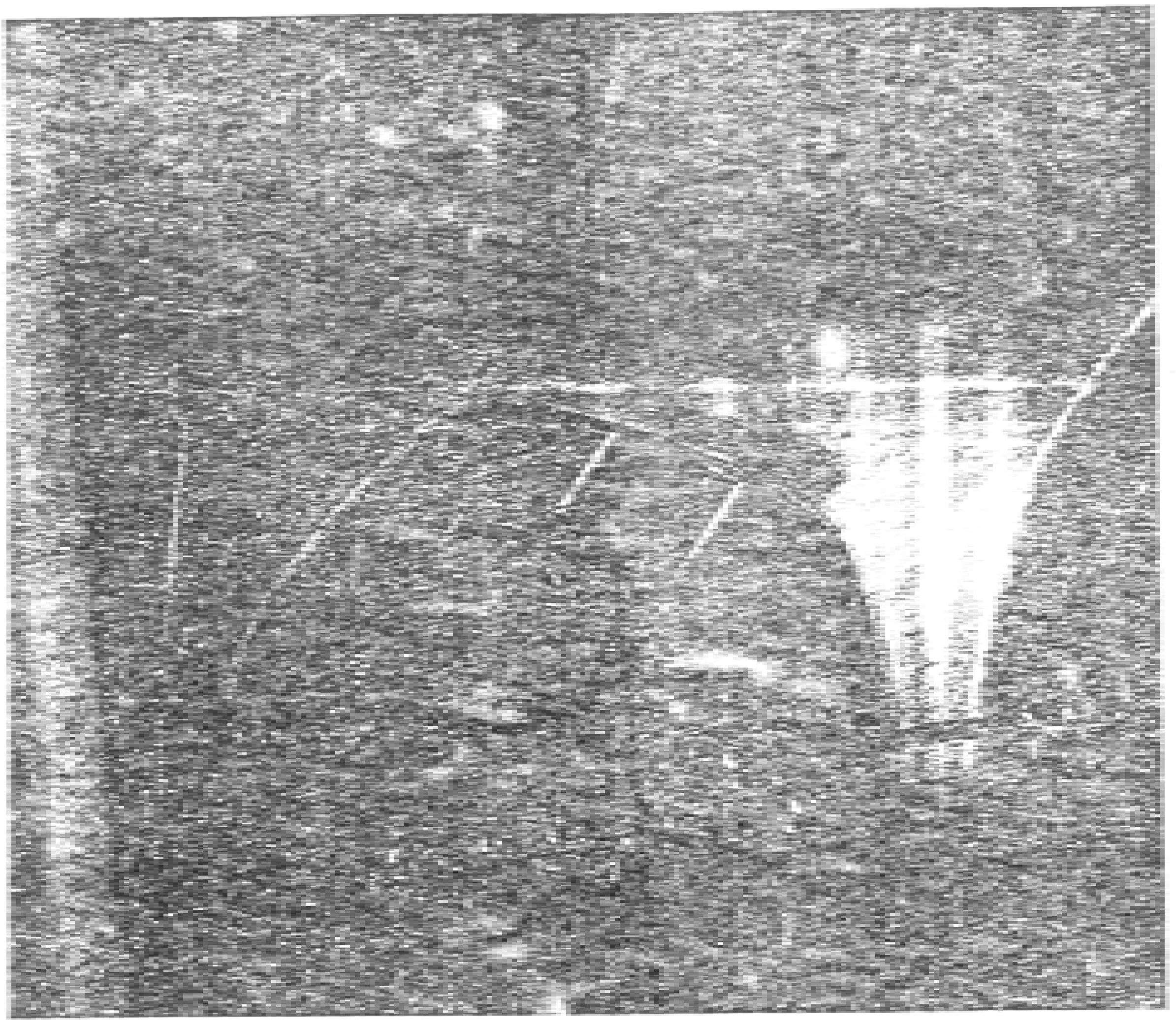
Badly fixed, incorrectly positioned, and an insufficient number of ties are frequent problems. Any tie taken out to enable work to proceed must be replaced as soon as possible. Through ties (which `hook' back to the inside face of the wall) must have protective coverings where they touch the inside face of the wall, but such ties may not be suitable where there is panelling to the inside face.

Through ties are simple to use with sash windows. The sash can be raised to allow the tube to pass through, the resulting gap sealed temporarily with plastic sheeting or hardboard, and the sashes screwed to each other to prevent unauthorised entry. Casement windows are more difficult. If they carry leaded lights it may be possible to remove one small pane but casements with a single glazed sheet may need to be taken off their hinges and stored safely. Regrettably, some scaffolders just smash a window to get their fixings. This is particularly likely in a derelict building.

Revel ties (which use screw jacks to grip against the revels of a window) must also be given good protection to ensure that they do not damage the building facade. Sheeted scaffolds will need extra ties.

Fixings to masonry

Where fixings are made to stone or brickwork it must is adequate for this purpose. Such a fixing to a facade could dislodge a stone or an area of brick, thus endangering the safety of the scaffold. All fixings made to the wall of an historic structure must be of stainless steel for two reasons: firstly because ordinary mild steel fixings will corrode and cause rust stains, and



A well designed temporary support

also possibly split masonry; and secondly because stainless steel fixings, which will not corrode, can be reused.

Bracing

Ledger bracing at right angles to the building should be fixed to alternate pairs of standards. Facade bracing should be to the full height, at an angle of 45 degrees, and at not more than 30m centres. Zig-zag bracing may be used for facade bracing. may be used for facade bracing. Joints in bracing should only be made with sleeve couplers, never with expanding joint pints. Bracing connections should be made within 300mm of standard ledger/transom junctions. Bracing should always finish at ground level or at some adequately strong point on the permanent work as bracing that finishes one or two lifts above ground applies horizontal forces to the scaffolding that cannot be satisfactorily dissipated. Likewise, bracing should always go to the very top of the scaffolding structure.

Decking

Boards should always be fitted with a hoop iron at each end. Decayed, warped. or split boards must never been used. Boards that have been exposed for a long time and have become slippery or damaged should be discarded. Boards should oversail their last support by at least 50mm. Boards oversailing more than 150mm from the transom on which they sit are in danger of slipping off. Precautions should be taken to hold boards down in high winds. Excessive loading on platforms should be avoided unless the scaffolding has been specifically designed to carry heavy loads.

Guard rails, toe boards, and ladders

Guard rails should be between 914mm and 1143mm above the platform and toe boards must not be less than 150mm high. Ladders must be sound, securely fixed, and set at an angle of 4:1. To prevent unauthorised access by vandals or children, lockable ladder boards should be use when the site is unattended. Alternatively the bottom ladder should be removed. Brick guards are required where there is risk of tools or materials falling from scaffolding.

Scaffolding to building interfaces

Scaffolding, however well constructed, is always likely to move slightly and a tube end rubbing on a wall face can easily cause permanent scarring. All tube ends that either touch a wall or are within 25mm of it should have plastic end caps. All other points of contact or near contact between scaffolding and historic buildings should be protected in some way All standards should sit on timber sole plates to spread the load and floors beneath should be protected with polythene sheet, old carpet, or similar materials to prevent damage.

Sheeting

Sheeting provided for the protection of the building and/or workforce must be strong enough to avoid tearing in high winds, must not flap excessively and annoy neighbours, and, very importantly, must be fireproof. Rapid spread of fire across a sheeted scaffold is a risk which must be avoided.

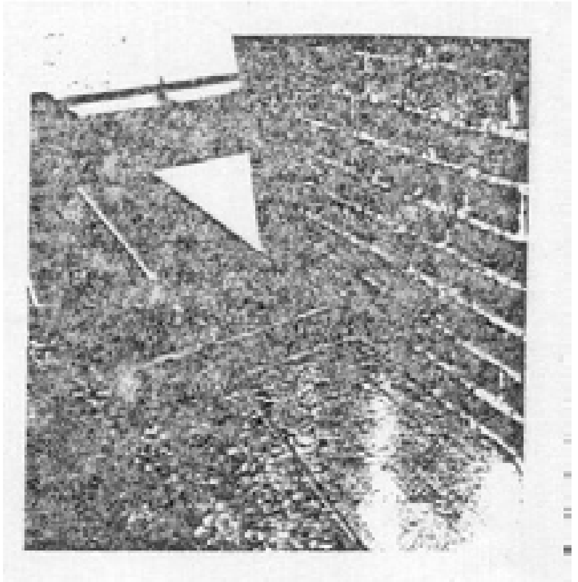
Shoring
Shoring must be designed by a competent person and account must be taken of wind, dead and superimposed loads, slenderness ratio of members, slenderness ratio of structure, bracing, foundations, fixing to permanent structure, permissible stresses of materials, safety factors, and any other relevant considerations. The main difficulty with shoring historic buildings is to ensure that temporary works do not cause damage in the process of being installed.

Telescopic props
These may need bracing if they are over 2m high or if they carry heavy loads. They must be plumb and must be properly founded. It is common to find a missing support pin being replaced by a short piece of reinforcing bar or something even less satisfactory, such as a big nail. Only the manufactures high tensile steel pin should be used.

Temporary roofs and temporary buildings
Such structures are often erected to protect historic buildings after a fire or other disaster or during roof repairs. In relation to their area or volume they are, by nature,light structures. As a consequence their need for lateral stability and resistance to wind uplift is a major, but often ignored, requirement. It is usually advisable to seek the help of a structural engineer in the erection of such structures. The contractor should always be required to provide a drawing of his proposals and, in any but the smallest of cases, supporting calculations.

Earthing
All scaffolding structures that are at risk from lightning strikes should be properly earthed.

Access to the building
Historic buildings often have important interiors and these must be well protected. Carrying a 7m length of steel scaffold tube into a building is not easy and major damage can be caused by a scaffolder inadvertently hitting a door frame or a



panelled wall with the end of a tube. It may be wise to provide stout protection to vulnerable surfaces.

Workforce
Efforts should be made to ensure that the workforce is aware of the value of the historic fabric. It must be ensured, particularly in the early stages of a contract, that proper attention is paid to the details discussed above. Scaffolders may not always bother to use plastic caps in the necessary locations or when installing through ties they may simply smash the glass not understanding that old glass may be important. Ensuring that supervisors are aware of such details and close supervision is vital.

Conclusion
Scaffolding and temporary works are not always given the consideration that they deserve. Consequently there is risk of damage to the historic fabric of a building either in relatively minor ways, such as scarring of surface finishes, or in more serious ways, such as partial collapse. There is the additional risk of injury or death to members of the workforce or to passers-by.

Documentation, both that produced by architect or engineer and that produced by the contractor, needs to be commensurate with the scale of the job, bearing in mind that failure of even a small element can cause serious problems. Even if only a single telescopic prop is proposed it is important that some proper estimate of the weight to be carried is made and reference made to literature to ensure that the proposed prop can carry the weight safely. Architects and engineers involved in historic buildings work (or any other building work for that matter) should have a clear understanding of the requirements of scaffolding and temporary works and be aware of the consequences if something goes wrong. The safety and success of scaffolding and temporary works in the historic building field relies heavily on two things; forethought and attention to detail. With an historic building there will be no second chance.

Bibliography and further reading
Basic scaffolding check guide,Building Employers Confederation Brand, Ronald E,1975 Falsework and access scaffolds in tubular steel,Maidenhead
British Standards Institute, 1981
BS 2482 Specification for timber scaffold boards
British Standards Institute, 1982 BS 5975, Code of practice for falsework
British Standards Institute, 1982 BS 4074 Specification for metal props and struts
British Standards Institute, 1990,1991,1994, BS 1139 Metal Scaffolding
Part 1, Specification for tubes for use in scaffolding
Part 2, Specification for couplers and fittings for use in tubular scaffolding
Part 3, Specification for prefabricated access and working towers
British Standards Institute, 1993 BS 5973, Code of practice for Access and working scaffolds and special scaffold structures in steel
Doughty, 1986 Scaffolding,London
GS42,1987 Tower scaffolds Health and Safety Executive Guidance notes
GS15, 1988 General access scaffolds, Health and Safety Executive Guidance notes
Wiltshire, CJ, 1981 Access scaffolding published by Thomas Telford Ltd

THE EFFECTS OF ROAD TRAFFIC VIBRATION ON HISTORIC BUILDINGS.

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Cheif Engineer.
Conservation Engineering Branch.

VIBRATIONS AND BUILDINGS.

The effects of vibration on buildings and their occupants is a very technical and complex subject. Vibrations can be caused by passing road traffic, by railways, both surface and underground, by users of the building and by numerous other sources including blasting and building works, particularly piling. When heavy goods vehicles pass, windows vibrate, ornaments rattle and vibrations may be felt by the occupants. As well as being technically complex it is a very emotive subject.

The response to vibrations by the inhabitants of the buildings may range from mild annoyance, through to grave alarm, probably via sleepless, but it must be remembered that the human body is a very sensitive instrument and it will "register" the most minute sensations. Unlike sophisticated scientific equipment the human body sometimes has difficulty in sorting out the effects of vibration from those caused merely by noise. The human mind and body is affected by thoughts and opinions whereas scientific equipment takes measurements without such psychological distractions.

VIBRATIONS FROM ROAD TRAFFIC.

A passing lorry generating a lot of noise will draw attention to itself and the observer may therefore be more susceptible to a level of vibration which, without the accompanying sound, might pass unnoticed.

The conditions of the road surface near the building has a very significant effect on the levels of vibration; vehicles on a smooth road surface create much lower levels of vibration than do similar vehicles travelling at similar speeds on an uneven surface. Poor road surfaces with badly filled potholes or service trenches will generate vibrations particularly if the traffic is fast moving and/or heavy.

However BRE Digest 353 of july 1990 "Damage to structures from ground- borne vibration" states "Although vibrations induced in buildings by ground-borne excitation are often noticeable, there is little evidence that they produce even cosmetic damage (ie small cracks in plaster)".

Between 1986 and 1988 members of the Conservation Engineering Branch of English Heritage collaborated with the Transport and road Research Laboratory (TRLL) in the production of two reports: namely TRLL Research Reports Numbers 156 and 207. These both relate to the effects of vibration on historic buildings and were produced as a result of a number of investigations on historic buildings in varying conditions.

At all sites ground-borne road traffic vibration was the most significant source of building vibration however when the road surface is even, airborne vibrations dominated. Peak vibration levels were, as might be expected, greater on the upper floors and walls at the front of the building rather than at foundation level. Despite the relatively high vibration levels, crack movements measured on existing cracks were small being much lower than those observed for normal variations in the temperature and humidity.

Window pane vibrations were found to be relatively high but at one site (a church with only a narrow footpath between the wall face and the kerb) where stained glass windows exposed to high levels of airborne road traffic vibration were compared to similar windows at much greater distances from the road, no differences in their conditions which could be attributed to traffic vibration were found.

The English Heritage Conservation Engineering Branch input to the investigation which resulted in the publication of these reports was to inspect the buildings, to report on the cracking and other signs of distress and to assess the possible causes. Some fractures in the buildings were clearly attributable to settlement, some to thermal and climatic movements and others due to decay or overload. Most were patently nothing to do with the effects of passing road traffic. One village corner shop had suffered major damage when a large van suddenly appeared in the area but this had little to do with vibration which it caused!

Cosmetic damage, cracking of plaster for example, might be attributable to traffic vibration but even this is a very difficult question to resolve.

To draw "scientific" and quantitative conclusions from the work done in collaboration with TRLL was difficult but it was our opinion that vibrations from road traffic did not cause any problems to the structure of a fairly robust historic building, but that they might possibly cause problems to fragile buildings, probably exacerbating existing cosmetic damage. However it was also our view that these fragile buildings were in such a poor condition that they demanded repair even without the effects of road traffic vibration being taken into account.

In our opinion, the traffic vibration on a building would become intolerable to the occupants long before structural damage was caused.

Clearly road traffic vibrations cause major problems to those people who have the misfortune to live in properties affected by large volumes of heavy traffic. It would be interesting to hear of any cases where road traffic vibration is thought to be causing problems to the structure of buildings rather that just being tiresome for the occupants.

Other sources of vibration such as nearby piling or blasting may well create vibrations of a much more serious level, will have a greater potential for damage and therefore must be treated accordingly.

ENGLISH HERITAGE

MONITORING OF CRACKS IN STRUCTURES

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Chief Engineer.
Conservation Engineering Branch.

INTRODUCTION

This note discusses the reasons for carrying out accurate structural monitoring and describes the various methods used by the engineers of the Conservation Engineering of English Heritage to follow crack movements in structures. Methods of showing results in an easy-to- understand form are discussed.

WHY MONITOR?

Movements in buildings can make themselves apparent in a number of ways. The most obvious sign. and usually the earliest, is cracking. Ground movements can also result in differential settlement, tilting and other movements within the superstructure.

Before remedial works can be commenced a careful survey of cracks and other damage should be made. To learn more about the magnitude and direction of the movements, to assist in the correct diagnosis of the problem and to help in the production of effective and sympathetic solutions to the problem, it is useful,often vital, to monitor accurately. These surveys and monitoring procedures can often avoid costly but incorrect solutions.

Monitoring is also the most effective, indeed often the only way of proving satisfactorily and without doubt that apparently distressed structures are in fact stable and therefore no major remedial works need be undertaken.

It is often wise to establish a system to monitor movements and to keep a close watch for some length of time, possibly over a period of years.

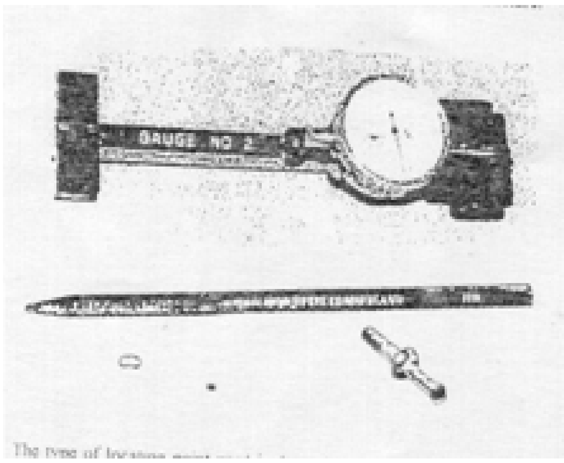
WHAT TECHNIQUES ARE AVAILABLE?

The monitoring technique discussed can be carried out using equipment readily from market sources but as it is rather expensive this note therefore also describes a cheaper method of monitoring which, whilst not giving such a high degree of accuracy, is much more reasonable in cost and can give satisfactory results if used with care.

Sophisticated commercial electronic equipment is not used by English Heritage and is therefore not discussed. Costs of this equipment are usually high and a considerable amount of hardware often need to each specific case. Cheaper alternatives can be found if the user has a modicum of electronics experience. A "home grown" electronic monitoring system capable better than 0.1mm accuracy can be built for a few pounds with each point costing around 15 to set up. This type of monitoring is useful where access is a problem. However for most purpose the mechanical methods discussed are more than sufficient.

IS THAT CRACK GETTING WIDER?

It seems to be a basic fact of life that cracks appear to get wider the longer they are studied. This may be due to the crack getting dirtier and therefore more noticeable, it may be psychological or it may actually be a fact that crack is widening due to movement. The only sure way of discovering the true nature and speed of the apparent widening is to accurately monitor the fracture.



Movements of cracks in structures can be monitored using a demountable strain gauge (the Demec) together with suitable locating points fitted to the structure adjacent and cracks.

The 200mm long gauge is shown but the manufacturers produce a wide range of differing lengths.

The locating points are 6mm diameter stainless steel discs with a small hole drilled at the centre for accurate positioning of the conical of the gauge. These steel discs can be fixed to the structure with either sealing wax or glue. An alternative method of fixing locating points is to drill 5mm diameter holes 24mm deep into the structure and to insert into this a hammer-in fixing consisting of a flanged expansion sleeve and a nail. The nail is driven flush with the surface and drilled with a BSI centre drill in order to receive the conical gauge point.

For monitoring movement in timber structures brass screws can be inserted at suitable locations. The head of the screw can be drilled to receive the conical gauge point. Some cross head screws provide a good seating for the gauge but some allow the conical point to move around excessively.

The type of locating point used is dependent upon the material to which the fixing is being made, the degree of exposure to the weather and the location in relation to possible vandalism.

A soft wall material can make it difficult to stick the discs on and therefore the drilled in fixing is advisable but conversely it can be difficult to drill into a hard material and the sticking on of discs is easier and quite satisfactory. Drilling into mortar joints is to be avoided as the fixings will eventually work loose and the readings will become unreliable.

Movements of 0.025mm are easily traceable and with care more accuracy can be achieved. The only visible signs of this form of monitoring are three small discs at each monitoring point.

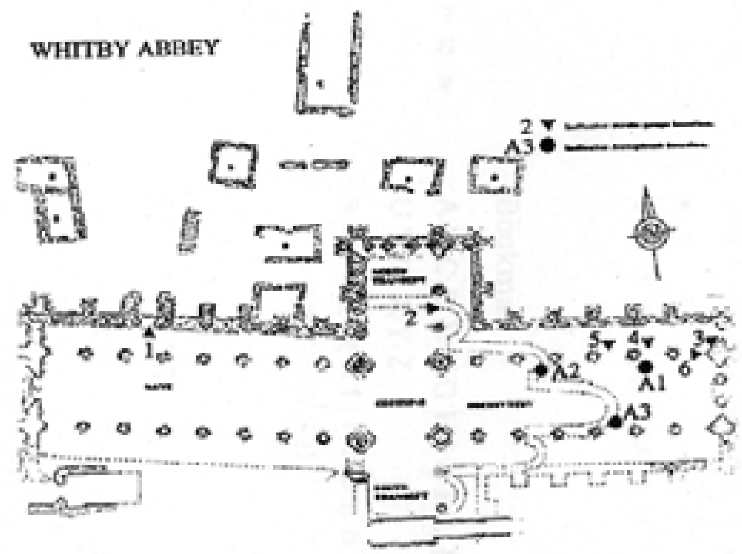
The Demec strain gauge, although easy to use and robust, is rather expensive occasional use (at about 600 in 1993). A cheaper alternative providing a lower but adequate accuracy is a good vernier gauge (which can be purchase from any suppliers of engineering tools) and can be used to measure accurately (to at least 0.1mm) between the shanks of brass screws set in plastic plugs around a crack in the pattern shown in Figure 3. Cheap verniers can be obtained from Do-it-yourself shops but for the sake of few pounds the better quality engineers' verniers are much more reliable. A good vernier usually incorporates a depth gauge which is a useful facility for monitoring fractures in comers of walls.

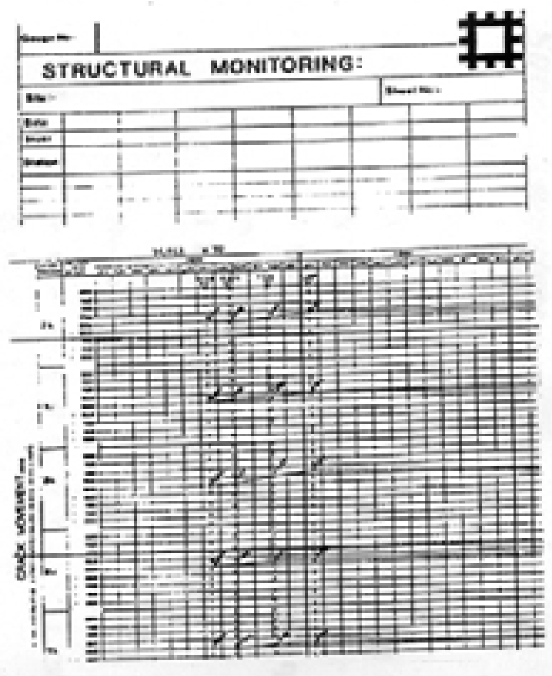
The use of glass plastic telltales cannot be recommended at all. The former are susceptible to breaking from frost or vandalism, and are difficult to fix adequately, often becoming detached at one end thus suggesting that by being still intact on movement has taken place. No record of progressive or climatic movement can be kept they are unsightly. the latter provides extremely low accuracy (+/-1mm) and so is of limited use.

On a "consumer guide" basis the best value for money is the vernier gauge and brass screw system although the Demec is to be recommended if a lot of accurate monitoring is foreseen.

RECORDING RESULTS

Experience has shown that it is vital to keep good neat records of monitoring results. This reduces the risk of forgetting to note the date (important when considering seasonal movements) or missing out some locations which are perhaps out of the way. A plan which indicates the location of the various monitoring points used in conjunction with a sheet of notes indicating precise location, for example. "Point 5 - on outside of clerestory window sill, west end" is essential. Such detailed recording is very much worth the time spent initially as a lot of time can be wasted searching for two small screws,"somewhere up the east wall (I think)", as often happens when monitoring is done infrequently. (Below left is a typical site plan.)





Also, of course, good records are invaluable when staff changes occur and also for people trying to check for movements in the future. All records should be kept, at least, in duplicate. Separate office copies and site copies are needed as the latter, particularly in bad weather conditions, can easily become illegible and vital information lost.

It is useful, especially when explaining movements to non-technical people, to have the results of monitoring shown in graphic form rather than in columns of unintelligible numbers. It is necessary to exaggerate movements times 10 or times 100 in order that patterns of movement can be seen and fitting movements to a time scale helps seasonal.

The example at Yarmouth Castle IOW, was undertaken as monitoring exercise in 1979 due to the then proposed harbour works within feet of the castle walls. A seasonal pattern of movement of movement of existing fractures was noted on the chart above and its several companions. When the periods of harbour works were marked on the time scale, movements due to these works in addition to those due to seasonal variations, became clearly apparent.

IN CONCLUSION

To maintain a thorough check on any structural or ground movements, it is often necessary to employ an accurate crack monitoring method and possibly other techniques such as monitoring for level and plumb. It is often necessary to consider the results obtained over a period of several months in the light of experience gained from work of a similar nature and to take account of matters such as temperature, rainfall, soil conditions, state of structure, etc.

Too much emphasis cannot be laid upon the importance of good sound monitoring points which will not become dislodged or corroded. The importance of detailed orderly and duplicated results and easy-to- understand charts is clearly shown by the experience of English Heritage engineers.

A FINAL COMMENT

Whilst this sheet gives an outline of methods it is not intended to give a finite answer for the method of crack monitoring, other methods are available and will continue to be developed. These alternatives may according to individual conditions provide significant benefits. Whilst English Heritage are aware of many of the alternatives any information on new methods will always be welcomed.

ENGLISH HERITAGE

CANTILEVER OR HANGING STONE STAIRS.

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INTRODUCTION.

Stairs of this type neither cantilever nor hang, neither do they gain any real support from the handrail but each step bears on the step below and relies on torsion at the point where it is built into the wall. These stairs have a long and distinguished history being illustrated in Palladio's book "Il Quattro Libri dell' Architectura" published in 1570. The first example built in this country was the Tulip Staircase in the Queen's House. Greenwich, by Inigo Jones in 1629-35

SOURCES OF PROBLEMS.

The main problem with this type of staircase is wear to the nosings of the treads and where this has already been repaired by the insertion of a replacement nosing, the staircase is very much at risk. Alterations, often the cutting of holes for the insertion of services, are very likely to threaten the stability of the staircase. Failure of supporting walls due to decay of any timber embedded in the wall or due to settlement allowing the wall to settle a little, will disturb the stairs. Sudden impact, such as might be caused by bumping a safe or heavy furniture down the stairs can be a cause of fracturing. Scaffolding should never be erected on this type of staircase even if it is supported from below as this puts high localised load on the staircase.

INVESTIGATION.

As with all problems with buildings unless there is proper and careful investigation there is unlikely to be the correct diagnosis and without the correct diagnosis the correct solution is unlikely to be found.

The investigation should begin with a thorough and close look for cracking paying particular attention to the stair/wall junction, the tread to tread junction and stair to landing junction. Excessive movement between treads should be looked for, some movement is quite common but an excessive gap allows the tread above to become a pure cantilever. Replacement nosings, a potential source of cracking must be looked for. If replacement nosings are found then a very careful search for cracking must be made. Such cracking will be found through the original tread at the end of the replacement nosing close to the supporting wall. Carpets must always be lifted and a good torch used

for proper inspection of the underside and dark corners. Landings should likewise be carefully inspected.
If the staircase has no sings of cracking, movement or replacement or replacement nosings then it almost certainly is satisfactory.

REPAIRS.

The introduction of a carpet is a good basic step to stop further wear to the nosings of the treads. If treads are worn badly and to a point where they are dangerous or unsightly it is quite feasible to rebuild the worn surface using a resin based mortar. If the result of this is unsightly (although it should be possible to achieve a satisfactory appearance) then the stair could be carpeted. As discussed above, on no account should the nosing be cut back to allow a replacement stone nosing to be inserted.

Any repair technique should take care not to disturb the staircase. Load path patterns should be kept as near original as possible.

Cracks can be repaired by resin injection possibly with the addition of thin stainless steel dowels drilled in.

If the step to step rebate is excessively wide, injection of resin into the gap can serve to restore the integrity of this joint and it may sometimes be necessary to tighten the embedment of the treads into wall in order to restrain torsional forces.

Replacing broken treads or parts of broken treads is difficult due to tight tolerances but can, with care, be done. The replacement step must be tightly embedded into the wall and be a good fit to its neighbours.

Putting stringers under a flight of stairs is very much a last resort as the result can rarely be anything bout most unsightly. It may however be the only alternative to a new staircase The whole structure must remain rigid. Stone cantilever staircases are one of the few parts of traditional buildings which do not benefit from being flexible.

LOAD TESTING

Load testing can be a means of justifying the unjustifiable. It must be done with great care and under proper supervision.

CONCLUSION.

Much like conservation in general, these staircases are best left well alone if at all possible.

ENGLISH HERITAGE

HOW TO ADAPT STRUCTURES AND (MORE IMPORTANTLY) HOW TO AVOID ADAPTING STRUCTURES.

Ian Hume.
Head of Conservation Engineering Branch.

How to avoid adapting structures.

If an old building is to be given a new lease of life much may need to be done to make it satisfactory for its new task and to make it acceptable to its inhabitants. However, it is not always necessary to gut the building or indeed to make any major changes to enable it to have long and useful future. It must be remembered that it is not only that which can be seen which is considered an important part of the historic fabric; it is the hidden structure as well.

How can adaptations to structures which are to be given a new life be avoided?

- **Select the right professionals.** It is vital to the conservation of an historic building which is to have new life breathed into is that those who deal with it are sympathetic to conservation and have a good understanding of old buildings.

- **A Detailed Inspection.** How does the building work? How can it be made to work in the future? Where are the problems? How can the problems be overcome? Do the problems really need to be overcome?

Remember that "opening up" for inspection may need listed building consent.

- **Consider past life.** What has the building has to carry in its previous incarnation? What alterations have been made in the post? How well has it survived its previous use and the changes to which it has been subjected.

- **New floor loadings.** Consider the new loadings that the building will have to carry very carefully. Do not assume the worst case unless it is a real possibility. Is a room designated as a library a library with a large number free standing book stacks or is it merely a reading room with a few bookshelves fixed to the wall? There is a significant difference in the load which the British Standard indicates should be used when assessing the building.

The English Heritage leaflet "Office floor loading in historic buildings" expands this topic

- Do not make unnecessary changes. Do not alter load paths. Try not to take out any more structure than is really necessary. Avoid adding an extra storey.

- Structural monitoring and load testing. Fractures and distortions may not always be the ogres that they appear. Structural monitoring can help allay fears of continuing movement and load testing can prove that the incalculable is satisfactory.

- Select the right contractor. The wrong contractor can wreck the best laid plans and cause unnecessary damage to historic fabric.

How to adapt structures.

Sometimes it will be necessary to adapt a structure in some way to enable it to carry put its new role safely, satisfactorily and for the benefit of its inhabitants and users. Alterations should be kept to the minimum and as little as possible of the historic fabric removed.

-Improve the factor of safety. If a building is still standing it must have a certain factor of safety. If there is concern that this factor is small then small improvements to the structure can often increase the factor of safety enormously.

-Make the most of all elements of the building. Floors provide tremendous horizontal stiffness to a building, make good use of this. Roof structures may only need additional bracing rather than wholesale renewal. It is really cheaper to rip out the old to make way for the new?

-Strengthening measures. Strengthening measures should ideally be additional to the existing structure, not replacement of existing members.

-New members. New structure should be in sympathy with the historic fabric wherever possible, new members should follow the pattern of the originals to avoid changing load paths and to keep some sense of the original design.

-Major changes. Major changes to historic buildings should always be avoided. Large scale demolitions invariably disturb existing fabric and can result in substantial and expensive temporary measures being needed.

Additional floors will result in increased load on the fabric of the building, on its foundations and on the subsoil on which it sits. New structure may well be needed to support this extra new weight and it is always difficult to successfully integrate new structure into an existing building sympathetically.

Major changes also invariably lead to changes in load paths which, as suggested above, should be avoided.

ENGLISH HERITAGE

STRUCTURAL ENGINEERING FOR CONSERVATION.

Ian Hume DIC,Dipl Cons AA,CEng,MIStructE.
Chief Engineer.
Conservation Engineering Branch.

WHAT IS ENGLISH HERITAGE?

English Heritage is the main national body responsible for the conservation of the built heritage in England. It secures preservation of the country's architectural and archaeological heritage and promotes the public's enjoyment and knowledge of the built heritage of England.It manages over three hundred and fifty historic sites including many monastic remains and the remains of England's past fortifications as well as many prehistoric and Roman sites together with a number of historic houses,barns,mills and other structures such as the Iron Bridge in Shropshire.

English Heritage advises the government on matters of conservation,listing and scheduling and it is the major source of public funds for granting aid to historic buildings,ancient monuments,historic towns and rescue archaeology.

CONSERVATION PHILOSOPHY

When a building or structure is listed everything within the curtilage (usually the boundary) of that building is deemed to be listed. A building is not usually listed for one particular feature but is listed as a whole, all parts being considered important.

Whilst it is easy to understand that the exterior appearance of a building is of historic and aesthetic importance it is often not appreciated that the hidden structure is also considered to be important. Floor joists and beams for example, cannot be destroyed without listed building consent being given.

The best alternative from the conservationist viewpoint is the original building in its original location and in its original condition serving its original purpose. Many buildings fall into this category but many more change their use and their condition demands repairs; listed building building consent may well be needed for such repairs.

Conservation engineers have to temper their philosophy of conserving as found and of minimum intervention with their responsibility for the safety and structural integrity of the building and of its users.

CONSERVATION ENGINEERING TECHNIQUES.

The first test of suitability for any technique proposed for the consolidation of historic fabric is "it tried and tested"? Tried and tested techniques are preferable to new methods which may have an unforeseen detrimental effect on the building at some time in the future. A further test for suitability is whether is whether or not the technique is reversible; can it be taken out at a later date without significant damage"?

Other questions regarding suitability include

-Are the repairs really required or will the building survive without them?
-Does the proposed work improve the overall structural stability of the building?
-What damage will be caused it these repairs are carried out? -Will the repairs be seen?
-It they are seen, are they to blend in with the existing fabric or are they to contrast whilst still being in harmony?
-Will future historians be able to date the repairs?
-if there is a need to mix materials, what effects might this have?

-Will the building lose its inherent flexibility which enables it to cope with climatic changes without distress ?
-Do the proposed methods meet the axioms "minimum intervention" and "conserve as found" ?

THE ART OF CONSERVATION ENGINEERING

Structural engineering for conservation is an art as well as a science. It takes little effort to design a major and intrusive scheme that improves the condition of the structure which is unobtrusive and sympathetic to the historic fabric but which ensures that it has a sound future.

Experience and expertise are also needed to decide whether a building which is distorted actually has a current problem or if the distortion is a result of movements which took place a long time ago and which are not likely to recur.

It takes experience and an understanding of traditional buildings to carry out sympathetic repairs to historic fabric, not just an ability with numbers.

It is not at all easy to decide to do nothing to the structure but very easy to advise demolition.

LOAD TESTING AND STRUCTURAL MONITORING

Load testing can be of great help in determining the structural adequacy of something which defies proof by calculation and it gives a deeper insight into the understanding of how old buildings work.

Structural monitoring is sometimes carried out to help in the diagnosis of problems but more often it is done to prove beyond doubt that fractured buildings showing signs of distress are in fact stable. Structural monitoring can be complex and expensive but a great deal of use can be made of straightforward and inexpensive techniques and it is these more simple methods which are underused but which have considerable potential.

THE INVOLVEMENT OF THE ENGINEER

It is important that sympathetically minded engineers becomes involved at a very early stage. The future of many listed buildings relies on the amount of damage caused by proposed works. All too often the layout of a listed building is replanned without a proper understanding of its construction and structural condition thus condemning it to unwarranted disfigurement.

CONCLUSION

It is in the area of the safety of the building that conservation engineers most often finds themselves in the centre of the argument. The owners and their engineers may consider that buildings are dangerous and should be demolished forthwith whilst the purist conservationist wishes to retain everything than can possibly be retained. However it is of no use whatever retaining a building or structure that is dangerous but very often a building is by no means as dangerous as it at first appears.

The philosophy of conservative repairs to buildings can be considered as being on a sliding scale of desirability.

1. do nothing
2. add extra members in similar material
3. add extra members in foreign materials
4. traditional repairs
5. insert new materials into the existing materials
6. replacing isolated members
7. replacing whole elements of the building
8. facadism
9. facsimile structures.

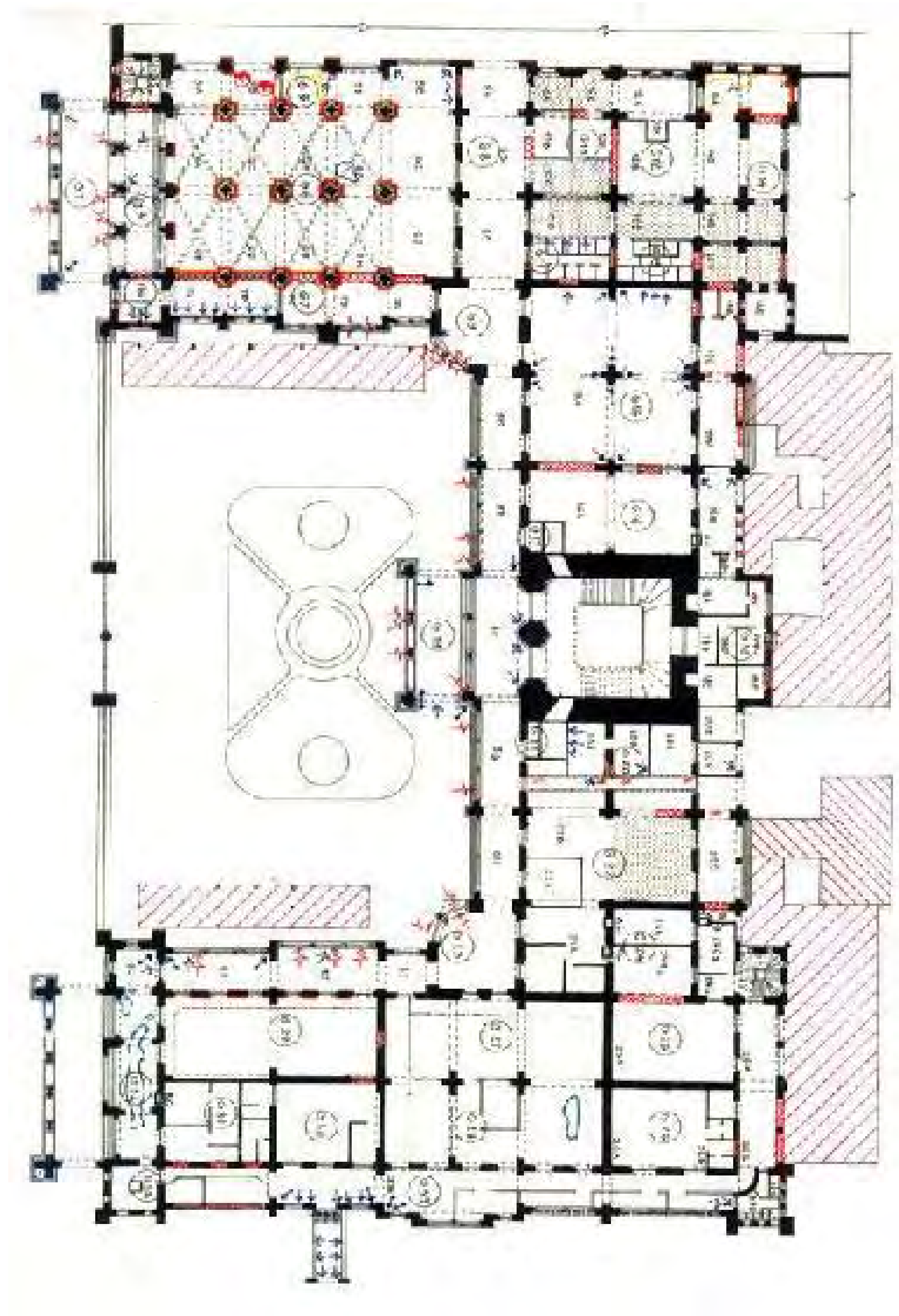
However, life is rarely simple and many cases will be a combination of two or more of these levels of desirability.

TRADITIONAL LIME KILN

USE OF TRADITIONAL MATERIALS & TRADIONAL LIME MORTAR TECHNOLOGY FOR AUTHENTICITY OF THE WORK

INVENTORY

SPACE	CURRENT USAGE	ELEMENT	MATERIAL DESCRIPTION	CONDITION	PRESENT CONDITIONS & DEFECTS	PRIORITY OF ACTION
G 1	ENTRANCE PORCH	FLOOR	Basalt stone paving	Bad	Uneven	L.L.
					2 gutters uncovered	L.L.
		CEILING	T. W. joists ceiling	OK	Leakage due to Plumbing at W corners	S.I.
		OPENINGS	Pointed stone arch	OK	Cracks at G1-a & G1-e	S.S.
		COLUMNS	Basalt stone twin columns	Bad	Cracks at G1-b & G1-d	S.S.
G 2	**Staircase BLOCK (Used as P.C.O.)**	**FLOOR**	Stone tiles	OK		
		CEILING	T.W Boarding	Good	Not accessible.	L.P.
		WALLS	Stone, plastered & painted. Dado of Minton tiles upto 1.5m ht.	OK	Dado - Incongruous.	L.L.
					sepage on the S wall	S.I.
		OPENINGS	Stone arch	Bad	I.A.- Arch covered with plywood box & Al grill.	L.L.
G 3	**ENTRANCE LOBBY**	**FLOOR**	Basalt stone flooring.	OK	Subsidence in G-3d	L.L.
		CEILING	Stone vaults		Staining in G3-a & G3-d	S.S.
					Holes made now filled in cement.	S.U.
					Seepage between G3-a & G3d vaults	S.I.
		WALLS	N,S,W &E wall- plastered and white washed above arches.	OK		
			W wall- plastered and white washed above arches.	OK	Paan stains.	S.S.
		OPENINGS	Stone arches	OK	N- I.A.- Arch infilled with acrylic sheets.	L.L.
					S- Arch infilled with brick work (G6f1)	L.L.
					E- I.A.- All openincgs shutters removed	L.L.
					& replaced with Al grills.	L.L.
					W- Externally-stained glass infilled with	
					T.W. panels. Rotten wooden door	S.I.

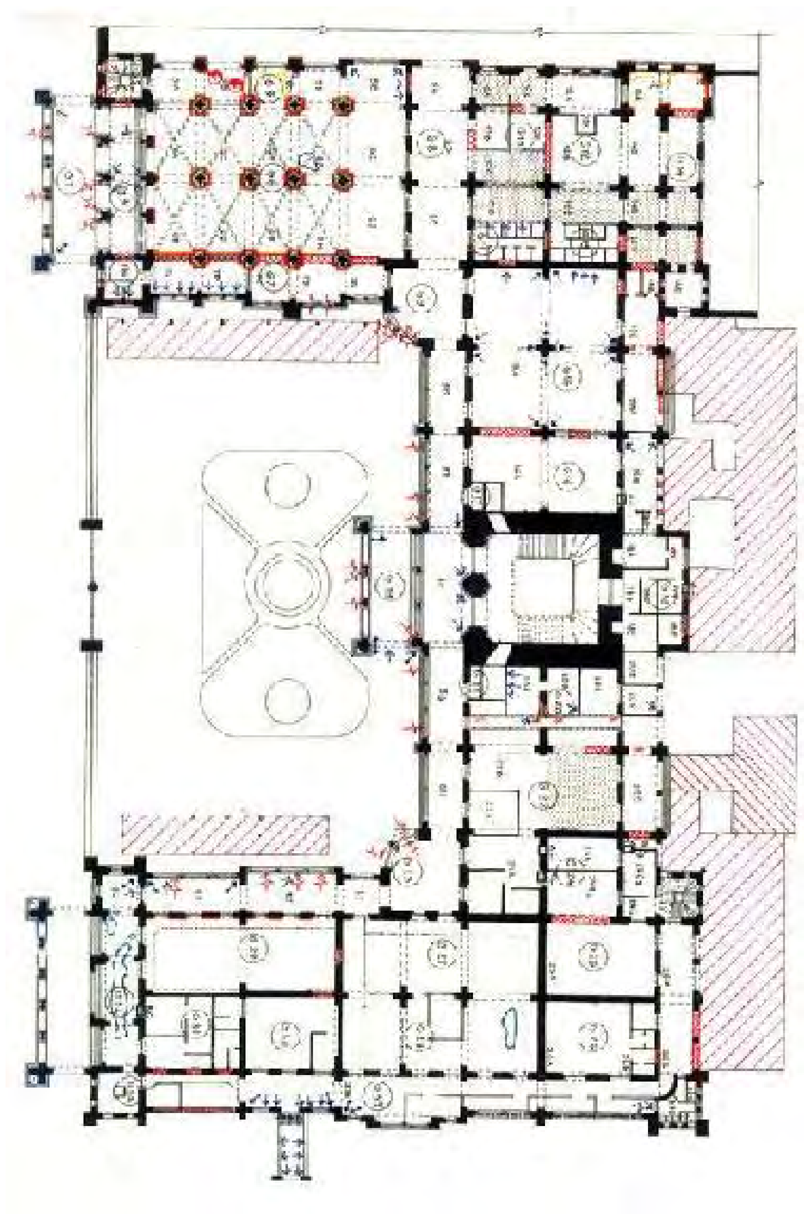


Legend	
	Long Term Duration
LL	Long Term Later
LP	Long Term Periodic

					frames at lower end.	S.I.
		COLUMNS	Basalt	OK	I.A.- Column bases cladded with kadapa	L.L.
	Entrance STEPS	**STEPS**	Kadappa treads & risers.	OK		

	Short Term Duration
SI	Short Term Immediate
SU	Short Term Urgent
SS	Short Term Soon

SPACE	CURRENT	ELEMENT	MATERIAL DESCRIPTION	CONDITION	PRESENT CONDITION & DEFECTS	PRIORITY
G 4	**TOILET**	**FLOOR**	Ceramic tiles	OK	Mezz flooring / gr. ceiling shows	
					seepage patches.	S.I.
		WALLS	All walls plastered and painted,	OK	N W corner - seepage	S.I.
		OPENINGS	Al frame, plywood doors.	OK	I A - S - window partly infilled	
					with unplastered brick work	L.L.
					IA- W- window partly filled with brick	S.U.
G 5	**SIDE**	**FLOOR**	Ceramic tiles	OK	Incongrous	L.L.
		CEILING	T.W. joists painted	OK	Distress - G5 - b.Boundary broken.	S.I.
		WALLS	N-Wall plastered & white	OK	No structural defects.Hoardings disfigure	L.L.
					Seepage on the W wall, NW corner and	S.I.
		OPENINGS	Stone arches	OK	N- Cables running across all arches	S.I.
					Paint dripped over the arches.	S.S.
					W- I.A.- Plywood panel partitions.	S.U.
G 6	**BOOKING**	**FLOOR**	Ceramic tiles	OK	I.A.-G6-d floor altered / patched	L.L.
		CEILING	Timber vaults	Good		
		OPENINGS	Stone arches	Bad	I.A.- S- Arches covered with white	S.S.
					I.A.-E- Arches covered with Al grill.	S.S.
		COLUMNS	Basalt stone.	OK	I.A.- Column base covered with kadapa.	S.U.
G 7	**TICKET**	**FLOOR**	Ceramic tiles	OK	I.A.	L.L.
		CEILING	False ceiling of Al. Frame &	Bad	Some perforated boards missing.	
			Mezz.on top of 2 entrance bays.	OK		
		WALLS	Stone walls, plastered & painted.	OK	Heavy seepage on top of S-wall	S.I.
					Buckling.	S.I.
		OPENINGS	Stone arch	Bad	Stained glass of the arch in bad condition.	S.I.



Legend	
	Long Term Duration
LL	Long Term Later
LP	Long Term Periodic
	Short Term Duration
SI	Short Term Immediate
SU	Short Term Urgent
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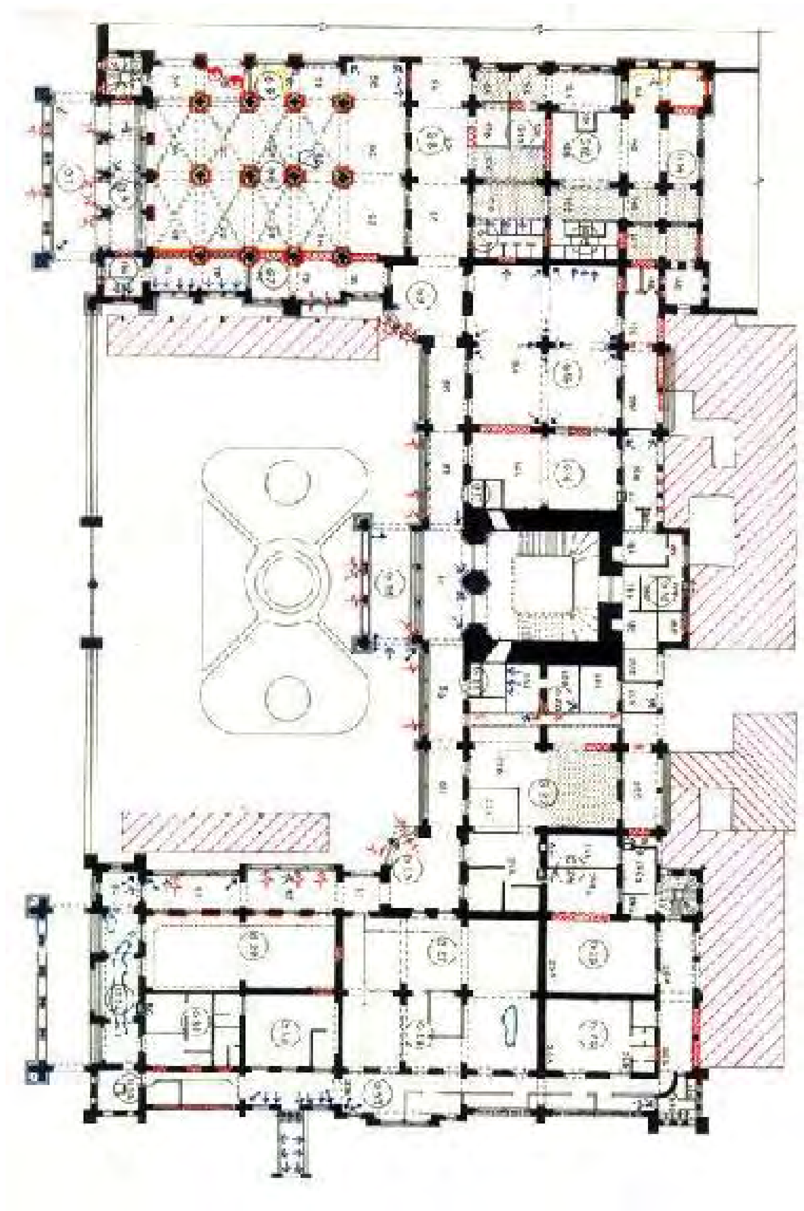
		OPENINGS	Stone arch	Bad	Stained glass of the arch in bad condition.	S.I.
			IA Window opening:Al.frame, tinted ss.	Bad	Stained glass broken.	S.I.

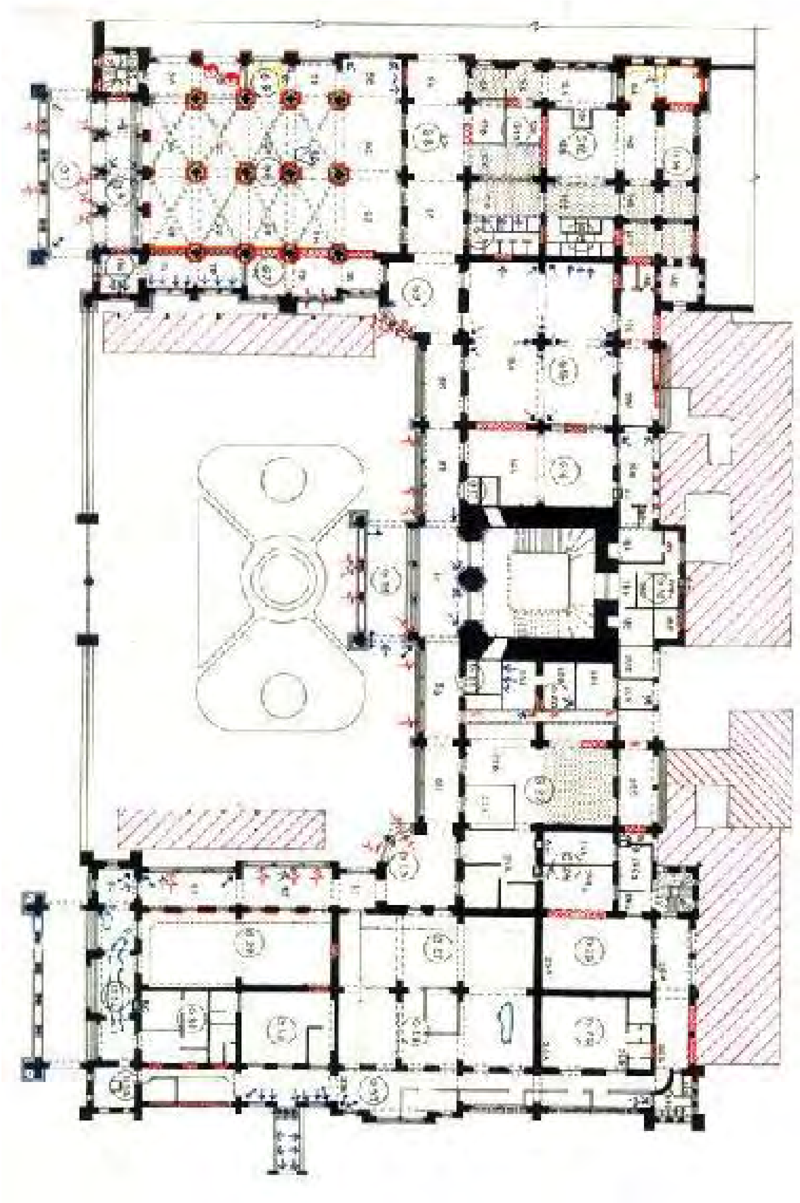
SPACE	CURRENT	ELEMENT	MATERIAL DESCRIPTION	CONDITION	PRESENT CONDITION &	PRIORITY
	USAGE					
G 8	Corridor	FLOOR	A to L, Q &U - Diagonal Kota tiles	Good		S.I.
			M & R - Cement tiles.			L.L.
			N & O - Red & black cement tile			L.L.
			S -Cement mortar, partly kadapa			L.L.
			T - Blue ceramic tiles. 10X10cm.			L.L.
			V - Kota tiles covered with carpet			L.L.
			Q - Kota tiles, GR, CR tiles.			L.L.
		CEILING	T.W. joists, painted.	Good		L.P.
		WALLS	Plastered & white-washed above	OK	Dado exposed. Stone masonry	L.L.
		OPENINGS	Stone arches, basalt stone ballusters.	OK	Arches show cracks in G8-D,	
					G8-N, G8-F, G8-I	S.S.
					I.A.- G8- L arch covered with	S.S.
					Large degree weathering of the	L.P.
					Ballusters need cleaning.	L.P.
	Corridor	FLOOR	Diagonal Kota tiles with black border.	OK		S.I.
		CEILING	T.W. joists painted white	Good		S.I.
		WALLS	Plastered & white washed above dado.	OK		L.L.
		OPENINGS	N- 1 stone arch.	OK		L.P.
			S- 1 stone arch & Basalt stone	OK	Cracks through balusters.	S.U. & L.P.
			ballusters.		Seepage seen above arch.	S.I.
			E- 2 stone arch doors with	Good		L.P.
			original shutter & fanlight.			
			W- 1 stone arch door.	OK		L.L.
G 10A	ST.	FLOOR	Ceramic tiles	OK		L.L.
		CEILING	T.W. boarding	Good		L.P.



Legend	
	Long Term Duration
LL	Long Term Later
LP	Long Term Periodic
	Short Term Duration
SI	Short Term Immediate
SU	Short Term Urgent
SS	Short Term Soon

		CEILING	T.W. boarding	Good		L.P.
		WALLS	Ply partitions	OK		L.L.
		OPENINGS	Stone arch. Al frame ply door.	OK	I.A. - Top of arch covered with Al grill	S.I.

SPACE	**CURRENT**	**ELEMENT**	**MATERIAL DESCRIPTION**	**CONDITION**	**DEFECTS**	**PRIORITY**
	USAGE					
G 10B, 10E	**C-Foreman's cabin**		SAME AS G 10A			
	D-SS subur-ban office					
G 10C	**REST RM**	**FLOOR**	Brown ceramic tiles	OK		L.L.
		CEILING	Concrete slab mezzaine	OK		L.L.
		WALLS	N-Ply partition	OK		L.L.
			S-Bk. work,			
		OPENINGS	N- Al frame, ply panel door.	OK		S.I.
			E- Stone arch	OK	I.A.- Arch infilleed with brick work	S.I.
			W-Stone arch	OK	I.A.- Arch infilleed with Al. Jali. Doors	
			S- No opening.		not accessible.	S.I.
G 10 D	**Motor man's rest room**	**FLOOR**	Ceramic tiles	OK	I.A.-	L.L.
		CEILING	Mezzanine-hard particle board for lockers.	Good		L.L.
		WALLS	Plastered and painted. S-E corner dado of white	OK	I.A.- Filled with 150 mm.thk. Bk. Wall.	L.L.
		OPENINGS	E- Stone arch.	OK	Openings without shutters.	S.U.
					IA Openings filled upto door level with	
					bk. Work.Arch infilled with ply.	S.I.
			W- Wooden door, stone arch.	OK	I.A.- Al grill - top of stone arch	L.L.
			N & S- 1 stone arch	OK		

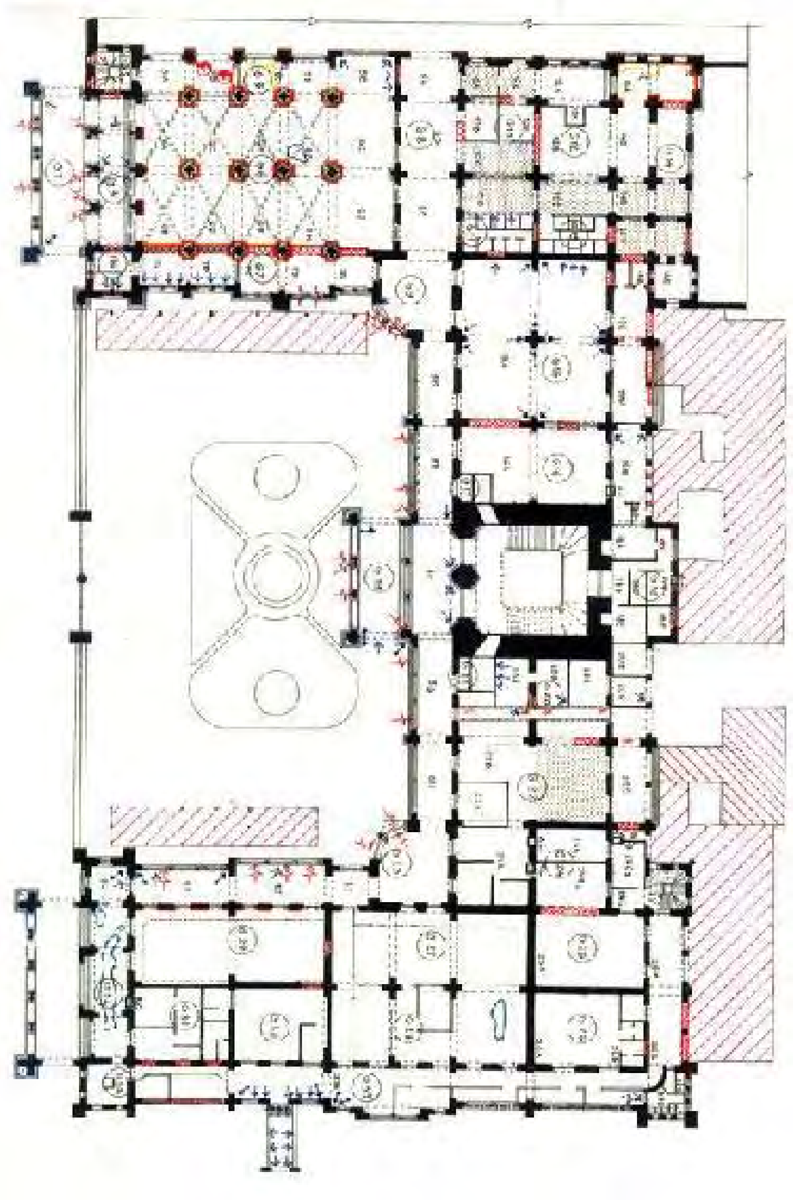


Legend	
	Long Term Duration
LL	Long Term Later
LP	Long Term Periodic

			corners. Plastered & painted.			

LP	Long Term Periodic
	Short Term Duration
SI	Short Term Immediate
SU	Short Term Urgent
SS	Short Term Soon

SPACE	CURRENT USAGE	ELEMENT	MATERIAL DESCRIPTION	CONDITION	DEFECTS	PRIORITY
G 11	**LADIES TOILET**	**FLOOR**	Marble tiles. 2 gutters with C.I. lids.	OK		L.L.
		CEILING	Steel plates welded & placed	OK		S.S.
			above M.S. channels.			
		WALLS	N-Ply partition above, bk wall below.	Bad	Needs to be consolidated. Dampness	S.I.
			S-low wall wooden partition below.		Dampness on the partition.	S.I.
		OPENINGS	E- Stone arch	Bad	I.A.- Arch infilled with part jali & part bk work. Badly ventillated.	L.L.
			W-Door, Al frame ply panel door.	OK	I.A. Opening partly infilled. Shutter not openable. Badly ventillated.	L.L.
G 12A	**OFFICE**	**FLOOR**	White ceramic tiles	Good		L.L.
		CEILING	T.W. Boarding	OK		L.P.
		WALLS	N-Walls above arches, plastered & painted.	OK		L.P.
		OPENINGS	N, S,E &W stone arches.	OK	I.A.-partly infilled with wooden partition & partly M.S. jali.	L.L.
		COLUMNS	M.S. stanchions. Painted.			L.P.
			Supports mezzaine.			
G 12A1	**TEMPLE**	**FLOOR**	Ceramic tiles	OK		L.L.
		WALLS	Half ply partitions with laminates.	OK		S.I.
G12 B		**FLOOR**	White & black ceramic tiles.	Good		L.L.
		CEILING	T.W. boarding	Good		L.P.
		WALLS	Above arches- plastered & painted.	OK		S.I.
		OPENINGS	N & S- arch W- arch.	OK	I.A.- Arch filled with bk work.	S.I.



Legend	
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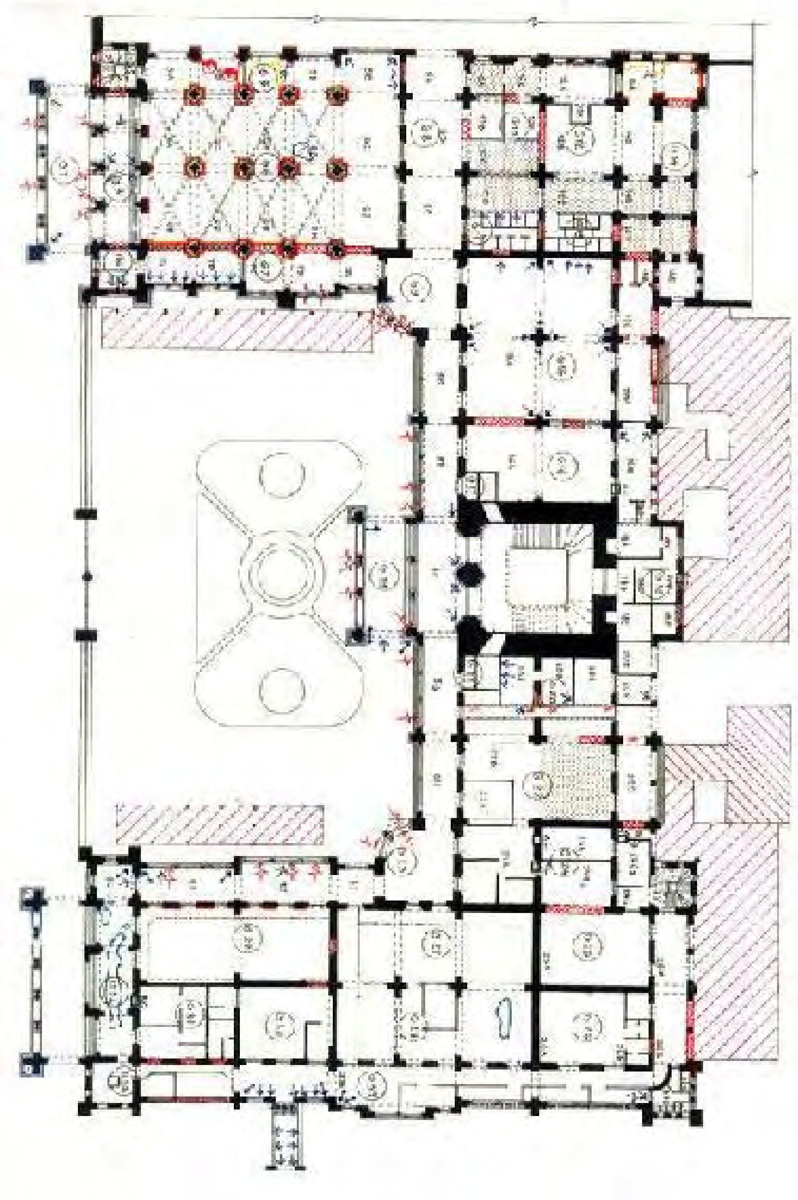
SPACE	CURRENT USAGE	ELEMENT	MATERIAL DESCRIPTION	CONDITION	DEFECTS	PRIORITY
G 12C		**FLOOR**	Ceramic tiles.	OK		
		CEILING	Particle boards resting on M.S. channels.	OK		
		WALLS	S - 1/2 bk walls	OK	I.A. - Wall added later.	L.L.
		OPENINGS	N - Stone arch with original shutters	OK		
			S - Toilet wall with 1 opening.			
			E - 1no. - stone arch			
			W - 1no. - stone arch			
	MEZZ.	**WALLS**	Plastered & painted	Bad	Blistering paint	S.U./L.P.
		CEILING	T.W. joists.	OK		L.P.
		FLOOR	T.W. Joists	OK		L.P.
G 13	**TOILET BLOCK**	**FLOOR**	White ceramic tiles	OK	Badly ventillated	S.I.
			5 Indian W.Cs, 6 urinals, 1 kadappa wash basin.			
		CEILING	Steel plates welded & placed above M.S. channels.	OK		L.P.
		WALLS	Stone walls,covered with white ceramic tiles.	OK		L.L.
			S-bk wall below, partition wall above.	Bad	Shows dampness.	S.I.
		OPENINGS	N- Al frame ply panel door.	OK		S.I.
			E &W stone arches	OK	IA- infilled with brick wall	
G 14A	**OFFICE**	**FLOOR**	Ceramic tiles.	Good.	Incongrous	L.L.
		CEILING	Covered with ply at some places	Bad	Seepage at 2 corners on N wall.	S.I.
		WALLS	Covered with ceramic tiles. Wall above arches, plastered & painted	OK		L.L.
		OPENINGS	Stone arches.	OK	I.A. stone arch infilled with bk wk	S.I.
G 14B	**DINING**	**FLOOR**	Ceramic tiles	Good		L.L.
		CEILING	T.W. Boarding	Good		L.P.
		WALLS	Stone,plastered & white washed.	OK		L.P.
		OPENINGS	S&E Stone arches.	Good		L.P.



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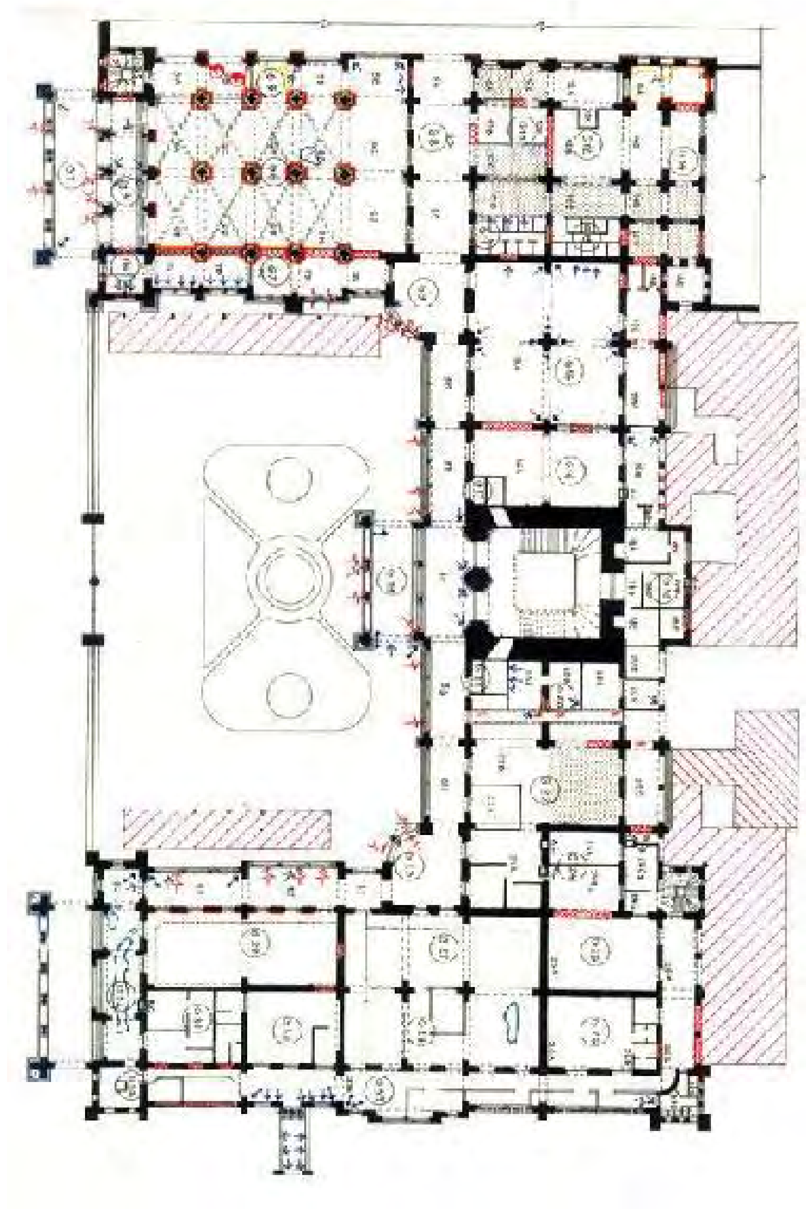
SPACE	CURRENT USAGE	ELEMENT	MATERIAL DESCRIPTION	CONDITION	DEFECTS	PRIORITY
G 14C	**KITCHEN**	**FLOOR**	Ceramic tiles	OK		L.P.
		CEILING	Mezzaine- hard particle board.	OK		L.P.
		WALL	Plastered & painted above arches.	OK	I.A. N- Additional kadappa platform	S.I.
		OPENINGS	Stone arches.	OK		
G 14D	**PREP. AREA**	**FLOOR**	Ceramic tiles.			
		CEILING	T.W. Boarding	Good		L.P.
		WALLS	N- open. S- Brick wall.	OK		
		OPENINGS	S - Stone arch	OK	I.A.-Arch infilled with bk work.	S.I.
			E - Stone arch	OK	I.A.-Partly filled with bk work, partly enclosed by jali.	S.I.
			W - Stone arch	OK	I.A.-Arch totally filled with bk work.	S.I.
			N - Stone arch	OK		
G 14E	**NOT ACCESSIBLE**					
G 15A	**MEETING ROOM**	**FLOOR**	Original minton tiles	Very good.	I.A.- Covered with linoleum	L.P.
		CEILING	False ceiling of p.o.p.	OK	Dampness spotted at places	S.I.
					Some p.o.p. moulding broken.	
		WALLS	N-Dado of Minton tiles.Partly of T.W.panels.	Good	Panels show dampness.	S.I.
			Walls above arches plastered & white washed.		I.A.- Some panels replaced with A.C. sheets.	L.L.
			S-Dado minton tiles.Walls above arches-plastered & white washed	Good	I.A.- Air conditioners.	S.I.
			W&E-Dado minton tiles.	Good	I.A.- Air conditioners.	S.I.
			Walle above arches plastered & white washed			
		OPENINGS	S- Stone Arches.	OK	I.A.- T.W. panel boarding on upper part of the arch.	S.I.
			E- 4 doors- original T.W.shutters	Good	Ia. One floor infilled with ply.	L.L.
			W- 4 doors.Original T.W.shutters.	Good		
		COLUMNS	Circular granite columns.	Good	Rising damp seen at corners.	S.I.



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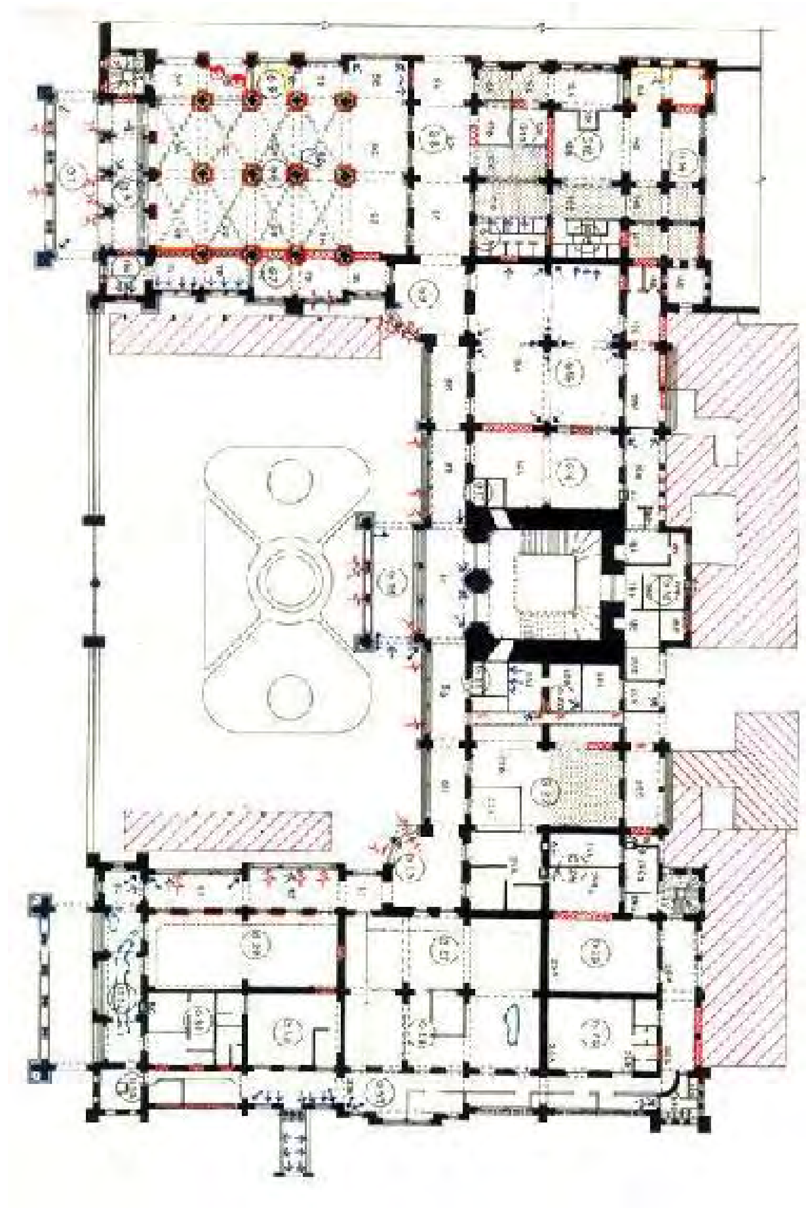
SPACE	CURRENT USAGE	ELEMENT	MATERIAL DESCRIPTION	CONDITION	PRESENT CONDITIONS & DEFECTS	PRIORITY OF ACTION
G 15B	**TOILETS FOR MEETING**	**FLOOR**	Pink marble	Good		
		CEILING	Loft for A.C. plant for the meeting room on top of the part room on top of a part of the kitchen & part of the toilet.	OK	Incongrous. No ventilation.	S.I.
			Loft made of M.S. plates.			
		WALLS	Half Bk. Thk. wall			
			Dado 2m high.	OK		
		OPENINGS	N-1 Stone arch	OK	I.A.- Arch infilled with bk. Work.	S.I.
			S- 1 door, Al frame ply partitions.	OK		
			E- 2 windows		I.A.- Windows infilled with bk work.	S.I.
		COLUMNS	2 M.S. stanchions.	Good		
G I5C	**SPACE OUTSIDE TOILET -**	**FLOOR**	Pink marble	Good		
	WASH BASIN	**CEILING**	Loft made of M.S. plates.	Good		
		WALL	Bk. wall covered with ceramic tiles.	OK	Incongrous S-E wall.	L.L.
		OPENINGS	S, E & W- Stone arch.	Bad	I.A.-E- Openings upto 2m closed by	S.I.
					bk. & then with ply.	
					I.A. S- arch partly infilled with brick wall.	S.I.
G 15D	**KITCHEN**	**FLOOR**	Plastered flooring covered by carpet.	Bad	Incongrous. No tiling. Many rats.	L.L.
		CEILING	Loft made of M.S. plates.	Good		
		WALLS	Plastered & painted above arch.	OK		
		OPENINGS	E- 2 Stone archs.	Bad	I.A.- infilled with bk work upto .75m & ply above. Ply in bad condition. Wood rot.	S.I.
			W- 2 Stone archs.	OK		
			N-1 Stone arch	Ok	I.A paretly infilled with brick work.	S.I.
			S-1 Stone arch	OK		



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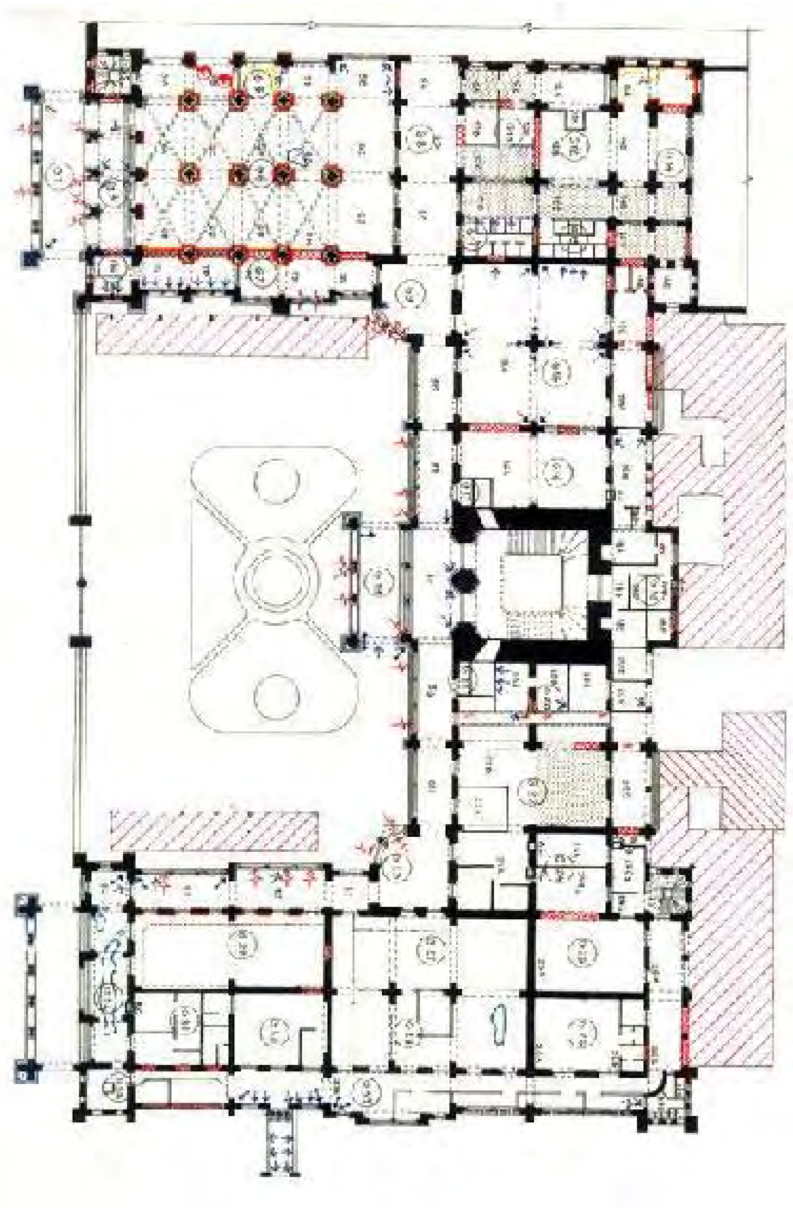
G 16	**LIBRARY**	**FLOOR**	Linoleum flooring	OK	I.A.- Covered with ceramic tiles at some places.	L.L.
		CEILING	T.W. joists.	Good.		
		WALLS	Stone,plastered & white washed .	OK		
			N- 2 stone arches	OK	I.A.- Arch infilled with brick work.	S.I.
		OPENINGS	E- 2 Stone arches	Bad.	I.A.- Air conditioner fixed on E wall.	S.I.
					I.A.- Arch partly infilled with bk work.	S.I.
			W- originol T.W. door	Good		
		COLUMN	Circular granite column	OK		
G 16B	**DUMP RM**	**FLOOR**	Cement	Bad	Incongruous	L.L.
		CEILING	T.W. joists painted white	Bad	I.A.- Part mezzanine of A.C corrugated sheet.	L.L.
		WALLS	Stone walls, plastered & painted	Bad	Seepageon NE corner & E wall.	S.I.
					I.A.- RCC columns added later.	
		OPENINGS	N- One stone arch.	Bad	I.A.- Infilled with ply partititon.	L.L.
			S- One stone arch.	Bad	Not accessible.	
			E- 3 stone arches.	Bad	Dilapidated state.	S.I.
			W- 2 stone arch doors.	Bad	I.A.- Partly blocked by ply	
					1 door not openable.	L.L.
G 17	**LIFT**	LATER ADDITION				
G 18	**Telephone Exchange**	**FLOOR**	Off white ceramic tiles.	OK		L.L.
		CEILING	Ply wood false ceiling	OK		L.L.
		WALLS	Ext.- Stone walls	OK		
			Int.- Ply partition.	OK		
		OPENINGS	E- 3 stone arches.	OK	I.A.- 2 arches infilled in brick.	S.I.
			N & S- Stone arch.	OK	I.A.- Arch infilled in brick.	S.I.
G 19	**PORCH**	**FLOOR**	Basalt stone paving	OK		



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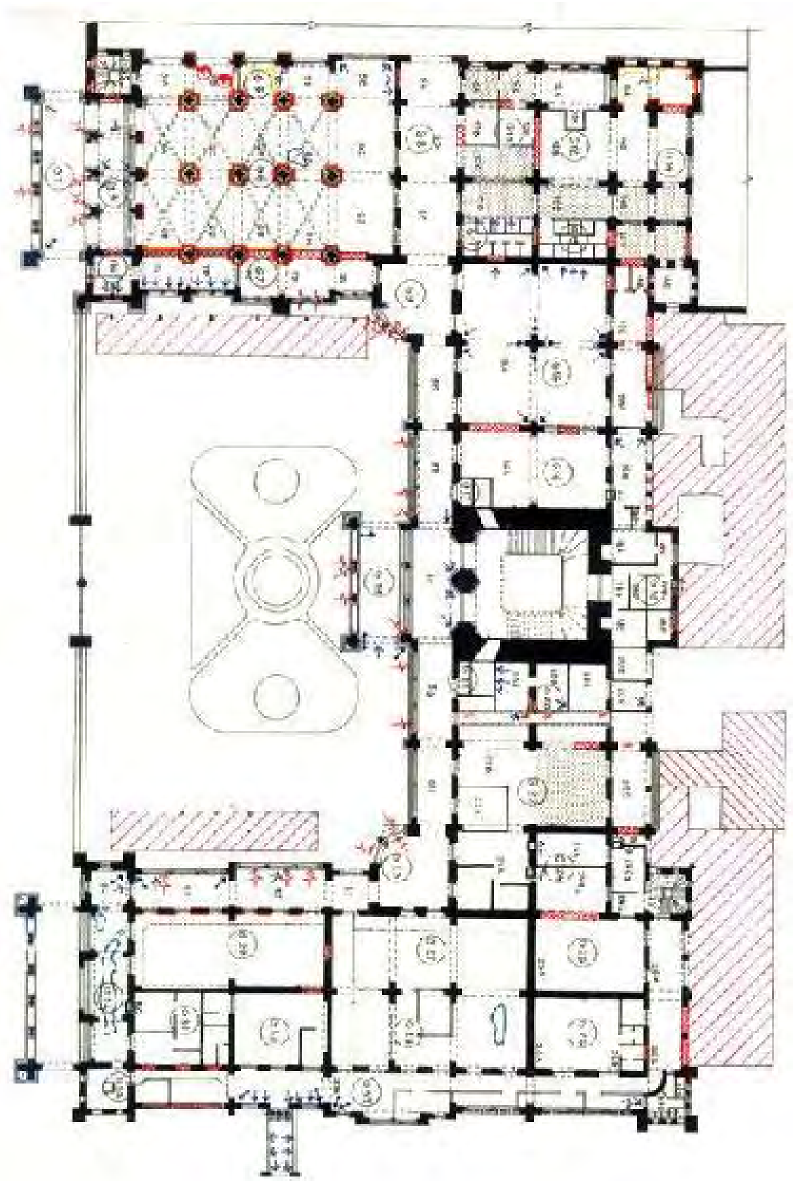
G 19	**CAR PORCH**	**FLOOR**	Red cement tiles with black granite border.	OK	Added later.	L.L.
		CEILING	T.W. joists.	Good		
		CEILING	T.W. joists & T.W. girders, painted white.	Good	SW corner- Leakage due to plumbing.	S.I.
		OPENINGS	Stone arches	OK	S- Seepage, leakage due to plumbing.	
					SE corner- rising damp	S.I.
		COLUMNS	N & S- 2 stone columns with ornate capitals.	Good	NW corner - leakage due to plumbing.	S.I.
		COLUMNS	Twin basalt columns	Bad	Cracks seen at column base.	L.P.
			W- 2 twin stone columns & 2 single stone columns with ornate capitals.	Good		
			E- Pink granite columns with stone base.	Good		
		OPENINGS	N & S- 1 stone cusped arch, heavily decorated & carved.	Good		
			E & W- 3 stone arches, heavily decorated & carved.			
		STEPS	Treads & risers of polished green kadapa.	OK	Added later.	L.L.
G 20	**OFFICE AREA**	**FLOOR**	Kota tiles.	Bad	Broken at places.	L.L.
		CEILING	False ceiling of perforated fibre boards.	Bad	Boards missing at places.	S.I.
					Seepage on W walls and SW corners	S.I.
		WALLS	S- 1/2 Bk wall.	OK	Added later	L.L.
			N- Original stone wall.	Good		
			Internal walls- ply partitions.	OK		
		OPENINGS	Stone arches	OK	I.A.- 2 air conditioners on E wall	S.I.
			Doors- Al frame, ply panels	OK		
G 20A	**OFFICE**	**FLOOR**	Red linleum tiles.	OK		
		CEILING	False ceiling in Al. Frame	OK		
		WALLS	N & E- Stone, plastered & painted	OK		
			S & W- Ply partitions, painted.	OK		
		OPENINGS	W- 1 stone arch	OK	I.A.- Partly infilled with ply.	S.I.



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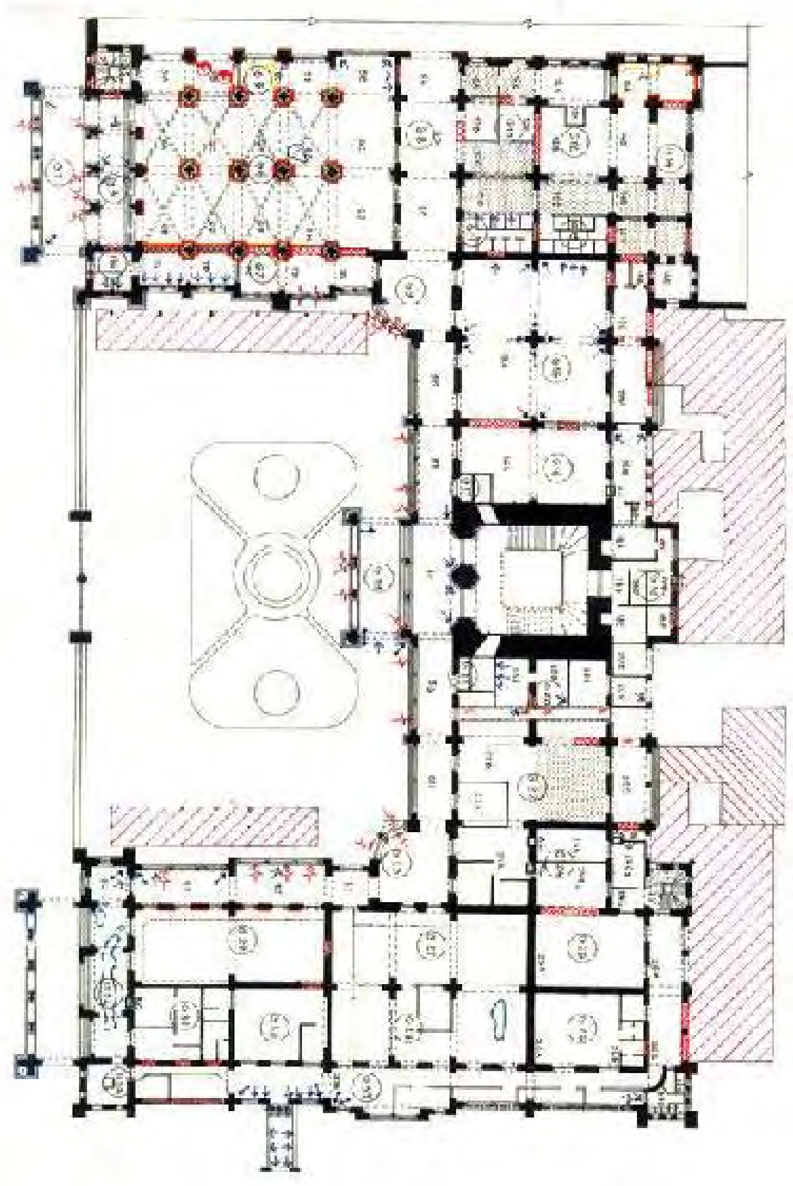
G 20B	**OFFICE**	**FLOOR**	Red linleum tiles.	OK		
		CEILING	False ceiling in Al. Frame	OK		
		WALLS	N & W- Stone , plastered painted	OK		
			S & E- Ply partitions.	OK	Seepage on SE corner.	S.I.
		OPENINGS	W- 1 stone arch	OK	I.A.- Partly infilled with ply.	S.I.
G 20C	**OFFICE**	**FLOOR**	Light brown Linoleum tiles.	OK		
		CEILING	False ceiling in Al. Frame	OK		
		WALLS	N & E- Stone, plastered & painted	OK		
			S & W- Ply partitions, painted	OK		
		OPENINGS	E- 1stone arch door.	OK	I.A.- Partly infilled with ply & fanlight infilled with jali.	S.I.
G 20D	**OFFICE**	**FLOOR**	Light brown Linoleum tiles.	OK		L.L.
		CEILING	False ceiling in Al. Frame	OK		L.L.
		WALLS	N & S- Ply partitions	Bad	N partition damaged.	S.S.
			E & W- Stone,plastered & painted	OK	Seepage on SE corner	S.I.
		OPENINGS	E- 1 stone arch	OK	I.A.- Infilled with brick upto sill,	S.I.
					covered with wooden shutters.	
			W- 1 stone arch	OK	I.A.- Top of arch infilled with jali.	S.I.
G 20E	**DUMP**	**FLOOR**	Cement plaster - broken	Bad	Incongruous	L.L.
		CEILING	T.W. boarding, painted	OK		L.P.
		WALLS	S- Ply partition	Bad	Broken & completely damaged.	S.I.
			N, E & W- Stone walls, plastered & painted.	OK	Cables running along the walls.	S.I.
		OPENINGS	N- Stone arch door.	Bad	Shutters, fanlight completely broken.	S.I.
			E- 1 stone arch.	Bad	I.A.- Partly infilled with brick & partly with wooden shutters. Door shutters infolled with jali.	S.I.
G 21						



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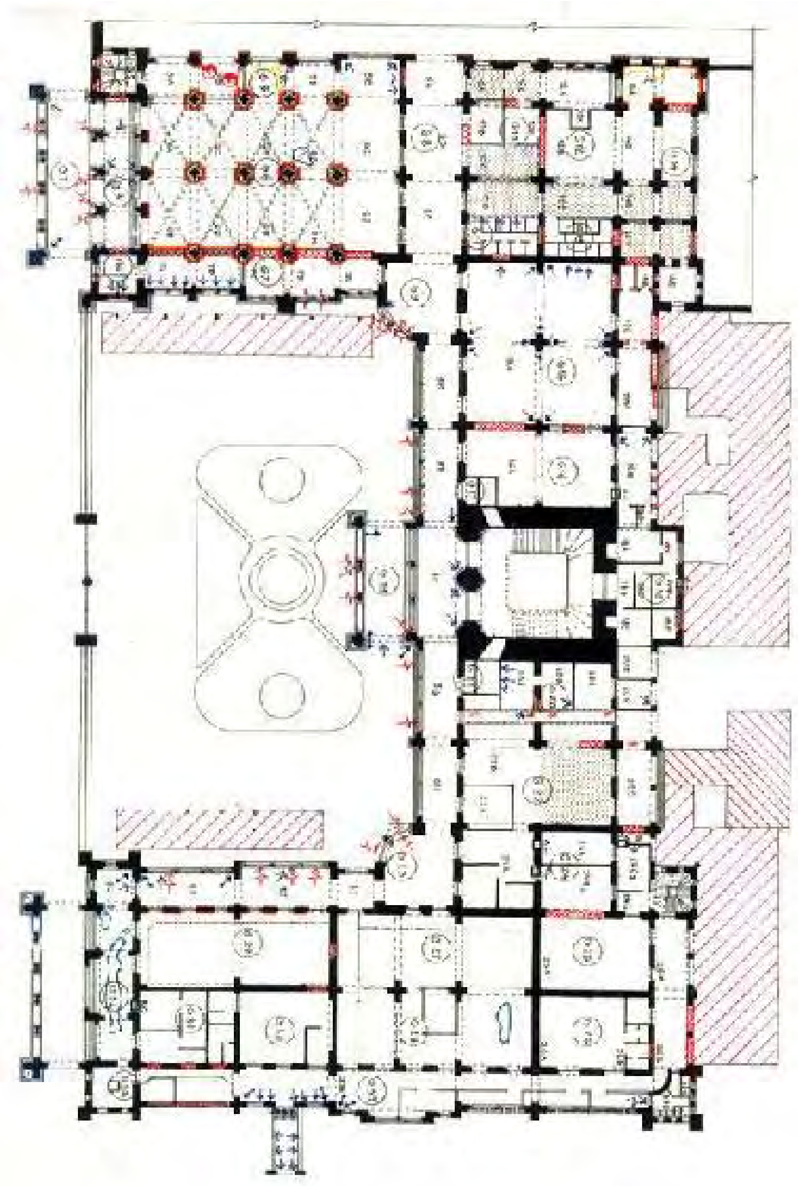
G 22A	**Sr. Public Relatn off.**	**FLOOR**	Off white ceramic tiles	OK		L.L.
		CEILING	Perforated fibre board in Al frame	Bad	Perforated boards in bad condition.	S.I.
		WALLS	N, E & W- Ply partition, painted.	OK		S.S.
			S- Stone, plastered & painted.	OK		
		OPENINGS	S- 1 stone arch door with	OK	I.A.- Fly door added & fanlight	S.I.
			original shutters.		painted blue.	
G 22B	**OFFICE**	**FLOOR**	Off white ceramic tiles.	OK		L.L.
		CEILING	T.W. joists, painted.	Good		L.P.
			Mezz on steel stanchions.			
		WALLS	N,S & E- Stone, plastered painted	OK		S.S.
			W- Brick, plastered & painted.	OK		
		OPENINGS	W-1 stone arch door with original shutters.	Good	I.A.- Fanlight infilled with ply & fly door added.	S.I.
			E- 2 stone arch doors.	OK	Not openable, blocked by storage cupboards.	S.I.
G 22C	**NOT ACCESSIBLE**					
G 23	**Corridor**	**FLOOR**	Diagonal kota tiles.	OK	Flooring patched.	L.L.
		CEILING	T.W. joists, painted white.	Good		L.P.
		WALLS	Plastered & white washed above dado. Dado- exposed stone.	OK		
		OPENINGS	N- 1 stone arch, basalt stone	OK	Basalt stone weathering	L.P.
			balusters.		Cracks through the balusters & arches.	
			S- 2 stone arch doors	OK		
			E- 2 stone arch doors with	Good		
			original shutters & fanlight.			
			W- 1 stone arch	OK		
G 24A	**OFFICE**	**FLOOR**	Off wnite ceramic tiles.	OK		L.L.
		CEILING	T.W. joists, painted.	Good		L.P.
		WALLS	N, E & S- Ply partitions.	OK		
			W- Stone.	OK		
		OPENINGS	W- 1 stone arch door with original shutters.	OK	I.A.- Fly door added.	S.I.



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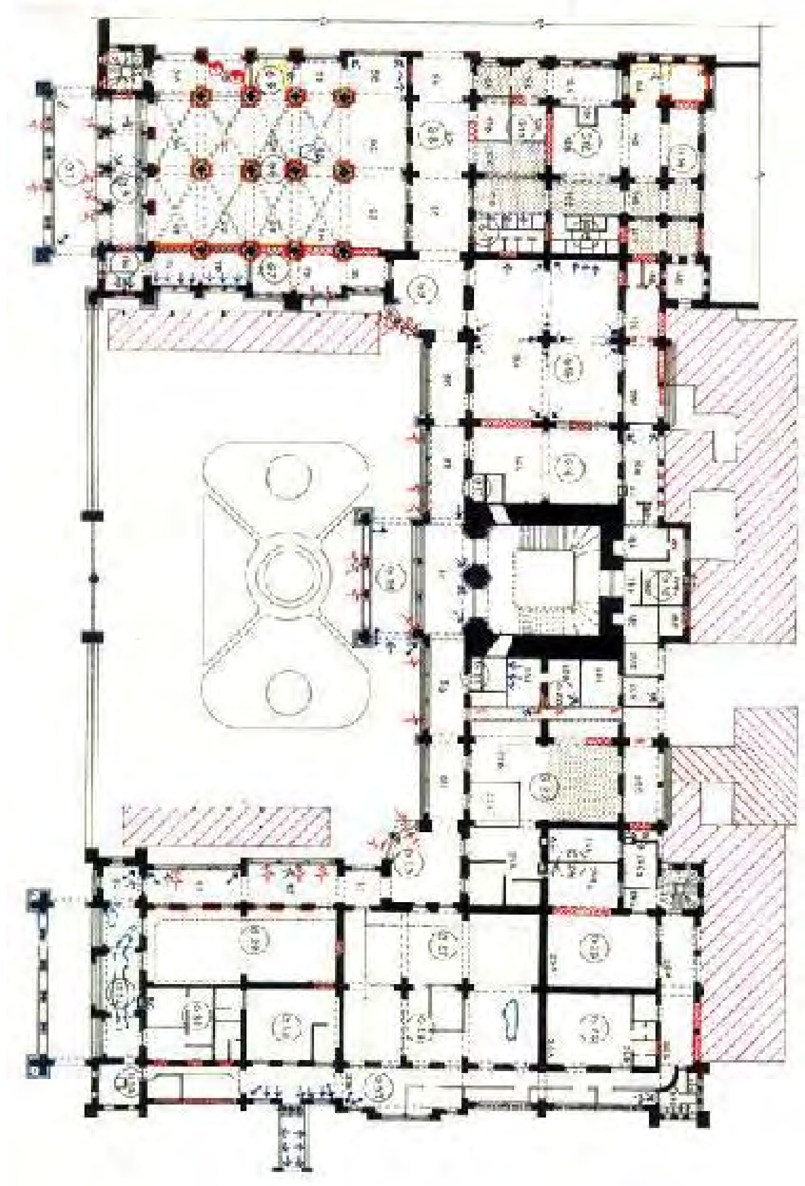
G 24A1	OFFICE	FLOOR	Off white ceramic tiles.	OK		L.L.
		CEILING	Perforated fibre board in Al frame	OK	Cracked at few places.	L.L.
		WALLS	S & W- Stone, plastered &painted	OK		S.S.
			N & E- Ply partiton, painted.	OK		
		OPENINGS	W- 1 stone arch door with original shutters.	OK	I.A.- Fly door added & fanlight covered with ply.	S.I.
G 24A2	OFFICE	FLOOR	Off white ceramic tiles.	OK		L.L.
		CEILING	Perforated fibre board in Al frame	OK		L.L.
		WALLS	N & W- Ply partition, painted.	OK		S.S.
			S & E- Stone, plastered & painted			
G 24B1	Computer Room	FLOOR	Off white ceramic tiles.	OK		L.L.
		CEILING	Perforated fibre board in Al frame	OK		
		WALLS	S- Ply partition	OK		
			N, E & W- Stone.	OK	I.A.- Cladded with ply.	S.I.
G 24B2	Chief Reg. Office	FLOOR	Carpet	Good		L.L.
		CEILING	Perforated fibre board in Al frame	OK		
		WALLS	E & W- Stone.	OK	I.A.- Cladded with ply panels.	S.S.
			N- Ply partition.	OK	I.A.- Cladded with ply panels.	S.S.
		OPENINGS	S- 1stone arch.	OK	I.A.- Infilled with brick work.	S.S.
G 24C1	OFFICE	FLOOR	Off white ceramic tiles.	OK		L.L.
		CEILING	T.W. joists, painted.	OK		L.P.
		WALLS	S, E & W- Stone, plastered & painted.	OK	Cables running along E & W walls.	S.L.
			N- 1/2 bk, 1/2 ply partition.	OK		
		OPENINGS	W- Stone arch	OK	I.A.- Blocked with partition.	S.I.
			E- Stone arch, access to stair with original C.I. grill.	OK	Staircasee not accessible.	S.I.
G 24C2	OFFICE	FLOOR	Carpet.	Good		L.L.
		CEILING	Perforated fibre board in Al frame			
		WALLS	N & S- Ply partitions.	OK		
			E & W- Stone.	OK	I.A.- Wall cladded with ply panel.	S.I.



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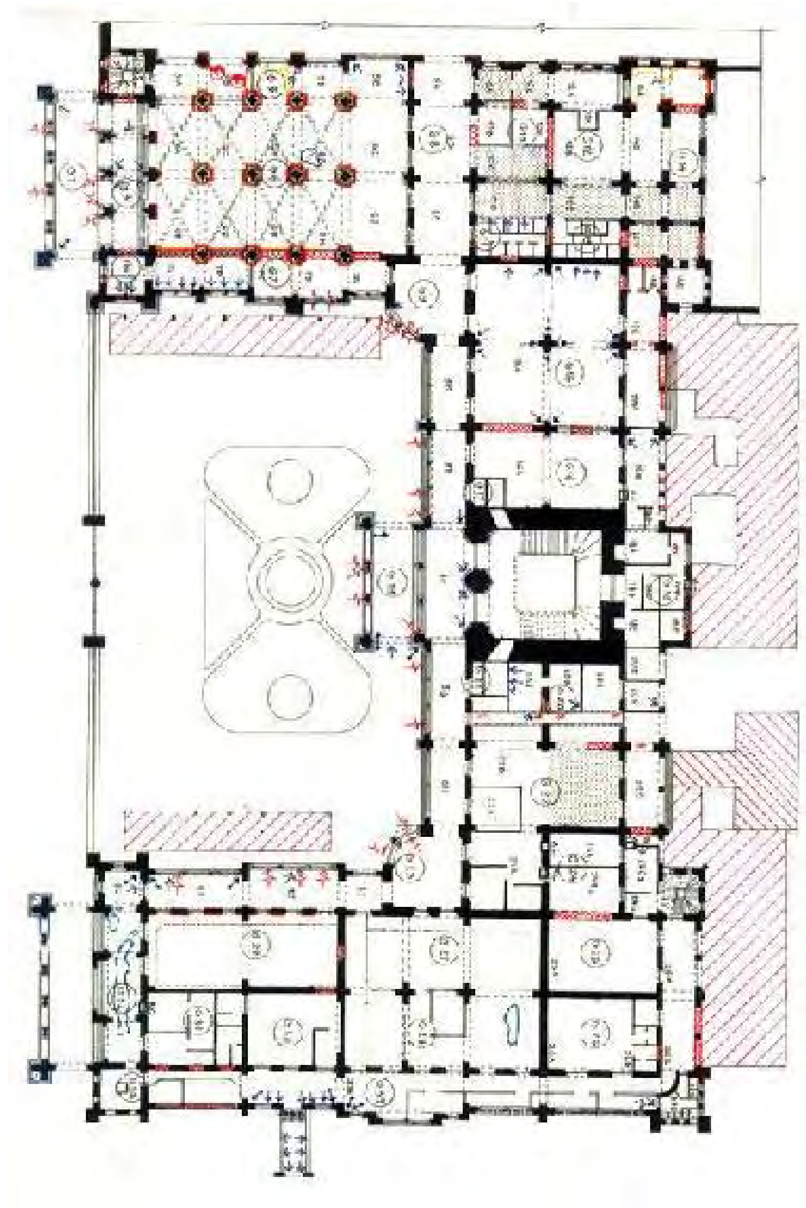
G 24C3	**TOILET**	**FLOOR**	Light brown ceramic tiles.	OK		S.I.
		CEILING	Perforated fibre board in Al frame	OK		L.L.
		WALLS	N & S- Bbrick walls.	OK	I.A.- Walls cladded with ceramic tiles.	S.I.
			E & W- Stone walls.			
G 25	**OFFICE**	**FLOOR**	Ceramic tiles approx. 30 x 30 cm.	Good		L.L.
		CEILING	T.W. joists.	Good		L.P.
		WALLS	Stone, plastered & painted.	OK		SS
			E- 2 stone arches			
		OPENINGS	Ventilators- ply panels / jali	OK	Closed	S.I.
			N Stone arch.		I.A.- Infilled with bk work.	
					Door not accessible.	
G 26	**OFFICE**	**FLOOR**	Ceramic tiles	Good		L.L.
		CEILING	T.W. joists.	Good		L.P.
		WALL	Loft resting on N- wall. M.S. stanchions with T.W. boarding.	OK		L.L.
		OPENINGS	S - 2 stone arch windows	OK	Not accessible	
			E - 2 stone arch windows	OK	1 infilled with bk. work.	S.I.
			E- 2 stone arches		I.A infilled with brick work	S.I.
		Addition	2 toilets	bad	Lots of leakage which leaks down to the basement.	S.I.
G 27	**OFFICE**	**FLOOR**	Ceramic tiles	Good	Very bad ventilation.	S.I.
		CEILING	T.W. joists.			
		WALL	N wall - dado of ceramic tiles	Good		
			S wall - Partly bk. & dado partly	Good	Incongrous.	L.L.
			Al jali			
			W wall-1/2 ply partition, 1/2 Al jali.	OK	Incongrous.	L.L.
		OPENINGS	W wall - 2 openings. 1 covered with jali & other with collapsable gate.			
			N- 2 stone arches doors	OK		



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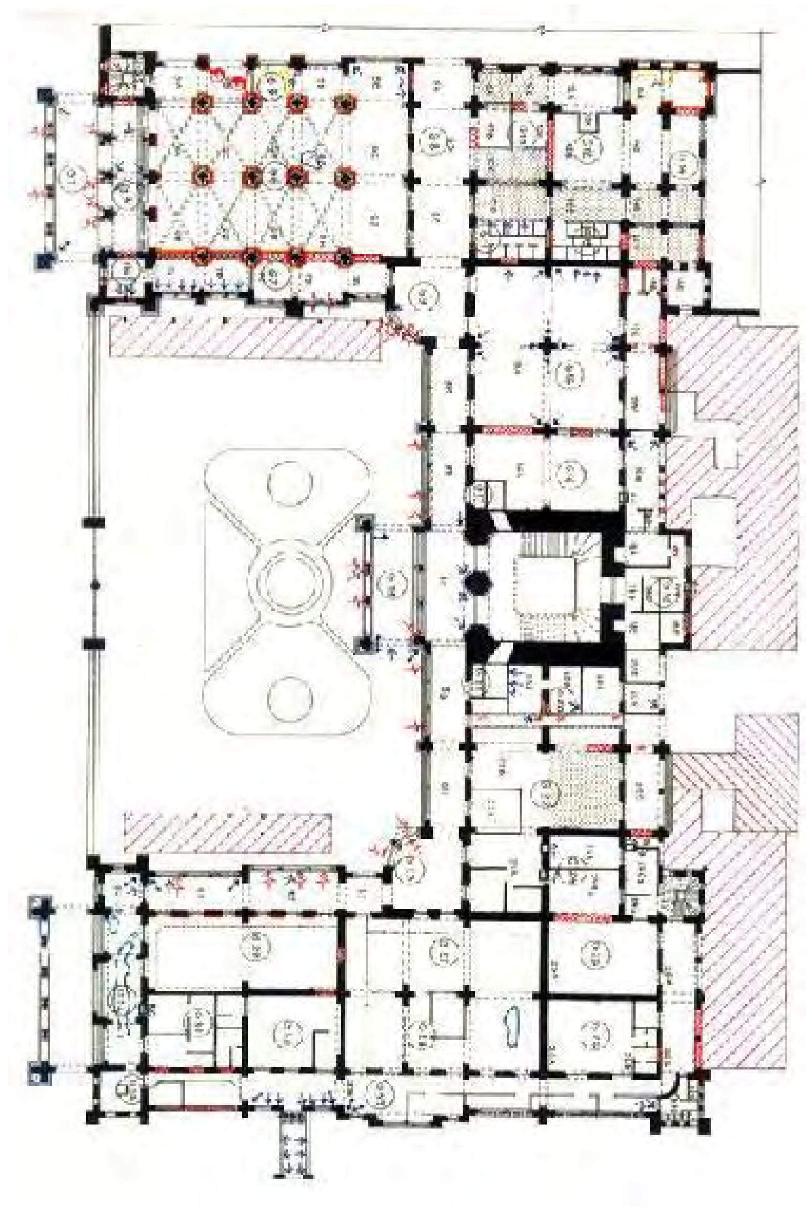
G 28	**OFFICE**	**FLOOR**	Ceramic tiles	Good	Partly replaced by MS plates for lift.	L.L.
	HARD RM.				Patched on E side	
		CEILING	T.W. joists.	Good		L.P.
		WALL	N wall - 1/2 Bk. & 1/2 AL. jali	OK	Incongrous.	L.L.
		OPENINGS	S- 4 Stone arches. 2 shutters & 2 replaced by Al jali.	OK	Doors not accessible. Incongrous.	L.L.
			W- Al jali.	OK		
G 29	**OFFICE**	**FLOOR**	Ceramic tiles	Good		L.L.
		CEILING	T.W. joists.	Good		L.P.
		WALLS	stone, plastered & painted.	OK		S.S.
		OPENINGS	N wall - 6 doors. No shutters	OK	3 - have rolling shutter from inside.	S.I.
			S wall - 1 opening	OK	I.A.- Opening infilled with bk.	S.I.
			E - 1 opening - Collapsable gate.	OK		
			W wall - 2 stone arches	OK	Doors not accessible.	S.I.
G 30	**OFFICE**	**FLOOR**	Ceramic tiles	Good		L.L.
		CEILING	T.W. joists.	Good		L.P.
		WALLS	Stone, plastered & painted.	OK		S.S.
		OPENINGS	N - 1 opening	OK	Opening infilled with bk.	S.I.
			S - 3 stone arch window	OK	Not accessible.	S.I.
			W -1 Stone arch.	OK		
G 31	**OFFICE**	**FLOOR**	Ceramic tiles	OK		L.L.
		CEILING	False ceiling	Bad	Leakage to be checked.	S.I.
		WALLS	Stone, plastered & white washed.	OK		S.S.
			Int walls- ply partitions.	OK		
		OPENING	W - 2 stone arch window	OK	1 not accessible, 1 window A.C.	S.I.
			N - Blank wall, 1/2 bk thk.		I.A -1 with window A.C.	S.I.
			S - 3 stone arched windows	OK	I.A. - infilled with bk work.	S.I.
			E - 1 door opening.	OK		



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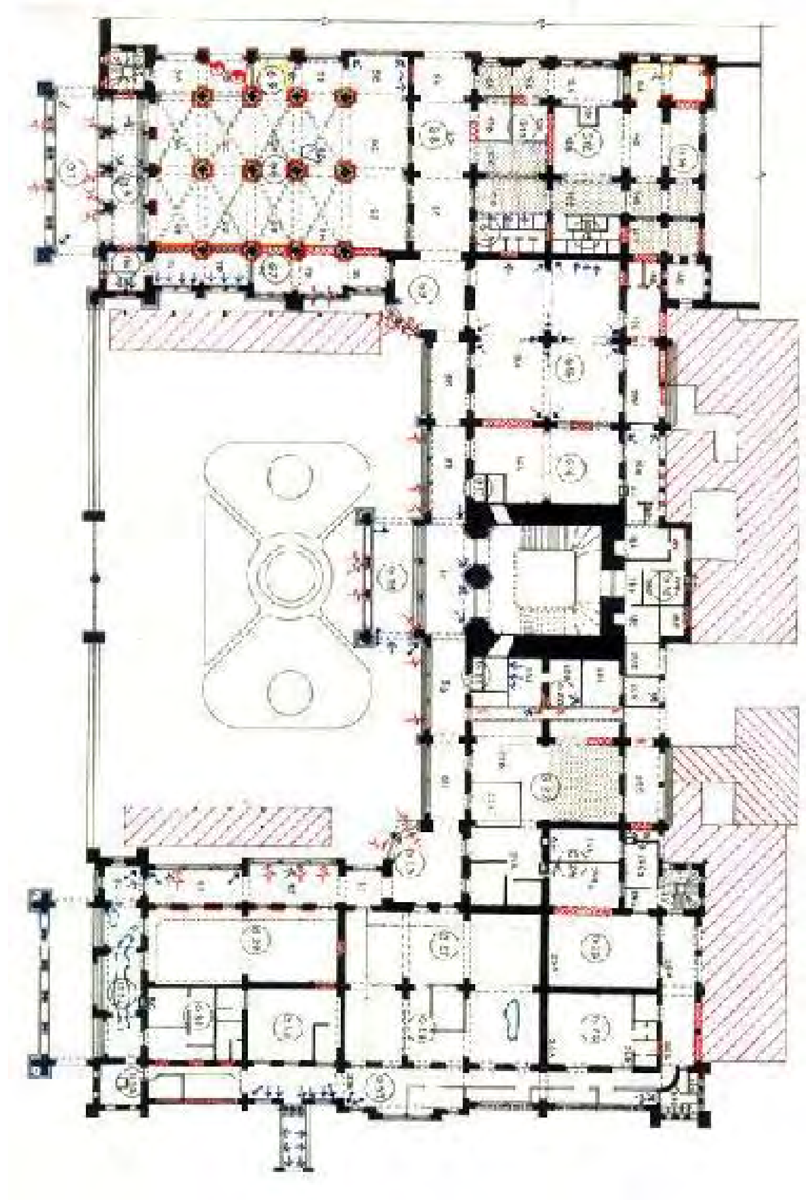
G 32	**STORE**	**FLOOR**	Original minton tiles.	Bad	Incongruous. Flooring patched	L.L.
		CEILING	T.W. boarding	Good		L.P.
		WALLS	Stone, plastered & white washed above arches.	OK		S.S.
			N & S- 1 stone arch	OK		
		OPENINGS	W- 3 Stone arches	Good	Arches are covered with W.I. grills.	S.I.
			E- 4 stone arches	OK	I.A. -1infilled with window A.C.	S.I.
G 33	**WORK STNS.**	**FLOOR**	Original minton tiles covered with cement mortar.	OK		L.L.
		CEILING	T.W. boarding - oil painted.	Good		L.P.
		WALLS	Original stone walls.	Good	Large seepage on centre of S wall & NE corner.Leakage due to plumbing.	S.I.
			Int - half ht partitions of Al frame, particle board.	OK		
		OPENINGS	Stone arches	OK	S- I.A.- Arches covered with Al grill.	S.I.
					I.A.-3 arches on S corner infilled	
					with bk work.	
G S1	**Key box**	**FLOOR**	Original Minton tiles.	Good		L.L.
		WALLS	Stone wall, white washed.	OK		L.P.
		OPENINGS	1 original stone arch door with original shutter & fanlight with original C.I. Jali.	Good		
G S2	**Store & Cabel rm.**	**FLOOR**	White marble.	Good		L.L.
		WALLS	Stone wall, white washed.	OK		L.P.
		OPENINGS	1 original stone arch door with original shutter & fanlight with original C.I. Jali.	Good		S.I.



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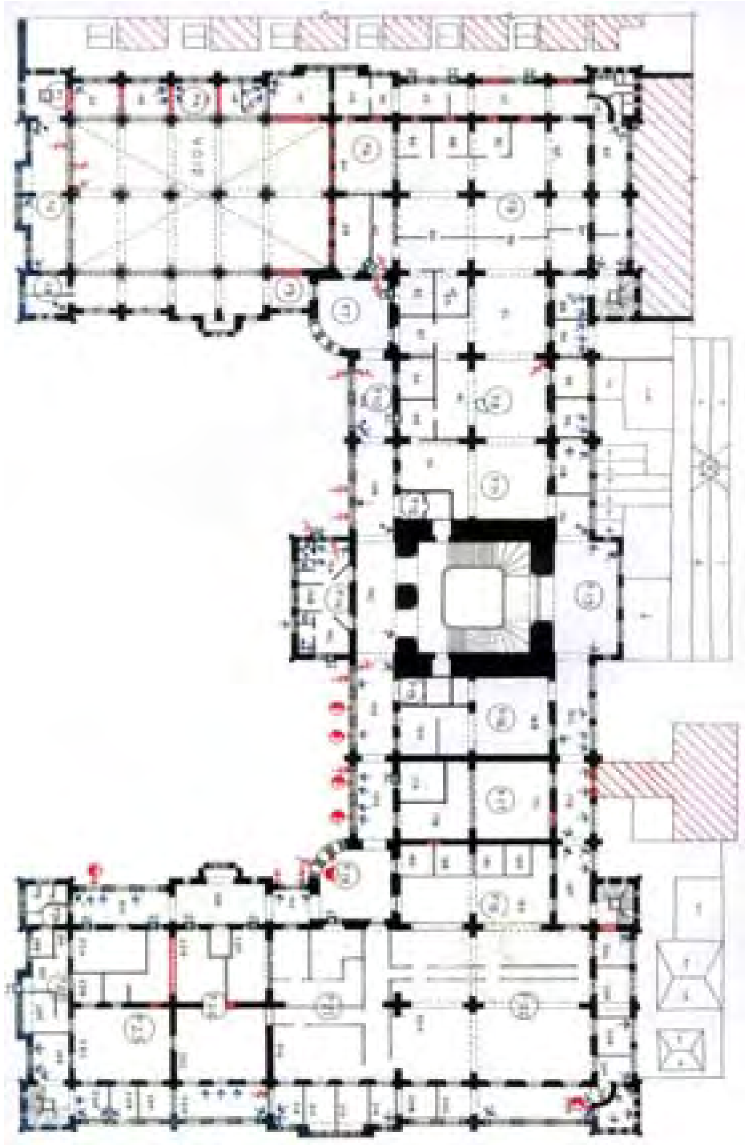
F 2	**CORRIDOR (above star chamber)**	**WALLS**	Stone walls, plastered & painted.	OK	E - Dampness spotted.	
					W - Pipes running along the wall.	
					Seepage on SW corner in central bay.	
					Leakage from plumbing & seepage on	
					NW corner.	
		CEILING	T.W. boarding.		Broken at 1 pt.on the N- the central bay.	
		OPENINGS	E - C.I. railing with columns & stone arches	OK	Stone chipped off from 3 column bases.	
			W - Narrow windows of stained glass.	Good	I.A.-Windows on either sides covered with mesh from outside.	
F3	**NOT ACCESSIBLE**					
F 4A	**STORE RM**	**FLOOR**	Cement tiles	OK		L.L.
		CEILING	T.W.Boarding	OK		L.P.
		WALLS	Stone wall above arches, plastered & painted.	OK	Seepage on N-W corner	S.I.
		OPENINGS	N- 1stone arch window.	OK	I.A.- Arch covered with jali shutters.	S.I.
					Some need to be consolidated.	S.I.
			S- 1 stone arch.	OK	I.A.-Railing and ply partition upto 2m.	S.I.
			E- Stone arch	OK	I.A.-G.I sheet partition infills arch.	S.I.
			W- Stone arch	OK	I.A.-Arch infilled with ply panel.	S.I.
					I.A.- Wiring from exterior onto the arch.	S.I.



Legend	
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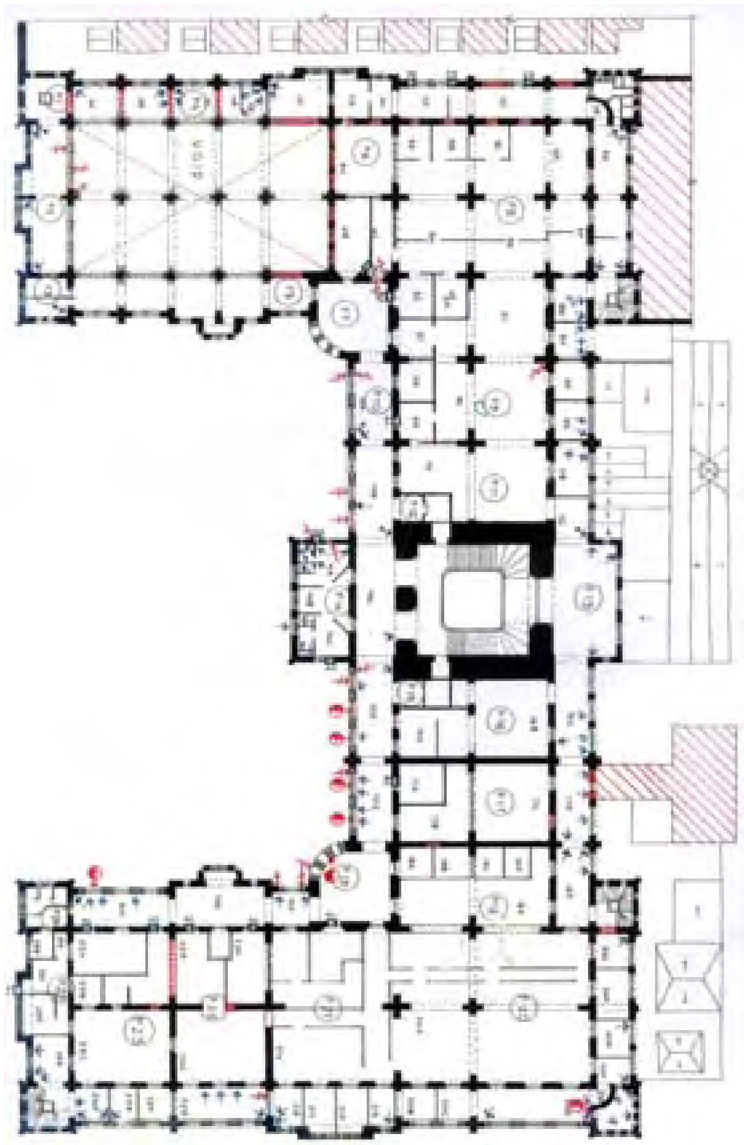
SPACE	CURRENT USAGE	ELEMENT	MATERIAL DESCRIPTION	CONDITION	DEFECTS	PRIORITY
F 4B	CABIN of Telephone exchange	FLOOR	Cement tiles	OK		L.L.
		CEILING	T.W. Boarding	OK		L.P.
		WALLS	Stone wall, above arch plastered & painted.	OK	Seepage in NE corner.	S.I.
		OPENINGS	N- 1 stone arch, 2 round stain glass windows.	OK	1 not openable.Cables running int & ext.	
					I.A.- 2 windows infilled with ply from outside.	S.I.
			S- 1 stone arch.	Bad	I.A.- Infilled with partition of T.W. panels upto bottom of arch.	S.I.
			E- 1 stone arch	Bad	I.A.- Infilled with partition of T.W. panel-upto bottom of arch.	S.I.
			W- 1 stone arch	Bad	I.A.- Infilled with partition of partly G.I. sheets & partly T.W. panels.Door shutters to be consolidated.	S.I.
F 4C	CABIN for Telephone exchange	FLOOR	Original minton tiles	OK	I.A.- Covered with linoleum.	L.L.
		CEILING	Original T.W. boarding	Good		L.P.
		WALLS	Stone wall, above arch plastered & painted.	OK	Seepage on corner of W-N wall	S.I.
		OPENINGS	Same as F52			
F 4D	CABIN for Telephone exchange	FLOOR	Original red & black cement tiles.	OK	Needs to be cleaned.	L.L.
		CEILING	Original T.W. boarding	Good		L.P.
		WALLS	Stone wall,above arch partly painted blue & blue & partly white washed.	Bad	Large seepage on N wall.	S.I.
					Seepage on NW corner.	
		OPENINGS	N- 1 stone arch.	OK		
			S- 1 stone arch.	OK	I.A.-Infilled with partition which covers	
					tne column ornamentations.	S.I.
			E & W- 1 stone arch.	OK	All partitions look incongruous.	S.I.



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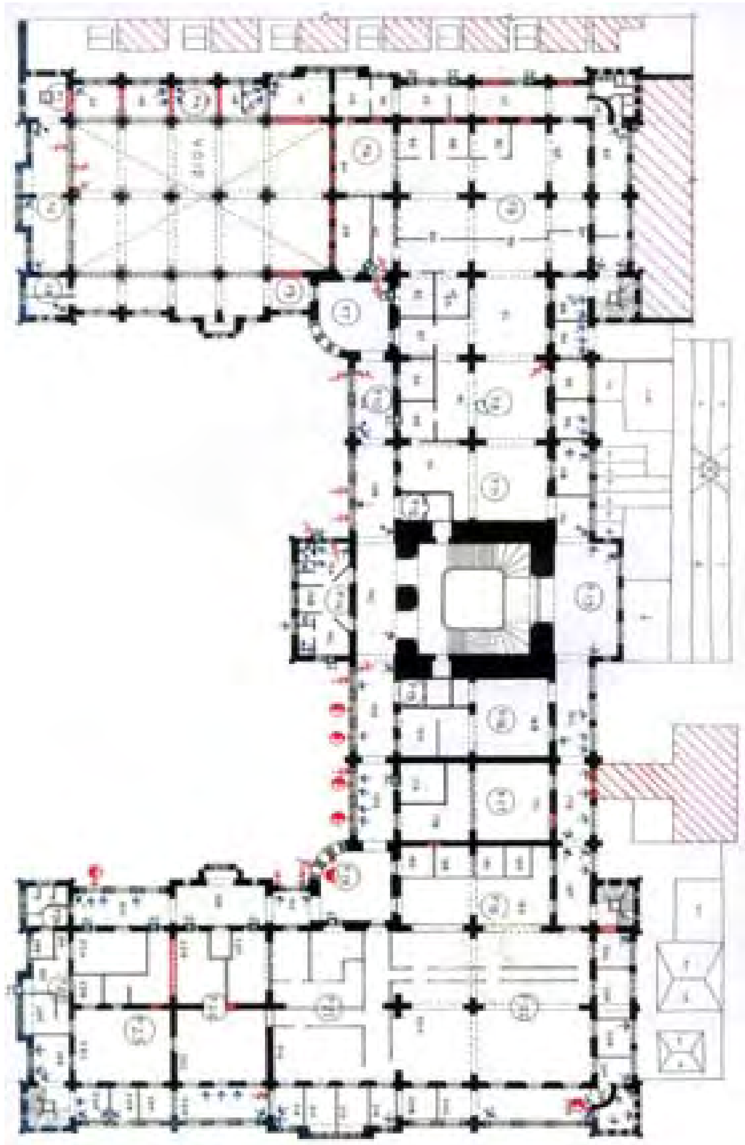
SPACE	CURRENT USAGE	ELEMENT	MATERIAL DESCRIPTION	CONDITION	DEFECTS	PRIORITY
F 4E	**CABLE ROOM**	**FLOOR**	Original cement tiles	OK	Needs to be cleaned.	L.L.
		CEILING	Original T.W. boarding	OK	Leakage on W side to be checked.	S.I.
		WALLS	Stone walls, plastered & white washed above arch.	OK	Blistering plaster.	S.U. & L.P.
					Seepage on SW corner.	
		OPENINGS	N- Stone arch with stained windows.	Good		L.P.
			E- 1 window	OK	I.A.- Partly infilled with ply panels.	
					Door shutters permanently closed.	
					Door needs to be consolidated.	S.I.
			S- Stone arch.	OK	I.A.- Arch infilled with brick & two	
					openings permanently closed.	
					Cables placed in front.	S.I.
F 4F	**CORRIDOR BETWEEN TEL. EX. & TERRACE**	**FLOOR**	Covered with linoleum	OK	Linoleum worn out.	S.I.
		CEILING	False ceiling- perforated fibre boards.	OK	I.A.-Some boards missing.	
					Cables running below the false ceiling.	S.I.
		WALLS	N - Stone wall plastered & painted.	OK	I.A.- Heavy cables running through.	S.I.
			E - Partition wall covered with veneer	OK	I.A.- Lockers alligning the panels.	S.I.
			S - Stone wall plastered & poainted.	OK		
			W - Stone wall above opening plastered & white washed.	OK		L.P.
		OPENINGS	N - Originally 2 stone arch windows.	OK	I.A.- 1 partly covered & made into a smaller window. Heavy cables running through the opening.	S.I.
			S - 1 original stone arch.	OK	I.A.- Partly infilled with brick work.	S.I.



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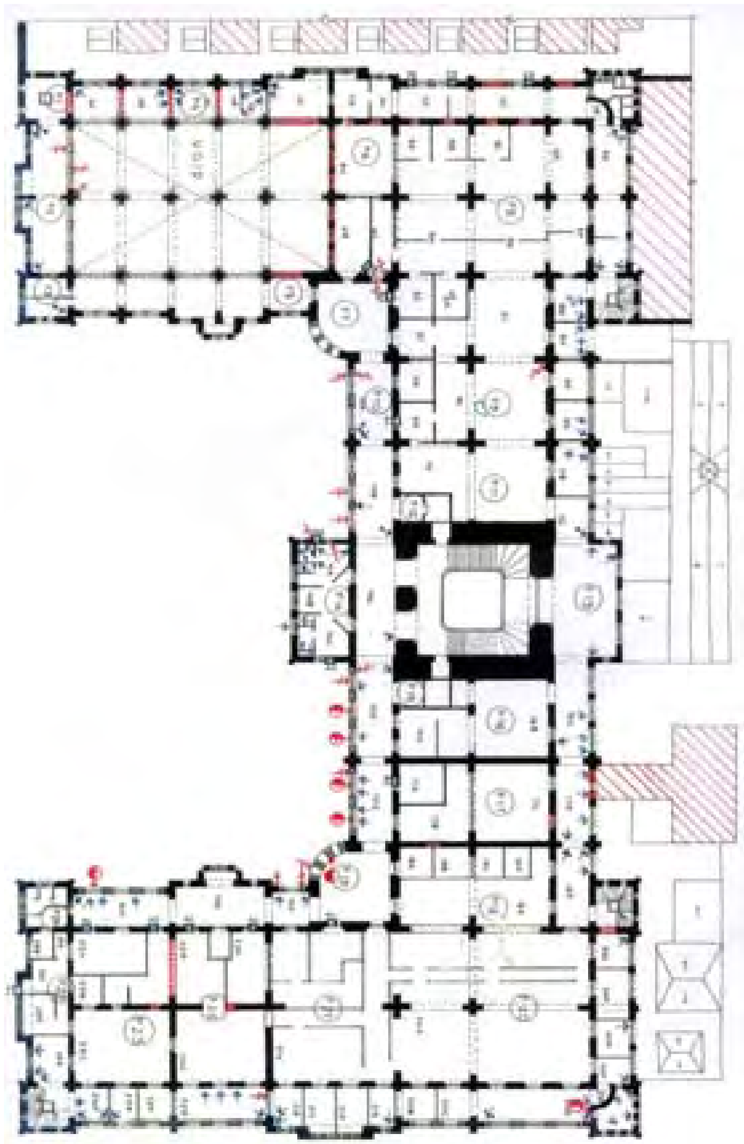
F 4G	**Telephone Exchange**	**FLOOR**	Covered with linoleum	OK		L.L.
		CEILING	False ceiling of corrugated plastic sheets.	OK		S.I.
		WALLS	Stone walls plastered & painted above arches.	OK		L.P.
		OPENINGS	S- 2 stone arches.	OK	I.A.- Infilled & made into niche. 2nd partly covered with ply & made into a small door.	S.I.
			N -1 large stone arch window.	OK	I.A.- Infilled with ply. Part partititon & a small door.	S.I.
					I.A.- Top of partition infilled with 2 window A.Cs.	S.U.
			E- 1 stone arch.	OK	I.A.- Covered with ply partition & veneer.	
			W - 1 stone arch.	OK	I.A.- Infilled with ply panels. Telephone machines placed in front. Metre box placed at the corner.	S.I.
F 5	**CORRIDOR (above star chamber)**	**WALLS**	Stone walls, plastered painted.	OK	I.A.- Cables running along the walls.	L.P.
					Lots of pipes running in the last bay.	S.I.
		CEILING	T.W. boarding	Bad (at few points).	Broken due to wood rot.	S.I.
					Leakage due to plumbing in the last .	
					south bay.	S.I.
		OPENINGS	N - Stone arches with C.I railing.	Bad	I.A.- Al straps on columns. Meter boxes for flash lights.	S.I.
			S - Unplastered arches with stain glass windows .	Good	Stain glass missing in the last bay.	L.P.
F 6A	**OFFICE**	**FLOOR**	Minton tiles covered with blue linoleum sheets.	OK		L.L.
		CEILING	False ceiling of orrugated plastic sheets in Al frame.	OK		L.L.
		WALLS	N & W- Stone, plastered & painted.	OK	N- Cladded with ply partition & laminate.	L.L.
			E & S- Ply partition.	OK		
		OPENINGS	W- 3 stone arches	OK	I.A.- Infilled with ply.	S.I.
			N- 2 stone arch doors.	OK	I.A.- 1 completely infilled & 1 partly infilled with ply partition.	S.I.
			S- 1 stone arch.	OK	I.A.- Large part infilled with ply partition.	S.I.



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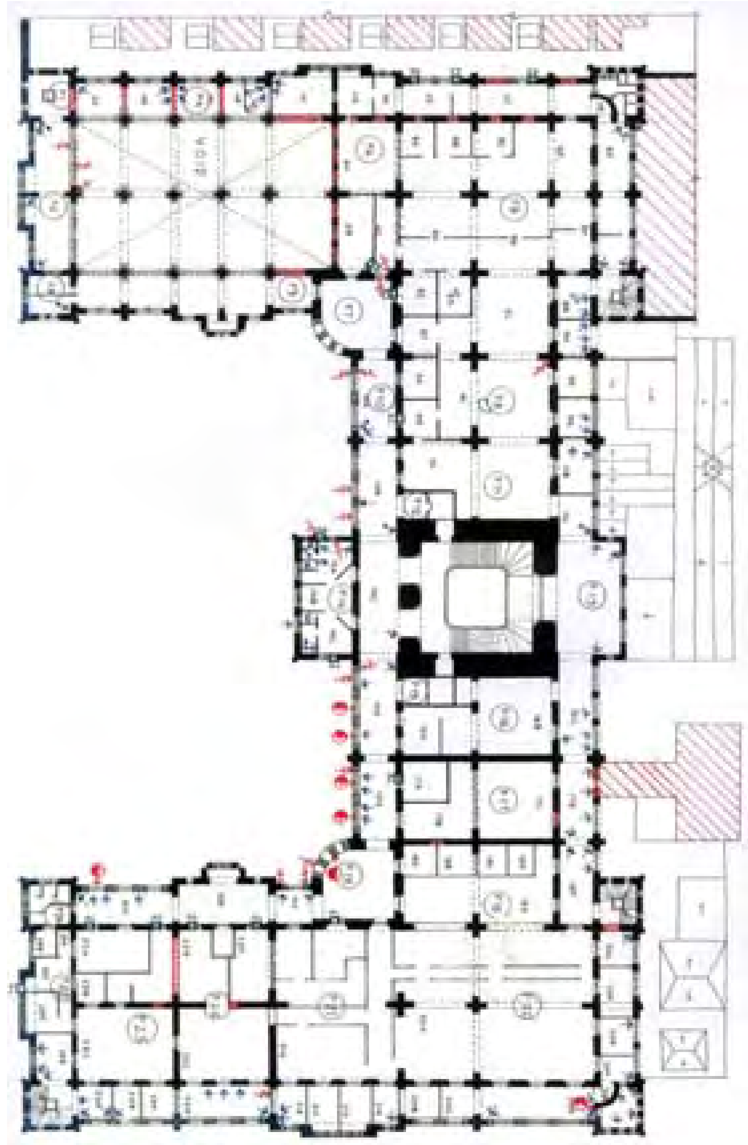
F 6B	**COMPUTER CELL**	**FLOOR**	Grey ceramic tiles.	OK		L.L.
		CEILING	Ply wood false ceiling above T.W. joists- painted white.	OK	Ply wood false ceiling sagging in the centre.	S.I.
		WALLS	N & E- Ply partition	OK		L.L.
			S & W- Stone, painted.	OK		L.P.
		OPENINGS	S- 1 stone arch door with original shutter.	OK	I.A.- Fanlight infilled with ply.	S.I.
			W- 3 stone arches.	OK	I.A.- Infilled with original partitions.	S.I.
F 6C	**OFFICE**	**FLOOR**	Original minton tiles.	Good		L.L.
		CEILING	T.W. joists, painted white.	Good	I.A.- False ceiling provided - completely broken.	S.I.
		WALLS	N, E & W- Ply partitions.	OK		L.L.
			S- Stone, plastered & painted.	OK		
		OPENINGS	S- 1 stone arch door with original shutter & fanlight.	Good	Door painted white.	L.L.
			N- 1 stone arch.	OK	I.A.- Partly infilled with ply.	S.I.
			E- 1 stone arch.	OK	I.A.- Infilled with ply.	S.I.
F 7	**CORRIDOR**	**WALLS**	Stone walls, plastered & painted.	OK	N - I.A.-Meter box mounted on this wall.	S.I.
		OPENINGS	N - 2 original arch doors.	OK	I.A.-Cable wire running across.	S.I.
					I.A.-Door shutters painted white.	L.L.
			E - 2 original arch doors.	OK	I.A.- 1 fanlight covered with ply for AC.	S.U.
					I.A.- Meter box & cables running along.	S.I.
			S - Basalt stone baluster, stone arch	OK	Ficus growth on ext. face of arch.	S.I.
			above.		Arches unpainted.	L.L.
			W -1 arch door.	OK	I.A.-1 shutter glazed & 1 of ply board.	S.I.
F 8A	**OFFICE CABINS**	**FLOOR**	Cement tiles	OK		L.L.
		CEILING	T.W. boards.	OK		L.P.
		WALLS	N- Stone walls, plastered 3 cabins of ply partitions.			L.L.
		OPENINGS	N- 1 Stone arch.	OK	I.A.- Infilled with brick work.	S.I.



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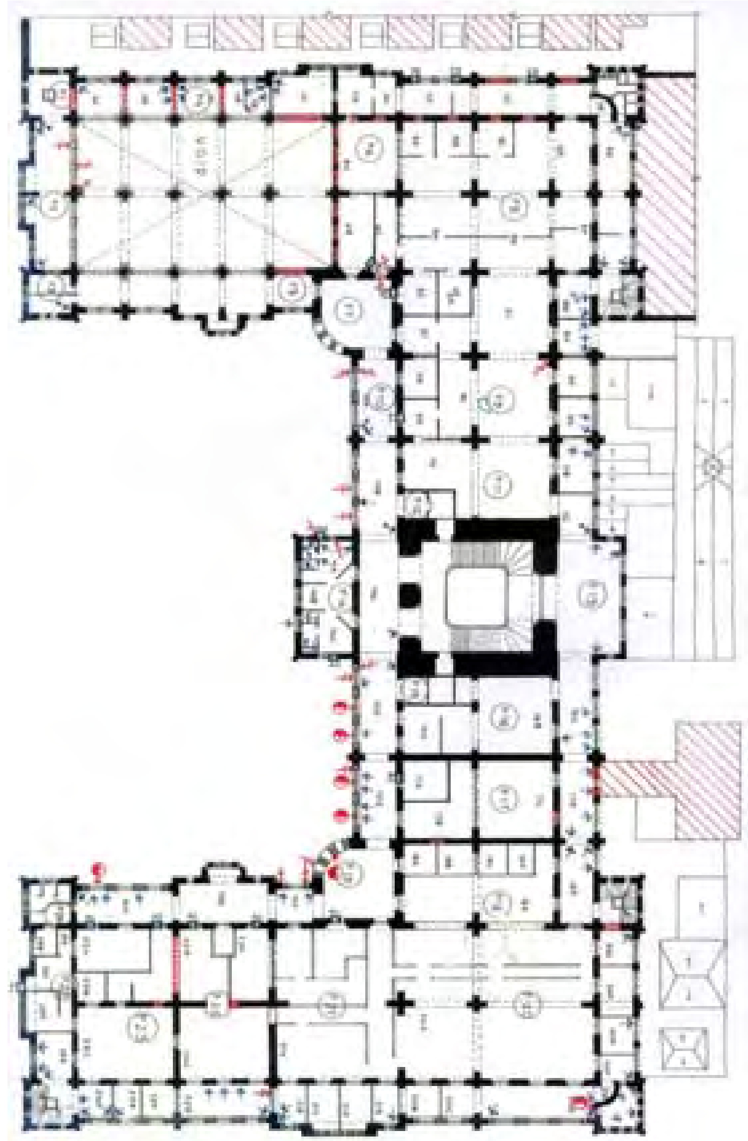
F 8B	OFFICE	FLOOR	Cement tiles.	OK		L.L.
		CEILING	T.W. boards.	OK		L.P.
		WALLS	N- Stone, plastered & painted.	OK		L.P.
			S,E & W- Ply partitions.	OK		L.L.
		OPENINGS	N- 1 stone arch.	OK	I.A.- Infilled with brick work.	S.I.
F 8C						
F 8E	OFFICE	FLOOR	Ceramic tiles.	OK		L.L.
		CEILING				
		WALLS	Stone walls, plasteres & painted.	OK	E - Dampness seen at 1 point.	
					Seepage on NE corner.	S.I.
					Wirign running along N & W walls.	S.I.
			S - Ply partition.		Seepage on S wall.	S.I.
		OPENINGS	N,S- Original stone arch openings.	OK		L.P.
			E- 4 Stone arch windows.	OK		L.P.
			W- 4 original arch windows.	OK		L.P.
F 8F, 8G, 8H	OFFICE	FLOOR	Cement tiles.	OK		L.L.
		CEILING	T.W. boards.	OK		L.P.
		WALLS	Stone, plastered & painted above arches.			L.P.
			Ply partition walls of cabins.			L.L.
		OPENINGS	N - 2 door openings	OK	Wiring running along openings.	S.I.
			E - 4 original arch openings.	OK	Original openings blocked.	S.I.
			W - 1 small opening in the partition.	OK	Not openable.	S.I.
F 8I &8J	OFFICE CABIN	FLOOR	Cement tiles.	OK		L.L.
		CEILING				
		WALLS	N,E & W- Stone,plastered & painted	OK	Seepage on E wall.	S.I.
			S- Ply partitoins.	OK		S.I.
		OPENINGS	N- 1 stone arch.	OK		S.I.
			S- 1 stone arch.	OK	I.A.- Infilled with ply partition.	S.I.
			E- 1 arch window, 1 access to stair.			
			W- 2 original arch doors.	OK		S.I.



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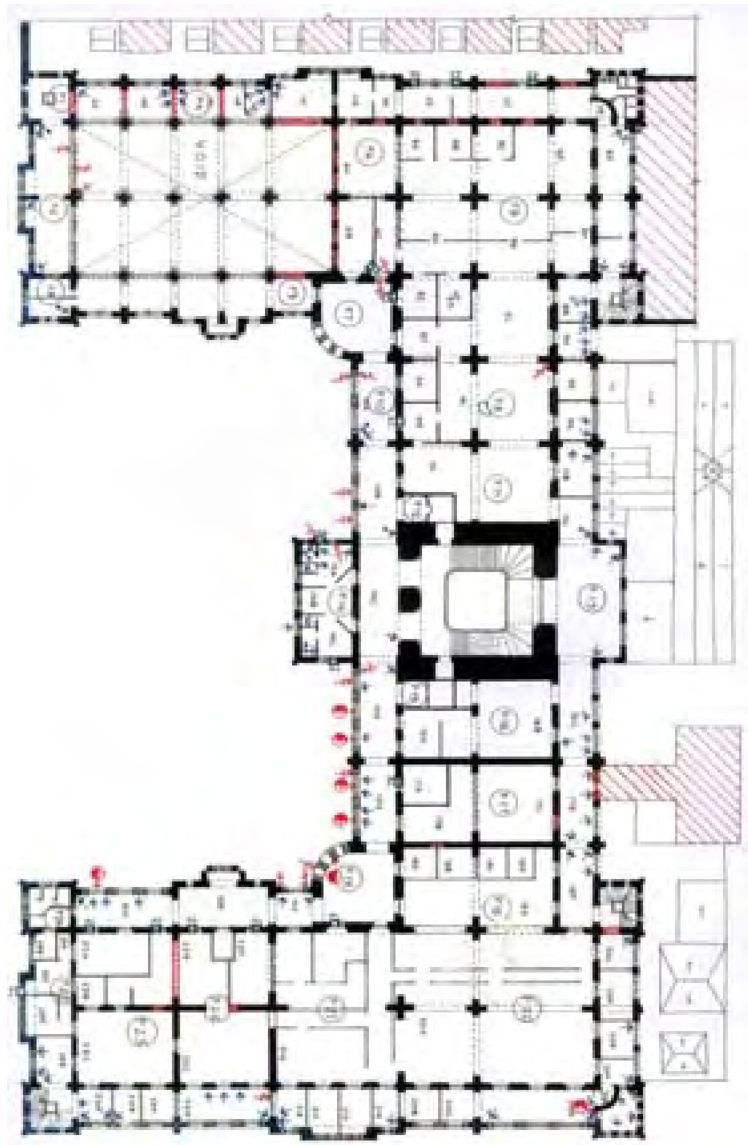
F 8K	OFFICE	FLOOR	Original minton tiles.	Good		L.L.
		CEILING	T.W. joists, painted white.	Good		L.P.
		WALLS	Stone, painted white above arches.			L.P.
		OPENINGS	N & S- Stone arch.	Good	Blocked by Godrej cupboards.	S.I.
			E- 2 stone arch doors with original shutter & fanlight.			
			W- 1 stone arch.	OK	I.A.- Partly blocked by ply partition.	S.I.
F 8L	OFFICE	FLOOR	Red linoleum tiles.	OK	Flooring patched at some places.	L.L.
		CEILING	False ceiling : Perforated fibre board in Al. Frame.			L.L.
		WALLS	N, S, E, & W- Ply partitions.	OK	Int. columns painted green.	L.L.
F 8M	OFFICE	FLOOR	Grey ceramic tiles.	OK		L.L.
		CEILING	Ply false ceiling.	OK		L.L.
		WALLS	W- Stone	OK		L.P.
			N, E & S- Ply partitions.	OK		L.L.
		OPENINGS	W- 1 stone arch door with original shutter & fly door.	Good	I.A.- Fanlight infilled with ply & box for	S.I.
					A.C. Shutter & fly door painted white.	
					Original door not openable.	S.U.
F 8N	OFFICE	FLOOR	Original Minton tiles.			L.L.
		CEILING	T.W. joists, painted white.	Good		L.P.
		WALLS	N, S & E- Ply partitions.	OK		L.L.
			W- Stone, painted above arch.	OK		L.P.
		OPENINGS	W- Stone arch door with original shutter & fly door	Good	Shutter & fly door painted white.	L.P.
F 9A	OFFICE	FLOOR	Original Minton tiles.	Good		L.L.
		CEILING	T.W. joists, painted white.	Good		L.P.
		WALLS	N, S & E- Ply partitions.	OK		L.L.
			W- Stone wall, painted above arches.	OK		L.P.
		OPENINGS	W- 1 original stone arch door with original shutter.	OK	I.A.- Fly door added & door shutter painted white.	L.P.



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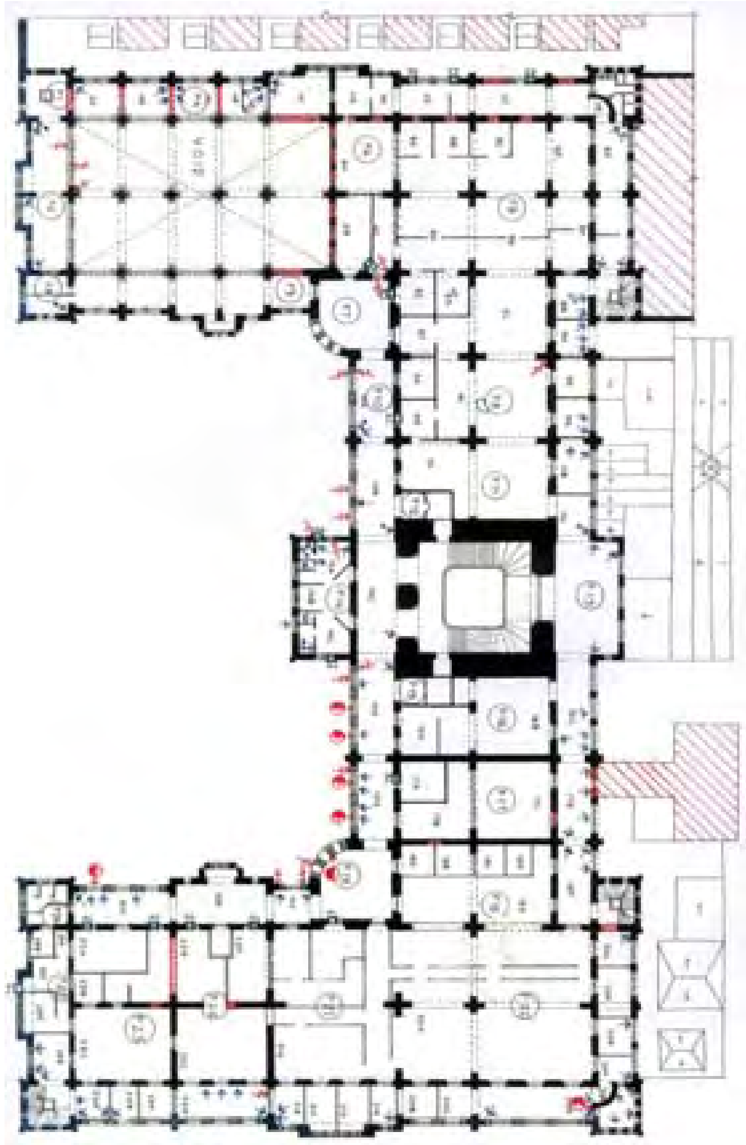
F 9B	OFFICE	FLOOR	White ceramic tiles.	OK		L.L.
		CEILING	False ceiling in Al frame.	OK		L.L.
		WALLS	N, S & E- Full ply partitions.	OK		L.L.
			W- Stone walls, painted above arch.	OK		L.P.
		OPENINGS	W- 1 original stone arch door with original shutter & fly door.	Good	I.A.- Fanlight infilled with ply & A.C. box	S.U.
					Fly door & shutter painted white.	L.P.
F 9C	OFFICE	FLOOR	Cement tiles.	Bad	Worn out.	L.L.
			Original Minton tiles.	Good		L.L.
		CEILING	T.W. boards.	OK		L.P.
			T.W. joists, painted.	Good		L.P.
		WALLS	N,S,E- Stone walls, painted above	OK	Cracks on NE corner.	S.U.
			Stone, plastered above arches.	OK		L.P.
			W - Ply partition	OK		L.L.
		OPENINGS	Original stone arches.	Good.		L.P.
			W - 2 original arch door openings.	OK	I.A. - 1 fanlight infilled ith ply for A.C.	S.U.
			E - 2 original arch door openings.	OK		L.P.
F 9D	OFFICE CABIN	FLOOR	Cement mortar	OK		L.L.
		CEILING	False ceiling	OK		L.L.
		WALLS	N & S - Ply partitions	Bad	Incongruous.	L.L.
			E & W - Stone walls, painted.	OK	Cables running along the wall.	S.U.
		OPENINGS	E - 1 original arch window.	OK	I.A. -Balusters covered with ply.	S.S.
			Basalt stone balusters.		Arches covered with ply partition.	S.I.
			W - 1 original arch opening.	OK	Opening broken on S side.	L.L.
F 9E	Sr.personel officer	FLOOR	Red linoleum sheet.	OK		L.L.
		CEILING	T.W. joists, painted white.	Good		L.P.
		WALLS	E & W- Stone.	OK	I.A.- Cladded with wooden panels.	S.U. /L.L.
		OPENINGS	E- 1 stone arch	OK	I.A.- Covered with ply panel & made into smaller opening.	S.I.
			W- Original stone arch door with fly door.	Good		S.U.



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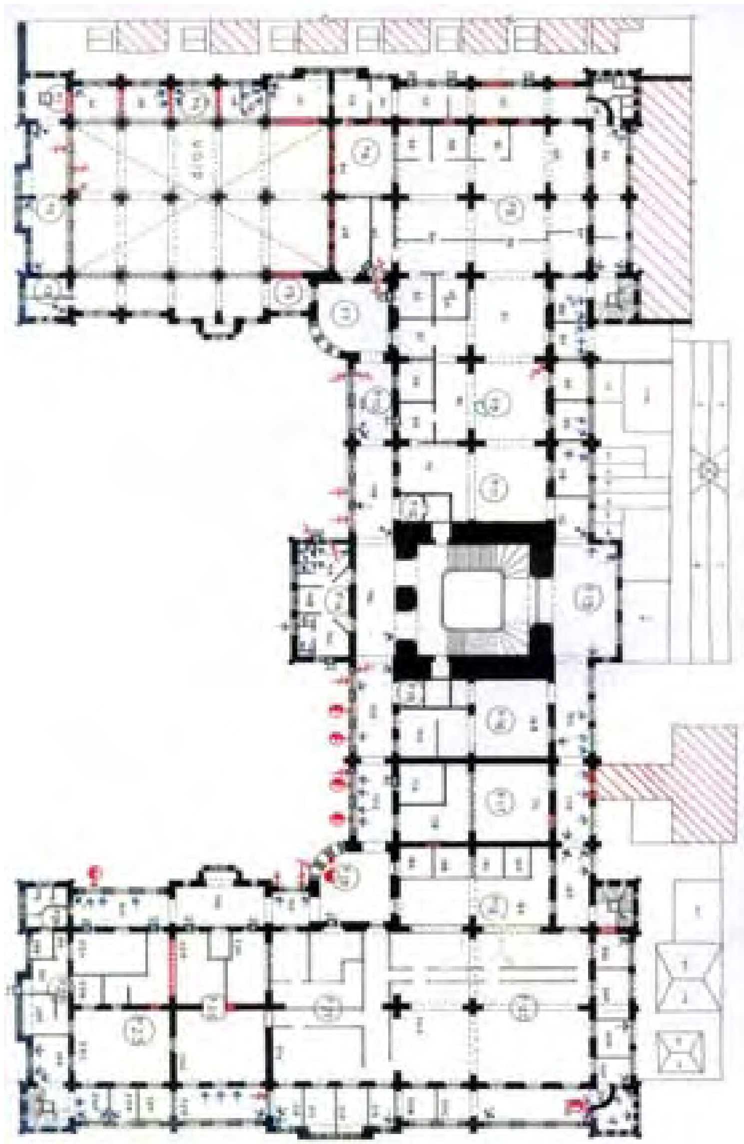
F 10A	**CORRIDOR**	**FLOOR**	Marble mosaic tiles.	OK		L.L.
		CEILING	T.W. boarding.	OK		L.P.
		WALLS	Stone walls, plastered & painted.	OK	Seepage & rising damp in SW corner.	S.I.
		OPENINGS	W - 2 stone arches above basalt stone balusters.	OK	Arches unpainted.	L.P.
					Corrosion on parapet due to acid rain.	S.I.
			E - 2 original arch door openings.	OK	I.A. - 1 fanlight covered with ply for window A.C.	S.U.
					I.A - 1 fly door covered with laminate.	S.U.
F 10B	**CORRIDOR**	**FLOOR**	Marble mosaic	OK	Incongrous	L.L.
		CEILING	T.W. boarding.	OK		
		WALLS	Stone walls, painted.	OK	W - Dampness at 1 point above column.	S.I.
		OPENINGS	W - 3 stone arches above basalt stone balusters.	OK	Cracks on some of the balusters.	L.L.
			E - 3 arch door openings.	OK		
F 10C	**CORRIDOR**	**FLOOR**	Original T.W. boarding. Linoleum on top.	Bad	Floor boards have wood rot.	S.I.
		CEILING	T.W. boarding.		Distress to be consolidated.	S.S.
		WALLS	Stone walls, plastered & painted.	OK	Ficus growth & seepage on SE corner.	S.I.
		OPENINGS	E - 2 arched openings.	Good	2 blocked by furniture - not openable.	L.P.
			W - 4 original arch doors.	OK	I.A. - Fanlights covered with ply.	S.U.



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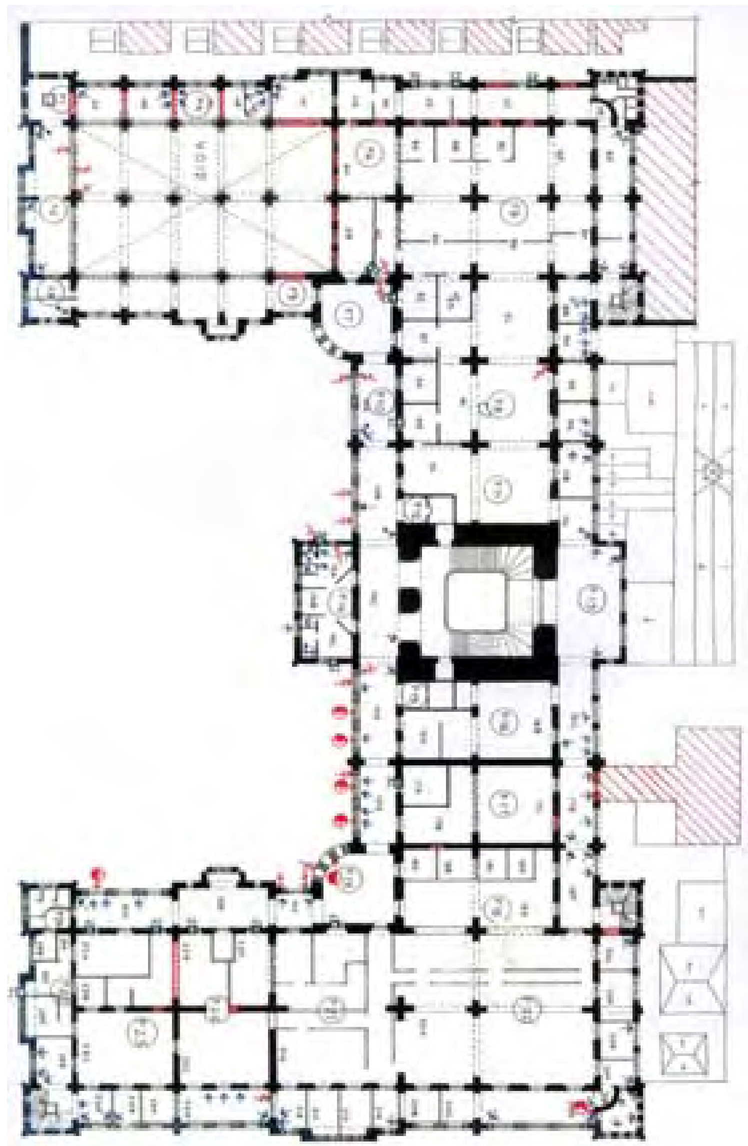
F 10D	OFFICE CORRIDOR	FLOOR	Original cement tiles	OK		L.L.
	CABIN		Marble mosaic tiles, skirting - glazed tiles.	OK		S.I.
		CEILING	T.W. Boarding.	OK		L.P.
		WALLS	N-1/2 stone wall with T.W skirting	Bad	I.A.-1/2 covered with TW panels.	S.I.
			S-Stone wall, plastered & painted.	OK		L.P.
			Stone walls, plastered & painted.	OK	W - Seepage.	S.I.
			E-Ply partition wall with smoke glass.	OK	Ply shows swelling at bottom.	S.U.
		OPENINGS	W - 3 original arches, basalt stone	OK	Distress in 2 arches	S.U.
			N - 1 stone arch.	OK	Crack running from the ceiling to the	
			balusters.		Cracks seen on 1 column & 2 balusters.	
					centre of the arch.	L.L.
			E - 2 door openings with original	OK		L.P.
			S - 1 stone arch.	OK	I.A.- Partititon wall runs across the opening. Permanently closed.	L.L.
			shutters, fanlights & fly doors.			
			W- 2 arched door openings. Original fly doors.	OK		
F 10E	CORRIDOR	FLOOR	Marble mosaic tiles, skirting - glazed tiles.	OK		S.I.
		CEILING	T.W. boarding.	OK		L.P.
		WALLS	Stone walls, painted.	OK	E - I.A. - Cables running along the walls.	
					E - I.A. - Meter box fitted on the wall.	S.I.
					E & W - Seepage above the arches.	S.I.
		OPENINGS	W - 2 original arch door openings.	OK	Distress in all the arches.	S.I. / L.P.
			E -2 original arch openings, basalt	OK	I.A. - Fanlight covered with ply for A.C.	S.U.
			stone balusters.	Bad	Crack in one of the columns.	L.P.



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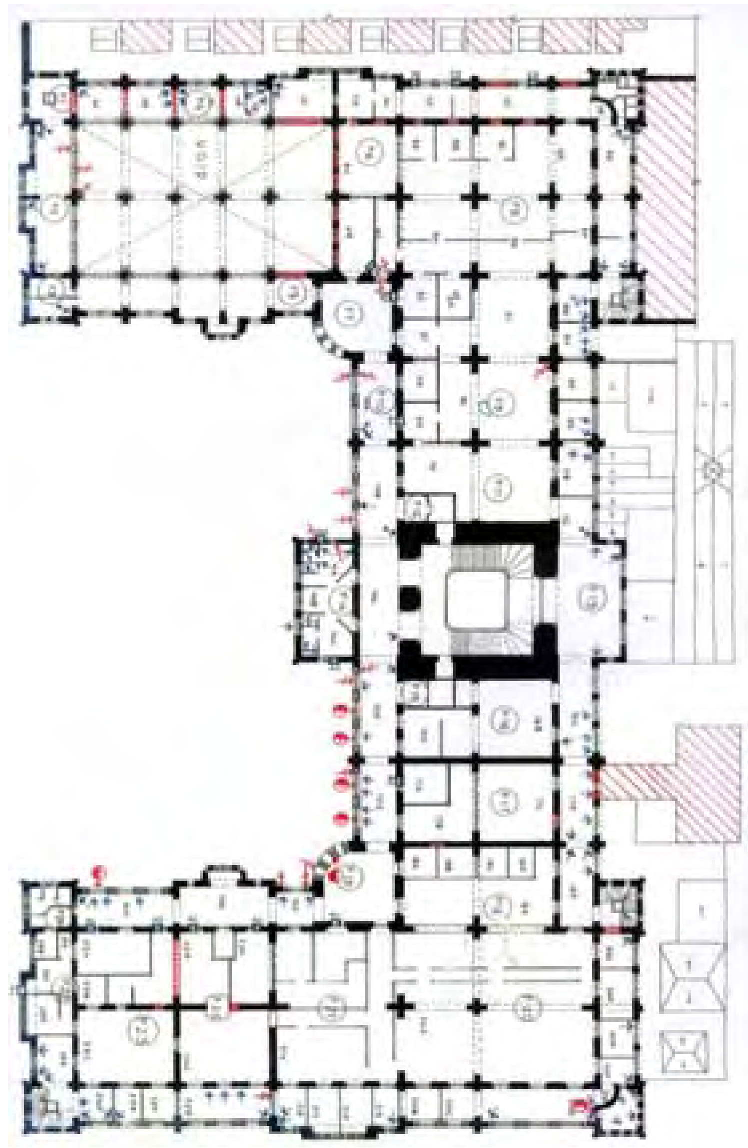
F 10F	**CORRIDOR**	**FLOOR**	Marble mosaic tiles. Skirting - glazed tiles.	OK		S.I.
		CEILING	T.W. Boarding	OK		L.P.
		WALLS	N - Stone wall, painted.	Bad	Seepage on NE & NW of the wall.	S.I.
			S - Stone wall, painted.	OK	Cables running along the wall.	S.I.
		OPENINGS	N - 1 Basalt stone baluster, stone arch above.	OK	Cracks in the balusters. Distress in the arch.	L.P. / S.I.
			S - 1original arch door opening.	OK	I.A.- glazing of the shutters painted.	
					A.C. fitted in the fanlight.	S.U.
F 10G	**CORRIDOR**	**FLOOR**	Marble mosaic tiles. Skirting - glazed tiles.	OK		S.I.
		CEILING	T.W. boarding.			L.P.
		WALLS	N - Original stone wall with projecting bay.	OK	Paan stains at the corner.	S.S.
			S - Stone wall, painted.	OK	I.A.- A.C. switches on this wall.	S.S.
					Cables running along this length.	S.U.
		OPENINGS	N -Stone arches & basalt stone baluster.	OK	Railing of the bay originally infilled with stone.	S.S.
			S - 3 stone arch windows.	OK	I.A.- 2 infilled & made into small window	
					with A.C. boxes.Fanlights infilled - ply.	S.U.
F 10H	**CORRIDOR**	**FLOOR**	Marble mosaic tiles. Skirting - glazed tiles.	OK	For the entire corridor upto the staircase lobby	S.I.
		CEILING	T.W. Boarding	OK		L.P.
		WALLS	Stone wall cladded with tiles.	Bad	Seepage on N wall above 2 arches.	S.I.
					Rising damp on NW corner.	
		OPENINGS	N - 3 stone arch openings above	OK	Distress in arch. Crack in 1 baluster.	L.L.
			Basalt stone baluster.			
			S - 3 door openings.	OK	I.A.-1 partly covered with ply and made	
					into a smaller opening.	L.L.
					Cables running along partly covered arch	
					I.A.- 2 fanlights replaced by A.C.	S.U.
			W - 1 original arch opening.	OK		



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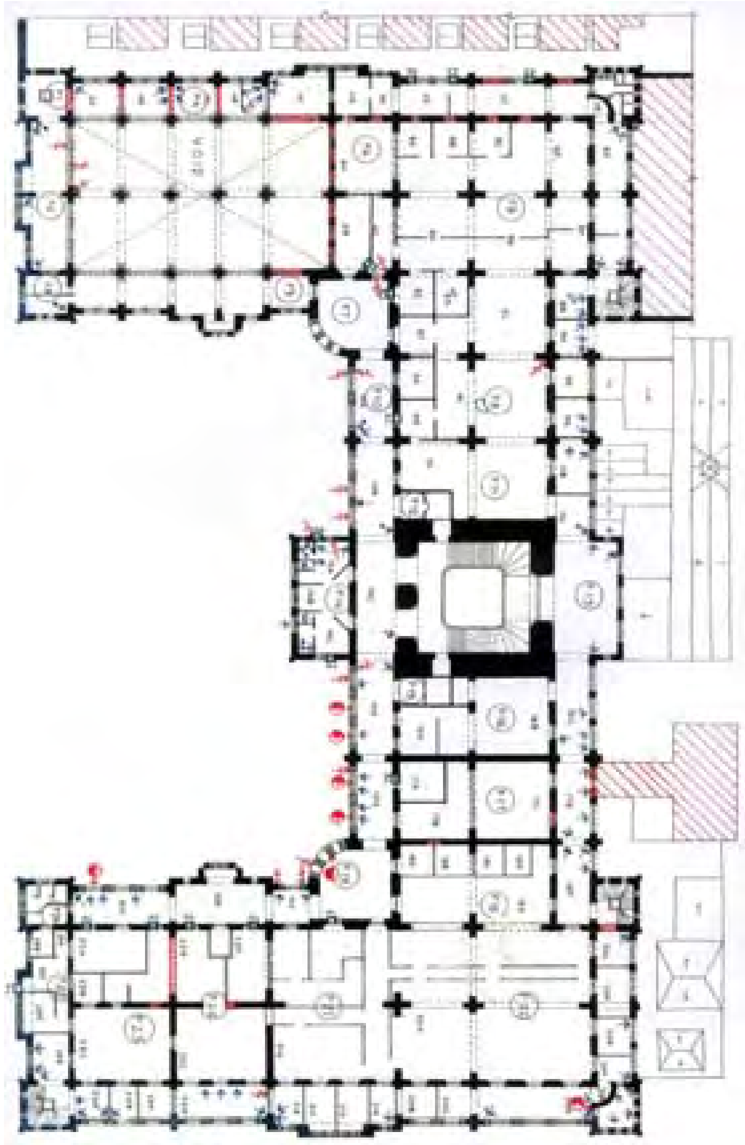
SPACE	CURRENT USAGE	ELEMENT	MATERIAL DESCRIPTION	CONDITION	DEFECTS	PRIORITY
F 11A	**OFFICE**	**FLOOR**	Linoleum.	OK	Incongrous.	L.L.
		CEILING	Original T.W. boarding.	OK		L.P.
		WALLS	Stone, plastered & painted above arches.	Good		L.P.
		OPENINGS	N- 2 stone arches	OK	I.A.- 1 partly blocked by ply partitions.	S.I.
			E & W- 2 stone arch doors.	OK		L.P.
F 11B	**OFFICE CABIN**	**FLOOR**	Cement mortar.	OK	Incongrous.	L.L.
		CEILING	False ceiling.		Broken on N - side.	L.L.
		WALLS	N & S - Ply partitions.	OK	Seepage on N wall & NE corner.	S.I.
			E & W - Stone walls, painted.	Good	I.A. - Wash basin mounted on E wall.	S.I.
					Cables running along W wall.	S.I.
		OPENINGS	E - 1 1/2 arch windows.	OK	I.A. -Balusters covered with ply.	L.L.
			Basalt stone balusters.		Arches covered with ply partition.	S.I.
			W - 1 original arch door.	OK	I.A. -Cables running along the opening.	S.I.
F 11C		**FLOOR**	Cement mortar.	OK	Incongrous.	L.L.
		CEILING	False ceiling.	OK		L.L.
		WALLS	N - Ply partition.	OK		L.L.
			E & W - Stone walls, painted.	OK		L.P.
		OPENINGS	E - 1 & 1/2 original arch window.	OK	I.A. -Balusters covered with ply.	L.L. / L.P.
			Basalt stone balusters.		Arches covered with ply partition.	S.I.
			W - 1 original arch door.	OK	I.A. - 1/2 covered with ply & made small	S.I.



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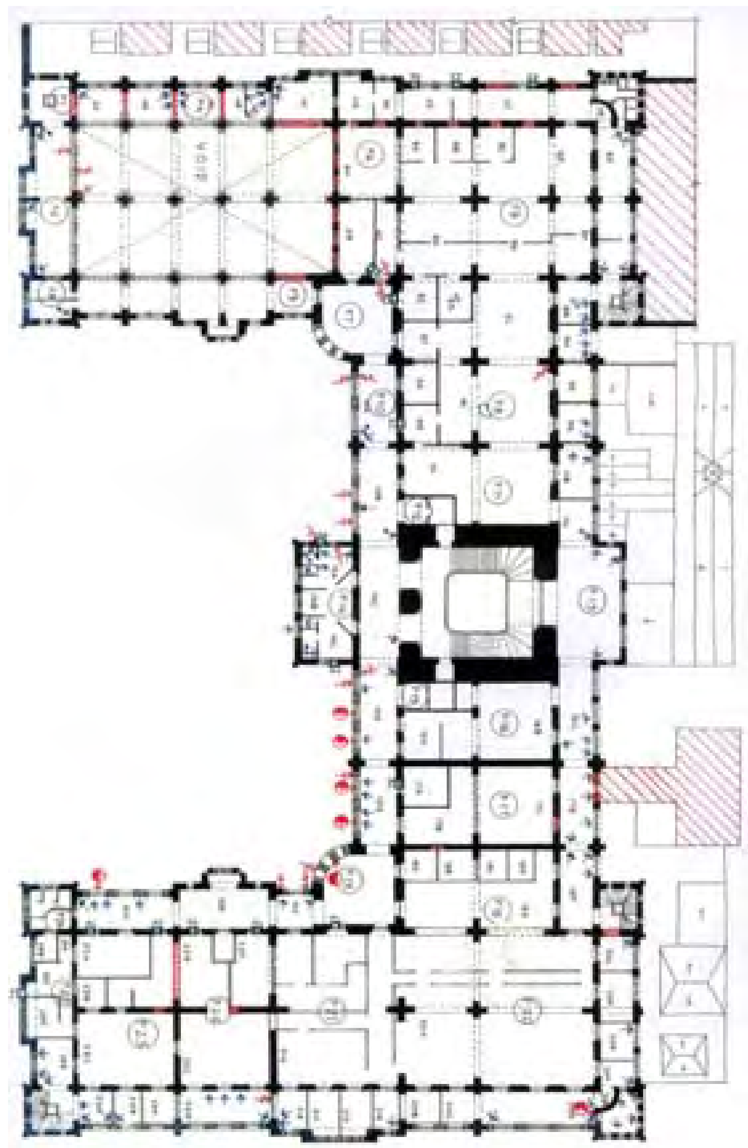
F12 & F 15	LIFT	LATER ADDITION				
F 13	OFFICE	FLOOR	Original Minton tiles.	Good	Need to be cleaned.	L.L.
		CEILING	T.W. joists painted white.	Good		L.P.
		WALLS	Stone walls, plastered & painted.	OK	Seepage on N & S wall.	S.I.
		OPENINGS	W- 1 stone arch	OK	I.A.- Partly infilled with ply.	S.I.
			N- 1 stone arch slit window with stain glass.	OK	I.A.- Shutter glass painted.	S.I.
			E- 3 stone arch windows with stain glass in fanlight.	Good	I.A.- Window glass painted.	S.I.
			S- 1 stone arch.	OK	I.A.- Cable running along arch.	S.I.
			W- 3 stone arches with original fanlights & shutters.	OK	I.A.- Central arch fanlight missing & shutters painted.	S.U.
F 14A		FLOOR	Ceramic tiles	OK		L.L.
		CEILING	False ceiling	OK		L.L.
		WALLS	N,E & W- Stone,plastered & painted.	OK	W - Seepage due to A.C.	S.I.
			S- Ply partition.Dado of ceramic tiles.		Seepage on NE corner.	S.I.
		OPENINGS	E - 1 original door opening.	OK	I.A. - Blocked by furniture. Fanlight covered with ply panels.	S.U.
			W - 1/2 arched opening.	Bad	I.A. - 1/2 blocked by toilet partition.	S.U.
			N - 1 arch window opening.	Bad	I.A. - blocked by A.C.	S.U.
					Cracks on arch.	L.P.
			S - Ply door opening.	OK	Incongrous. Seepage near the window.	S.I.
F 14A1	TOILET	WALLS	S & E - Ply partition.	Bad	E - Seepage & wood rot.	S.I.
			N & W - Stone walls, painted.	OK	NW corner - leakage due to pipe.	S.I.
		OPENINGS	W - 2 original arch window.	OK	I.A. - Louvres.	L.P.
F 14B		FLOOR	Grey linoleum.Original cement tiles.	OK		L.L.
		CEILING	False ceiling			L.P.
		WALLS	N & S - Ply partition walls.	OK		L.L.
			E - Stone walls, plastered & painted.			L.P.
		OPENINGS	E- 2 original arch doors.	OK	I.A.- 1 blocked by furniture.	S.U.
			W- 1 stone arch window.		Fanlights covered with ply panels.	S.U.



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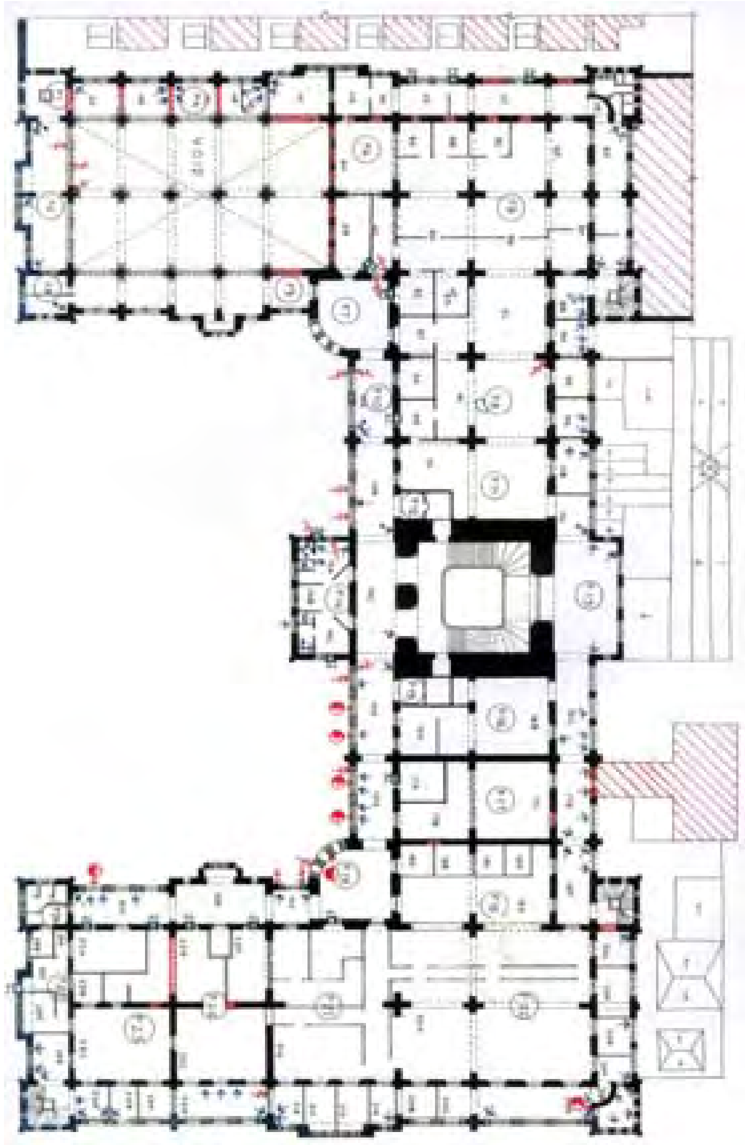
F 14C		**FLOOR**	Ceramic tiles.	OK		L.L.
		CEILING	False ceiling	OK		L.P.
		WALLS	N & E - Ply partitions.	OK	I.A.- Not original.	L.L.
			S & W - Stone walls, painted.	OK	Seepage on NW corner.	S.I.
		OPENINGS	N - 1 door opening.	Bad	Incongrous.	L.L.
			E -1 original door opening.	OK	I.A. - blocked by furniture.	S.U.
			W - 1 arch window opening.	OK	I.A.-1/2 blocked by toilet block partition.	S.U.
			S - 1 arched window opening.	Bad	I.A. - Blocked by AC. box.	S.U.
F 14C1	**TOILET BLOCK**	**FLOOR**	Glazed tiles	OK		L.L.
		CEILING	False ceiling			L.L.
		WALLS	S,W- Stone walls.	OK	S - W.C. along the wall. Heavy seepage.	S.I.
			N,E- Ply partitions. Glazed tiles for dado.			
		OPENINGS	W - 1/2 window arch opening.	Bad	I.A. - Louvred.	S.S.
			E - 1 ply door opening.	OK		S.S.
F 14H	**NOT ACCESSIBLE**					
F 16A	**OFFICE**	**FLOOR**	Original minton tiles.	OK		L.L. / L.P.
		CEILING	T.W. joists, painted white.	Good		L.P.
		WALLS	E- Ply & glass partition.	OK		S.U.
			S & W- Stone, plasteerd & painted.	OK		L.P.
			N- Brick wall.	OK		L.P.
		OPENINGS	W- 2 stone arch doors with original fanlight & shutter.	OK	Shutters painted white.	S.U.
F 16B	**OFFICE**	**FLOOR**	Original minton tiles.	OK		L.L. / L.P.
		CEILING	T.W. joists, painted white.	Good		L.P.
		WALLS	N, S & E- Stone, plastered & painted.	OK		L.P.
			W- Ply & glass partition.	OK		S.U.
		OPENINGS	E- 1 stone arch opening & 1 stone arch door with original fanlight.	OK	Door shutter missing.	S.U.



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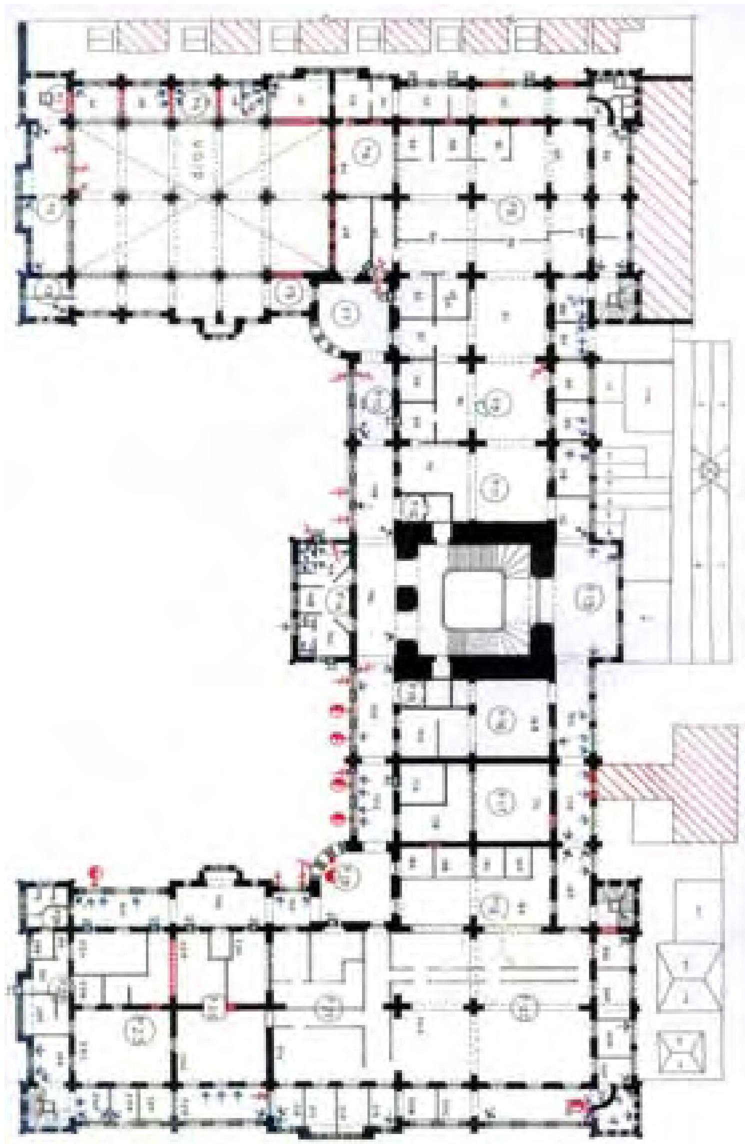
F 16C	**OFFICE**	**FLOOR**	Stone flooring.	OK		L.L.
		CEILING	T.W. joists, painted white.			L.P.
		WALLS	Stone walls, painted above arches.	OK	Seepage in SE corner & E wall.	S.I.
		OPENINGS	N & S- 1 stone arch.	OK		
			E- 3 stone arches.	OK	I.A.- Infilled with ply upto sill level.	L.L.
					Window frame & fanlight added later.	S.U.
F 17A	**DPTY CPO OFFICE**	**FLOOR**	Red carpet	OK		L.L.
		CEILING	Brown perforated fibre board in Al frame (fitted with concealed tubelight)	OK		L.L.
		WALLS	N & W- Stone, plastered & painted.	OK		L.P.
			S & E- Ply partitions.			L.L.
		OPENINGS	W- 1 stone arch door with original shutter.	OK	I.A.- Fanlight infilled with ply for A.C.	S.U.
					Shutter glass painted white.	S.S.
F17B&C	**OFFICE (General)**	**FLOOR**	Cement tiles	OK		L.L.
		CEILINGS	T.W. boarding.	OK		L.P.
		WALLS	N- wall of F12B not present.			
			S, E & W - Stone walls, plastered & painted.	OK		L.P.
		OPENINGS	E- 1 door & 2 small windows. Door shutters original.	OK	2 small windows closed permanently.	S.I.
F17B&C	**OFFICE**	**FLOOR**	Original cement tiles	OK	Needs to be cleaned	L.L.
		CEILINGS	T.W boarding	OK		L.P.
		WALLS	Stone walls, plastered & painted	OK	Paint- blistering.	S.U.
		OPENINGS	Original stone arches.	OK	Intermediate openings between 2 rooms closed & have broken glazing.	S.I.
			F13B- 2 original doors & 2 small windows	OK	Small windows closed permanently.	S.I.



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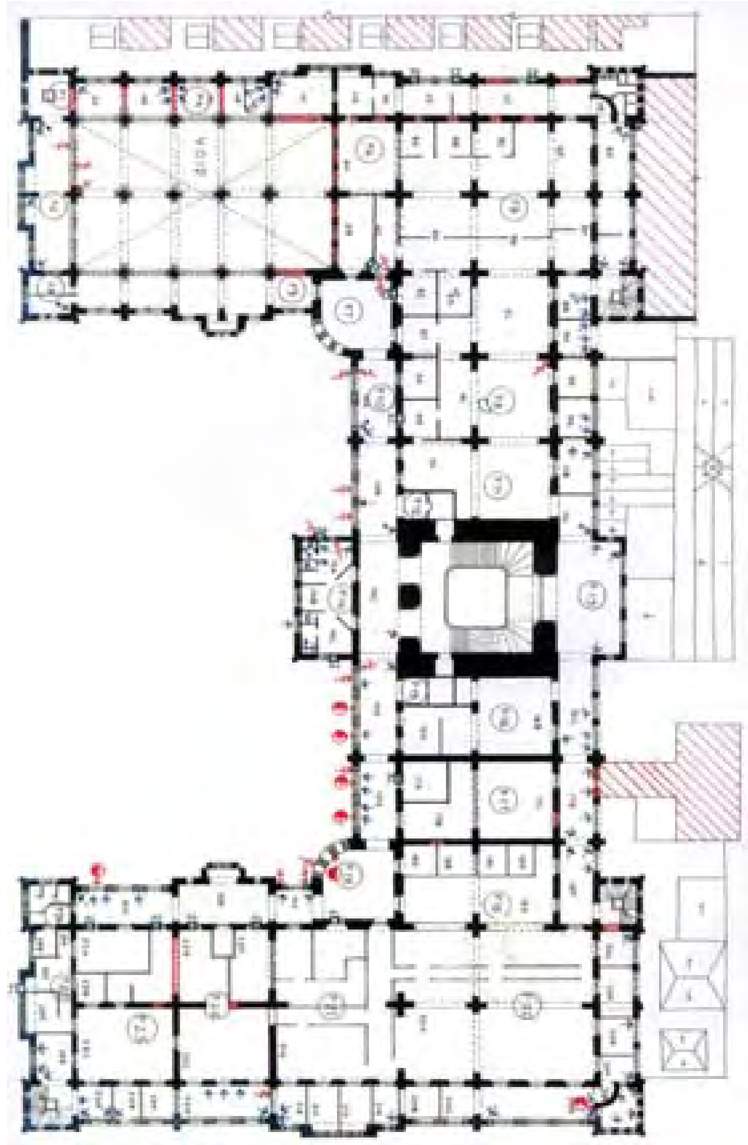
F 17D	CORRIDOR USED AS OFFICE	FLOOR	Cement mortar	Bad	Incongrous.	S.I.
		CEILING	T.W. boarding.	OK	Damaged on the E-side due to seepage.	S.I.
		WALLS	Plastered & painted above arches.	Bad	Major seepage on the S-wall & E- Wall.	S.I.
			W wall skirting of glazed tiles.	OK		S.I.
		OPENINGS	N & S- Stone arches.	OK		L.P.
			E- Basalt stone ballusters	OK	I.A.-Balusters infilled with ply & A.C. sheets with window shutters on top.	S.U. / L.P.
			W- 2 stone arch openings.	OK	I.A. 1 arch opening partly filled with bk work & made into 1 small opening.	S.I.
F 18A & 18B	OFFICE	FLOOR	Cement tiles	OK		L.L.
		CEILING	T.W. boarding.	OK		L.P.
		WALLS	Stone walls plastered & painted.	OK		L.P.
		OPENINGS	N- 1 Stone arch.	OK	Closed permanently.	S.I.
			S- 4 Stone arches.	OK		L.P.
			E- 4 Stone arches.	OK		L.P.
			W- 2 Stone arches.	OK		L.P.
F 18C	CORRIDOR AS OFFICE	FLOOR	Cement mortar	OK	Incongrous.	S.I.
		CEILING	T.W. boarding.	Bad	Damaged- seepage in NW & NE corner.	S.I.
		WALLS	Above arches plastered & painted.	OK	N - Heavy seepage.	S.I.
					W - I.A. - 2 meter boxes on the wall.	S.I.
		OPENINGS	E-2 stone arch openings, 1 staircase access, 2nd balcony access.	OK	I.A.- Covered with jali.	S.U. / L.L.
				OK	I.A.-Covered with ply panels.Balusters	L.L.
					I.A.- Covered with window shutters.	S.S.
			W- 2 stone arches.	OK	Door shutters removed.	S.S.
			N- Stone arch.	OK	No shutters.	S.S.
			S- 1 Stone arch.	OK		



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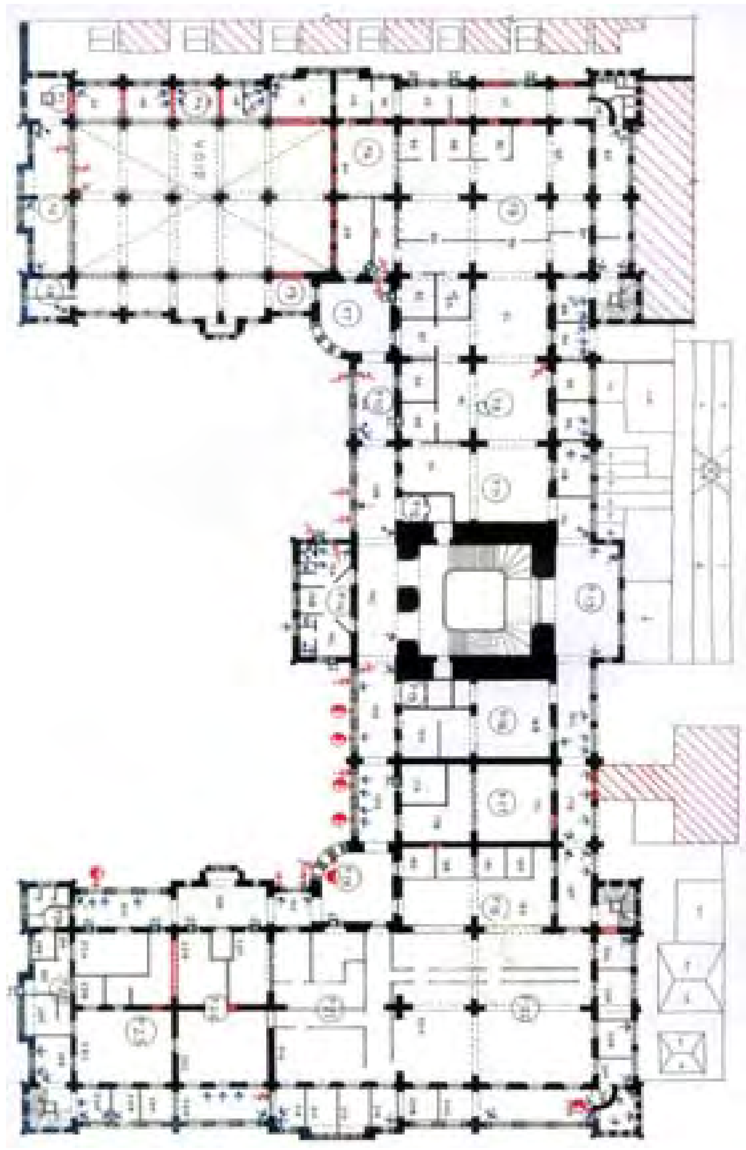
F 19	**CORRIDOR**	**FLOOR**	Marble mosaic tiles, skirting - glazed tiles.	OK	Subsidence at one point	S.I.
		CEILING	T.W. boarding.	OK	Distress observed.	L.P.
		WALLS	Stone walls, plastered & painted.	OK	S & E - Cables running along the wall.	S.I. / L.P.
		OPENINGS	S - 2 original arch door openings.	OK	I.A.-fanlight covered with ply for AC box.	S.U.
					I.A.- 2 meter boxes.	S.I.
			E - 2 original arch door openings.	OK	I.A. - Cables running along the arches.	S.I.
			W - Basalt stone balusters.	OK	I.A.-Infilled with cement mortar. Cracks in railing filled with cement mortar.	S.S. / L.P.
F 20A	**OFFICE**	**FLOOR**	Red linoleum sheets in passage.	OK		L.L.
			Original minton tiles.			
		CEILING	T.W. joists, painted white.	Good		L.P.
		WALLS	Stone walls, painted above arches.	Good		L.P.
		OPENINGS	W & N- 2 stone arches.	OK		L.P.
			S- 5 stone arch doors with original fanlights & shutters.	OK	Shutters painted white.	S.U. / L.P.
			E- 4 stone arch doors with original fanlights & shutters.	OK	Shutters painted white.	S.U. / L.P.
F 20B	**OFFICE**	**FLOOR**	Original stone.	Good		L.L.
		CEILING	T.W. joists, painted.			LP
		WALLS	S- Stone, plastered & painted.			L.P. / L.L.
			E & W- Ply partitions.			
		OPENINGS	S- 1 stone arch window.	Bad	I.A.- Covered with wooden window	S.I.
					shutter. Ply partititon till sill level.	
F 20C	**OFFICE CABIN**	**FLOOR**	Cement mortar	OK	Incongrous.	L.L.
		CEILING	T.W. boarding.	OK		L.P.
		WALLS	N & S - Stone wall, painted.	OK		L.P.
			E & W - Ply partitions.	OK	I.A. - Ply partition with veneer.	L.L.
		OPENINGS	N - 1 Stone arch	OK		L.P.
			S- Stone arch,basalt stone balusters	OK	I.A.- Balusters covered with ply panels & openings covered with ply of window shutters.	L.P. / L.L.



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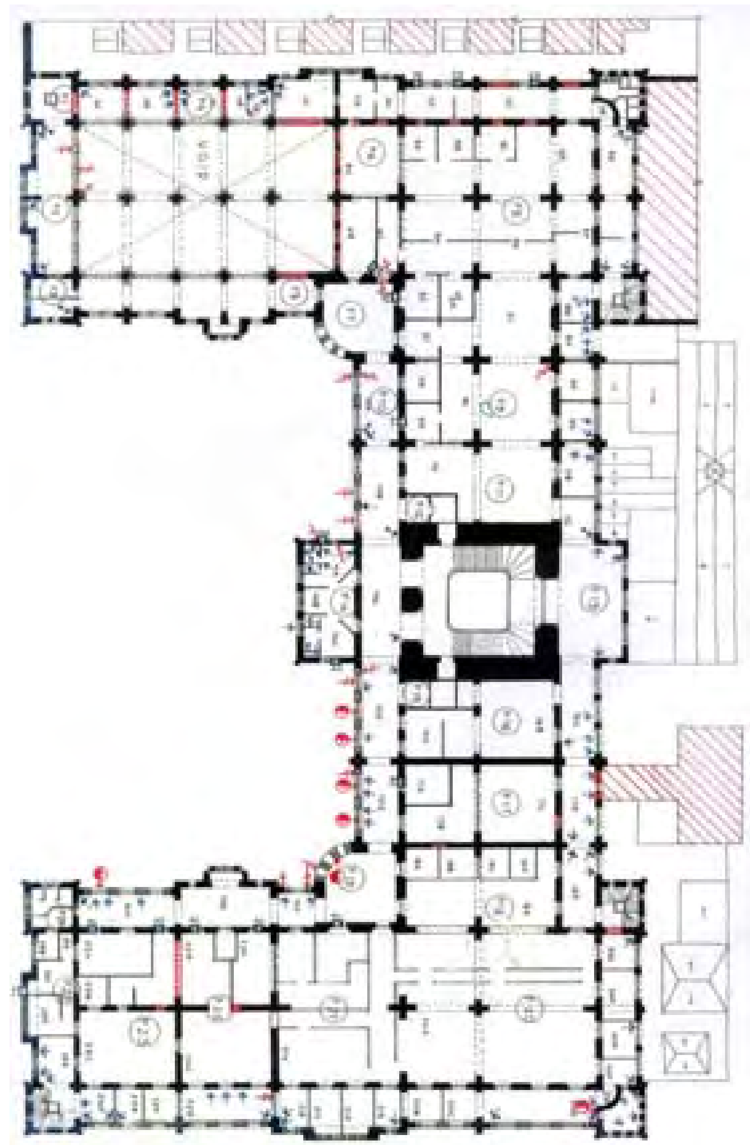
F 20D	**CORRIDOR AS OFFICE**	**FLOOR**	Cement mortar	OK	Incongrous	L.L.
		CEILING	T.W.Boarding.	OK		L.P.
		WALLS	Plastred & painted	OK	I.A.- W wall - ply partition with veneer.	L.L. / L.P.
		OPENINGS	N - 3 stone arches.	OK		L.P.
			S -Basalt stone balusters.	OK	I.A.- Balusters covered with ply panels & openings covered with ply of window shutters.	L.L. / L.P.
F 20E	**KITCHEN**	**FLOOR**	Black ceramic tiles.	OK	Incongrous.	L.L.
		CEILING	False ceiling of ply panels	OK	Major seepage problem.	S.I.
		WALLS	Plastered and white washed.	Bad	All walls - major seepage.	S.I.
			Dado 1.8m high.- ceramic tiles.	OK		
		OPENINGS	Stone arch windows.	OK	Window shutters of the E & W walls need to be consolidated.	S.U. / L.L.
F 20F	**CORRIDOR AS OFFICE SPACE.**	**FLOOR**	Cement mortar	OK	Incongrous.	L.L.
		CEILING	T.W. boarding.	OK	Seepage on E & S corner.	S.I.
		WALLS	Walls above arches painted.	OK	Seepage on E wall. only W-S wall painted entirely.	S.I.
		OPENINGS	E-Stone arch,basalt stone balusters.	OK	I.A.-Arch covered with partition panel & window shutters.	S.U. / L.L.
			W -1 door opening original shutters .	OK	I.A.- Fanlight of ply, not original.	S.U.
F 20G	**CORRIDOR AS OFFICE CABIN.**	**FLOOR**	Ceramic tiles	OK	Incongrous.	L.L.
		CEILING	T.W. Boarding.	OK		L.P.
		WALLS	N & S - Ply partition.	OK		L.L.
			E & W - Stone walls, plastered & painted.	OK	Some parts not painted.	L.P.
		OPENINGS	E-Stone arch,basalt stone balusters.	OK	I.A.- Balusters covered with ply.Arch panel in a bad condition.	L.L.
			W - 1 stone arch - original shutters & fly door.	OK		S.S.



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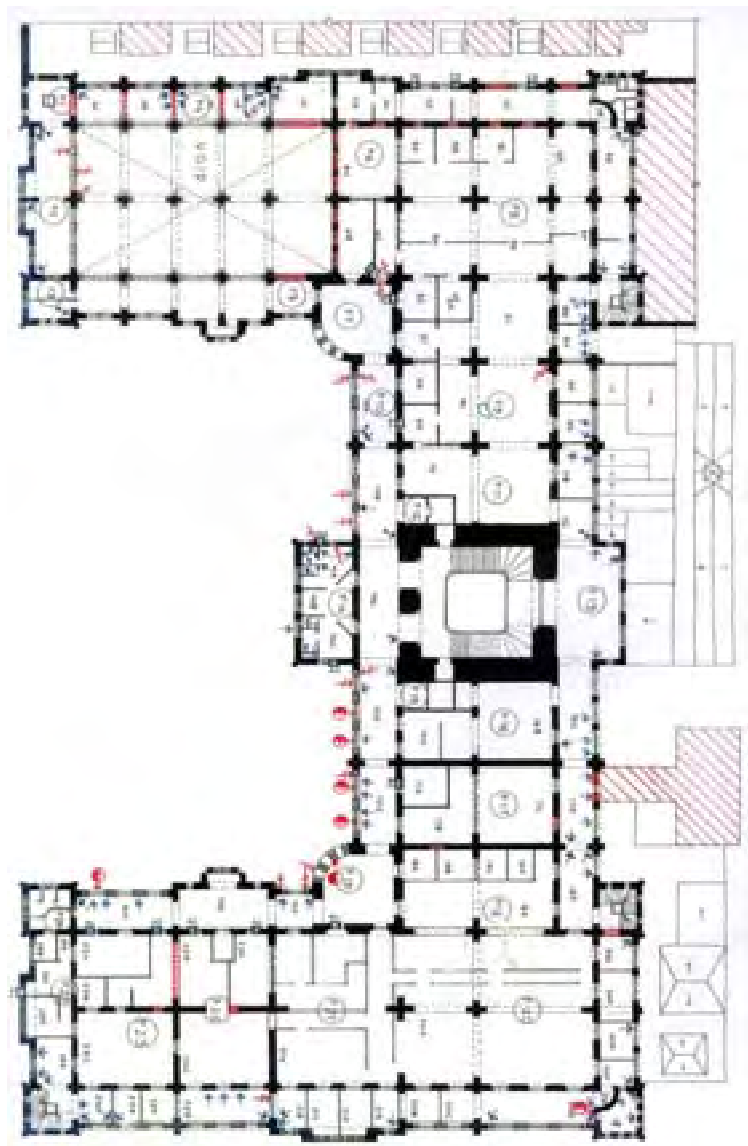
F 20H	**CORRIDOR AS OFFICE CABIN.**	**FLOOR**	Ceramic tiles	OK	Incongrous.	S.I.
		CEILING	Original T.W. boarding	OK		L.P.
		WALLS	N & S - Ply partitions polished from inside. (2m ht.)	OK		L.L.
			E - Stone walls, plastered & painted.	OK	Paint- blistering.	S.U. / L.P.
			W - Stone walls plastered & painted.	OK		
		OPENINGS	E - 1 stone arch.	OK	I.A.- Arch infilled with ply panels.	L.L.
			W - 1 window with shutters. Fly door not original.	OK		S.S.
F 20I	**CORRIDOR AS OFFICE CABIN**	**FLOOR**	Ceramic tiles	OK		S.I.
		CEILING	T.W. boarding.	OK		L.P.
		WALLS	Stone walls, plasterd & painted	OK	I.A.- The skirting tiles painted.	S.I.
					Seepage N-E corner	S.I.
		OPENINGS	E- Stone arch with glazing.	OK	Arch glazing cracked at places.	S.S.
			Basalt stone balusters.		I.A.- Ballusters covered with ply & A.C. sheet.	L.L. / L.P.
			N -1door opening	OK	I.A.- Covered with ply, painted properly.	L.L.
			S -Ply partition (2m ht.).	OK		L.L.
			W-1 opening with fly doors.	OK		S.U.
F 21A	**OFFICE**	**FLOOR**	Cement tiles	OK		L.L.
			2 cabins - Ceramic tiles	OK	Incongrous Addition	L.L.
		CEILING	T.W.boarding.	OK		L.P.
			2 cabins - False ceiling :Perforated fibre boards.	OK	False ceiling damaged at places.	L.L.
		WALLS	N - Stone wall.		I.A.-ply partition cabins, A.C. fittings.	S.U. / L.L.
			S - Stone walls, painted.	OK		SP
			F15A-W - ply partition	OK	Incongrous Addition	L.L.
			F15B- Original wall.	OK	Shutters missing	L.L.
		OPENINGS	S - 4 round arch windows.	OK		
			N - 2 original door openings.	OK	I.A. - Fanlights covered with ply for A.C.	S.U.



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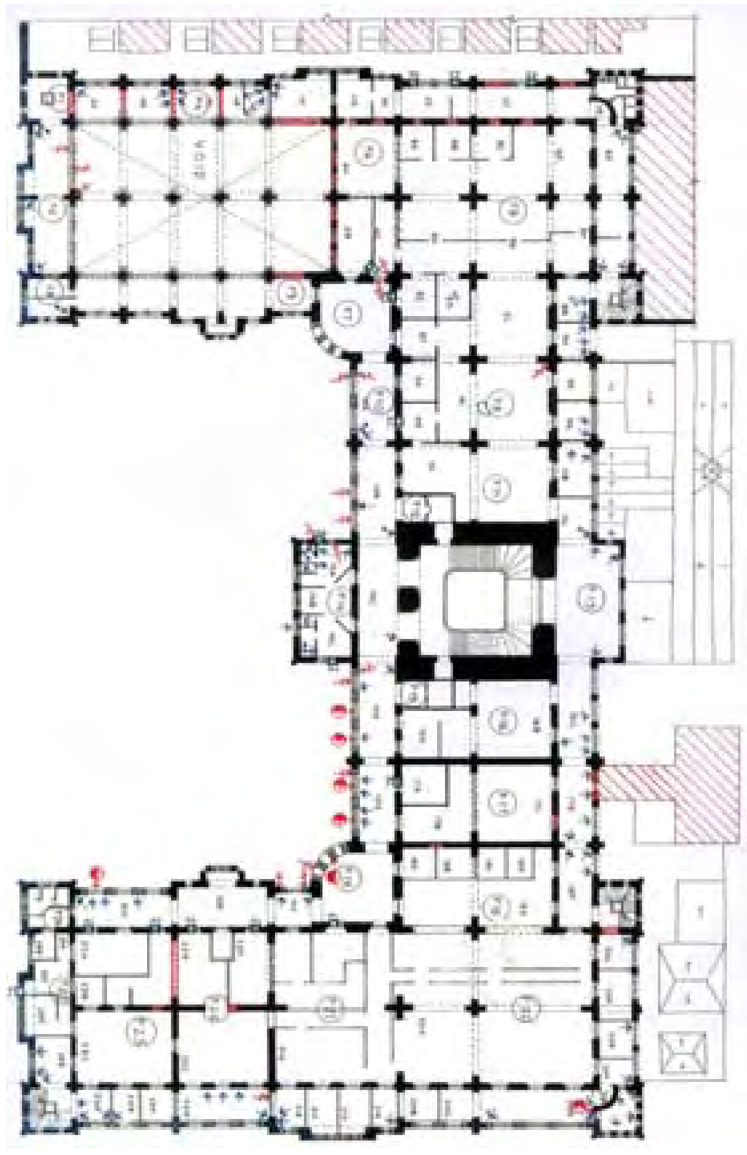
F 21B	OFFICE CABIN	FLOOR	Cement mortar covered with linoleum.	Bad	Incongrous.	L.L.
		CEILING	T.W. boarding.	Bad	W - side affected due to seepage.	S.I.
		WALLS	N & S - Stone walls, painted.	OK	Sepage on SW corner.	S.I.
			E & W- Ply partitions.			
		OPENINGS	S - Basalt stone balusters.	Bad	I.A.- Entire railing is covered with ply.	L.L.
			N - Stone arches.	OK	Seepage above arch on the SW corner.	S.I.
F 21C	OFFICE CABIN	FLOOR	Cement mortar	OK	Incongrous.	L.L.
		CEILING	T.W. boarding.	OK		L.P.
		WALLS	Plastered & painted, above arches.	OK		L.P. / L.L.
			E & W - Ply partititons.	OK		
		OPENINGS	S - 2 round arches.	OK	I.A.-Stained replaced by ply.	L.L. / S.I. / L.P.
			Basalt stone balusters.		Gap between the window frame & the	
					parapet wall from where the water enters.	
					Stains on the inner side of the arch.	
F 21D	OFFICE CABIN	FLOOR	Cement mortar	OK	Incongrous.	L.L.
		CEILING	T.W. boarding.	OK		L.P.
		WALLS	S - Painted above the arch.	OK		L.P.
			E & W - Ply partitions, with smoke glass	OK		L.L.
		OPENINGS	N - Stone arch.	OK		L.P.
			S - 2 round stone arch openings.	OK	I.A.- Stained replaced by ply.	L.L. / L.P.
			Basalt stone balusters.	OK	I.A.- Balusters covered with ply &	
					openings with ply partitions.	
F 21E	OFFICE CABIN.	FLOOR	Ceramic tiles	OK	Incongrous.	L.L.
		CEILING	T.W. boarding.			L.P.
		WALLS	S - Painted above the arch.	OK	S - Seepage from the wall.	S.I.
			All other walls painted.	OK		
		OPENINGS	S-Stone arch, basalt stone balusters.	OK	I.A.- Balusters covered with ply.	L.L. / L.P.
			N - Stone arch.	OK		



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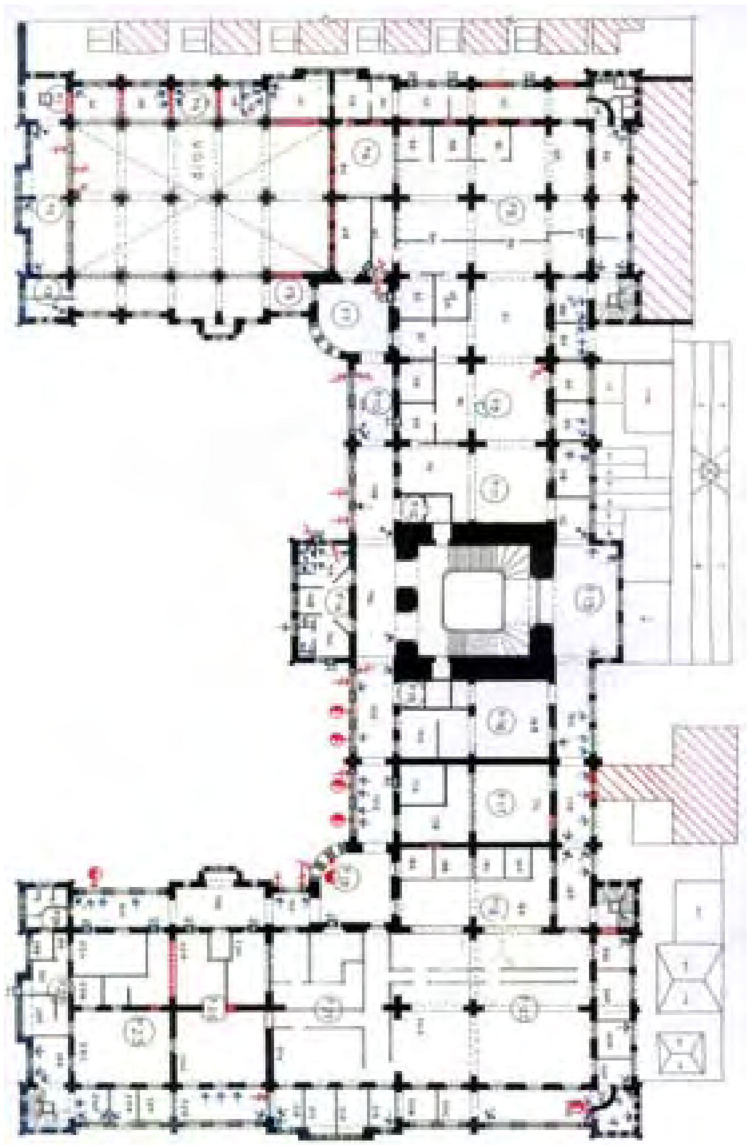
F 21E	OFFICE CABIN.	FLOOR	Ceramic tiles	OK	Incongrous.	L.L.
		CEILING	T.W. boarding.			L.P.
		WALLS	S - Painted above the arch.	OK	S - Seepage from the wall.	S.I.
			All other walls painted.	OK		
		OPENINGS	S-Stone arch, basalt stone balusters.	OK	I.A.- Balusters covered with ply.	L.L. / L.P.
			N - Stone arch.	OK		
F 22A	2 OFFICE CABINS	FLOOR	Covered with rug	OK		L.L.
		CEILING	AC. sheets	OK		L.L.
		WALLS	Plastered & painted.	OK		L.P.
		OPENINGS	N - 2 arch openings	OK	I.A.- Partly covered with ply. Fanlights covered for A.C.s	S.U.
			S - 1 original opening.	OK		L.P.
F 22B						
F 22C	OFFICE	FLOOR	Cement tiles	OK		L.L.
		CEILING	T.W. boarding.	OK		L.P.
		WALLS	Plastered & painted.	OK		L.P.
		OPENINGS	N -1 door & 2 window openings.	OK	Openings closed permanently.	S.I.
			Window fanlight original.			
			S - 3 openings. 1 louvered window.	OK	Original frame - good.	L.L.
					F16B - Louvres missing.	
			W - 1 original door	OK	F16B - Shutters missing.	S.S.
F 22D	OFFICE Corridor.	FLOOR	Cement mortar	Bad	Incongrous.	L.L.
		CEILING	T.W. boarding.	OK		L.P.
		WALLS	Stone, plastered & painted.	OK	N & E wall - Heavy seepage.	S.I.
					E wall - crack to be checked.	S.I.
		OPENINGS	S-Stone arch,basalt stone balusters.	OK	I.A.-Balusters covered with ply.	L.L. / L.P.
			N-3 stone arch window openings, original shutters.	OK	No shutters, louvers missing.	L.L.



Legend	
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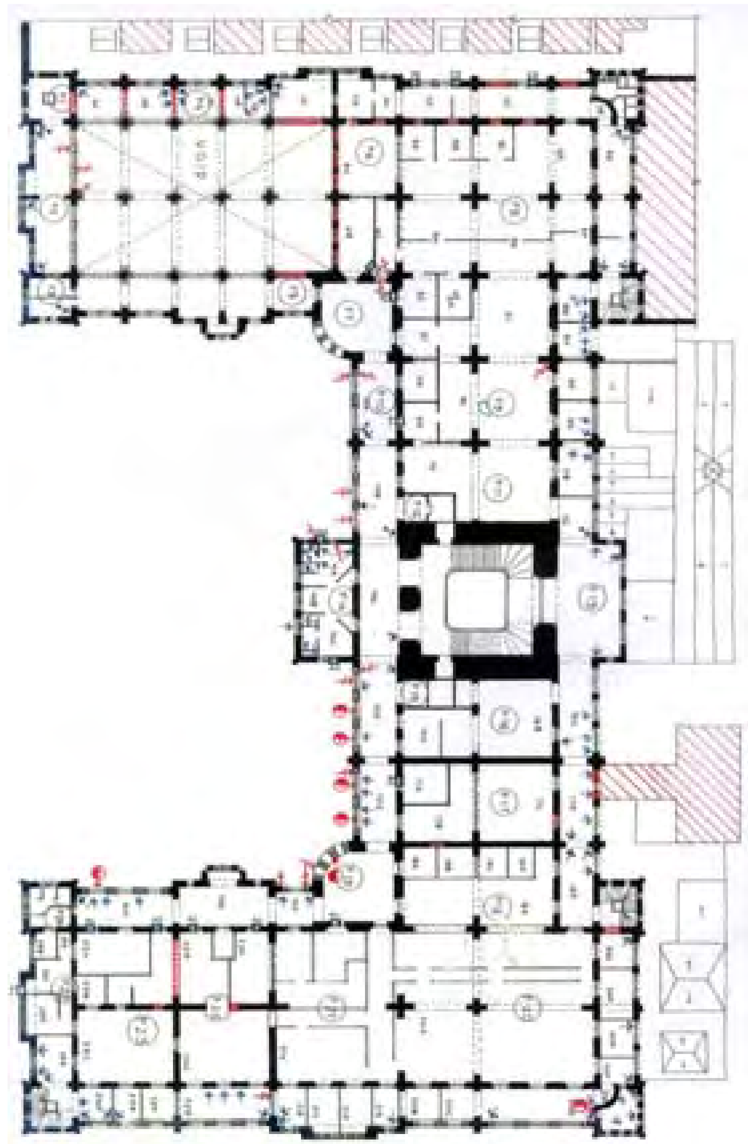
SPACE	CURRENT USAGE	ELEMENT	MATERIAL DESCRIPTION	CONDITION	DEFECTS	PRIORITY
F 23A	OFFICE CABIN	FLOOR	Covered with rug. Wiring concealed under rug.	Good		L.L.
		CEILING	False ceiling :Perforated fibre boards.	OK	Some boards missing.	L.L. / L.P.
		WALLS	N,W- Stone, plastered & painted.	OK		L.P.
			S,E- Ply partitions.			L.L.
		OPENINGS	N - 2 arch openings.	OK	I.A. - 1 fanlight covered for A.C.	S.U.
					1 permanently closed.	
			S - 1 original door.	OK		S.I.
F 23B	OFFICE	FLOOR	Green linoleum tiles.	OK		L.L.
		CEILING	False ceiling in brown perforated board with A.C frame.	OK		S.U.
		WALLS	N, E & W- Ply partition	OK		L.L.
			S- Stone, plastered & painted.	OK		L.P.
		OPENINGS	S- 1 stone arch	OK	I.A.- Iinfilled in ply sheets.	L.L.
F 23C	OFFICE	FLOOR	Original minton tiles, passage- red linoleum sheets.			L.L.
		CEILING	T.W. joists, painted white.			L.P.
		WALLS	Stone, plastered & painted.			S.U. / L.P.
		OPENINGS	W- 2 stone arch doors with original shutters	OK	I.A.- Fanlight infilled with jali. Shutter painted white.	S.U.
			N- 3 stone arch doors.	OK	I.A.- Fanlight infilled with ply. Doors not accessible.	S.U.
			S- 3 stpne arch doors with original shutters & fanlight.	OK	I.A.- Fanlight infilled with jali. Shutter painted white.	S.U.
			E- 1 stone arch door.	OK	Shutters mising.	S.U.
F 23D	STORAGE	FLOOR	Cement mortar		Incongrous.	L.L.
		CEILING		OK		
		WALLS	N & S - Stone walls, painted.	OK	Seepage problem on SE & SW corners.	S.I.
			E - Ply partition.			
		OPENINGS	W - opening for staircase.	OK	I.A.- covered with jali - broken.	S.U.
			N - 1 arch opening	OK		
			S - Stone arch	OK	I.A. - Arch infilled with ply.	S.S. / S.I.



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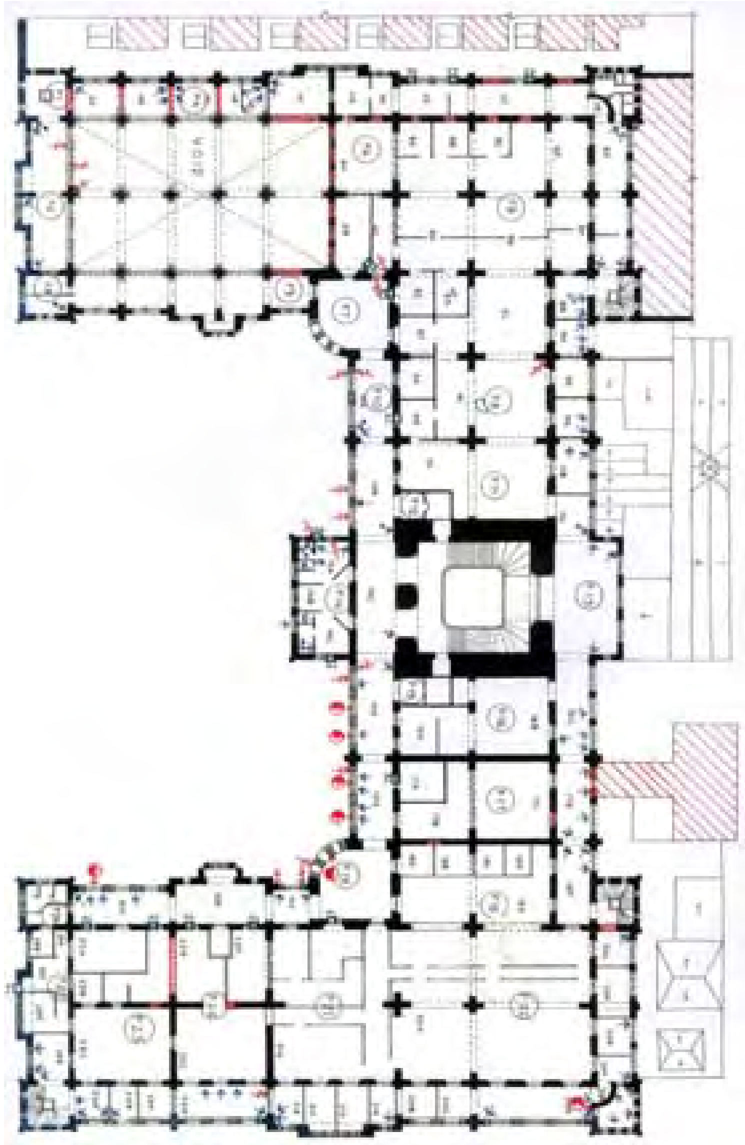
F 23A	OFFICE CABIN	FLOOR	Covered with rug. Wiring concealed under rug.	Good		L.L.
		CEILING	False ceiling :Perforated fibre boards.	OK	Some boards missing.	L.L. / L.P.
		WALLS	N,W- Stone, plastered & painted.	OK		L.P.
			S,E- Ply partitions.			L.L.
		OPENINGS	N - 2 arch openings.	OK	I.A. - 1 fanlight covered for A.C.	S.U.
					1 permanently closed.	
			S - 1 original door.	OK		S.I.
F 23B	OFFICE	FLOOR	Green linoleum tiles.	OK		L.L.
		CEILING	False ceiling in brown perforated board with A.C frame.	OK		S.U.
		WALLS	N, E & W- Ply partition	OK		L.L.
			S- Stone, plastered & painted.	OK		L.P.
		OPENINGS	S- 1 stone arch	OK	I.A.- Iinfilled in ply sheets.	L.L.
F 23C	OFFICE	FLOOR	Original minton tiles, passage- red linoleum sheets.			L.L.
		CEILING	T.W. joists, painted white.			L.P.
		WALLS	Stone, plastered & painted.			S.U. / L.P.
		OPENINGS	W- 2 stone arch doors with original shutters	OK	I.A.- Fanlight infilled with jali. Shutter painted white.	S.U.
			N- 3 stone arch doors.	OK	I.A.- Fanlight infilled with ply. Doors not accessible.	S.U.
			S- 3 stpne arch doors with original shutters & fanlight.	OK	I.A.- Fanlight infilled with jali. Shutter painted white.	S.U.
			E- 1 stone arch door.	OK	Shutters mising.	S.U.
F 23D	STORAGE	FLOOR	Cement mortar		Incongrous.	L.L.
		CEILING		OK		
		WALLS	N & S - Stone walls, painted.	OK	Seepage problem on SE & SW corners.	S.I.
			E - Ply partition.			
		OPENINGS	W - opening for staircase.	OK	I.A.- covered with jali - broken.	S.U.
			N - 1 arch opening	OK		
			S - Stone arch	OK	I.A. - Arch infilled with ply.	S.S. / S.I.



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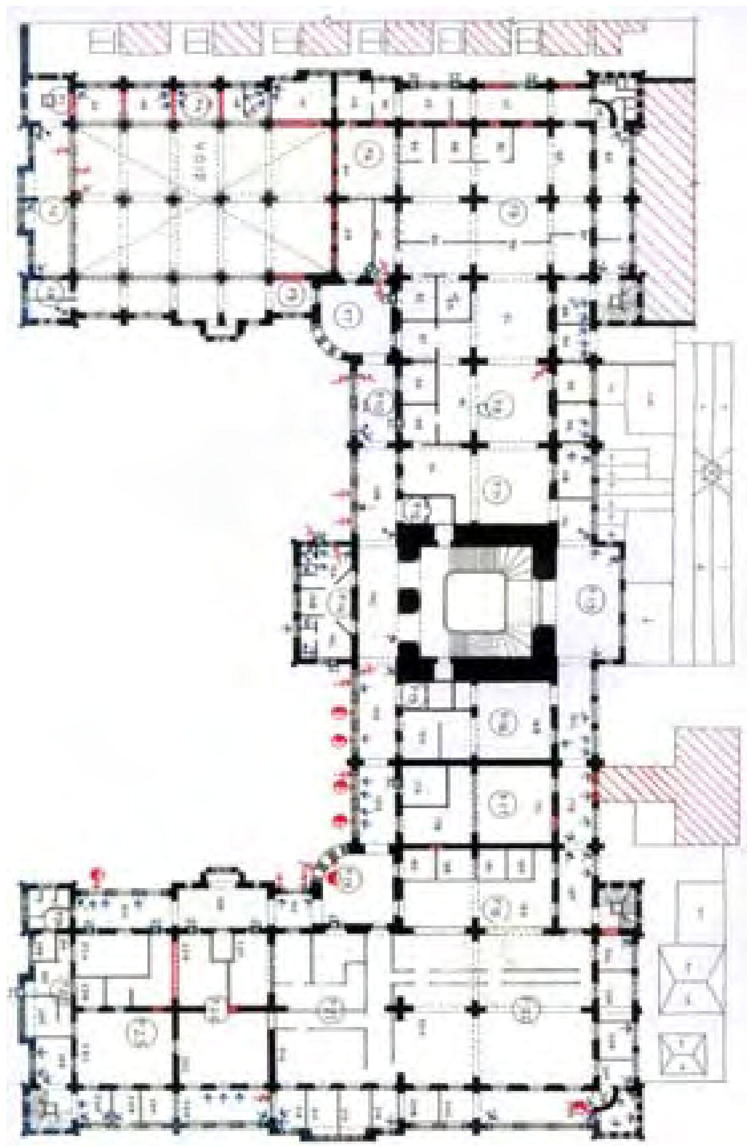
F 25B		FLOOR	Marble mosaic	OK		L.L.
		CEILING				
		WALLS	S & E -Ply partition with laminate.	OK		L.L.
			N & W - Stone walls, painted.	OK		L.P.
		OPENINGS	N - 1 stone arch door.	OK	Door needs to consolidated.	S.S.
			S - 1 stone arch window.	OK	Partly blocked by S partition. Only 1 door openable.	S.U. / L.L.
F 25C	Kitchenete for officer in F17A	FLOOR	Yellow ceramic tiles	OK		L.L.
		CEILING	False ceiling	OK		L.L.
		WALLS	N & S - Ply partition with laminate.	OK		L.L.
			E & W - Stone walls, painted.	OK		L.P.
		OPENINGS	W - 1 stone arch window.	OK	I.A.- A.C. fixed in 1 window which is	S.U.
					partly covered.	
F 25D	MEETING ROOM (now not used).	FLOOR	Marble mosaic tiles.	OK		
		CEILING			Damaged on the E-side due to seepage.	S.I.
		WALLS	N,S & E - ply partition walls.	OK	I.A.-partition walls.	L.L.
			W - Stone wall, painted.	OK		
		OPENINGS	S -Stone arch windows with stain glass.	OK	Stain glass broken & windows need to be consolidated.	S.I.
F 25E	OFFICE CABIN	FLOOR	Marble mosaic tiles	OK		
		CEILING			Damaged on west side due to seepage.	S.I.
					Seepage S - W corner & the west wall.	S.I.
		WALLS	E & W - Stone walls - painted.	OK		L.P.
			N - Ply partititon.	OK		L.L.
		OPENINGS	E & W - Stone arches.	OK		L.P.



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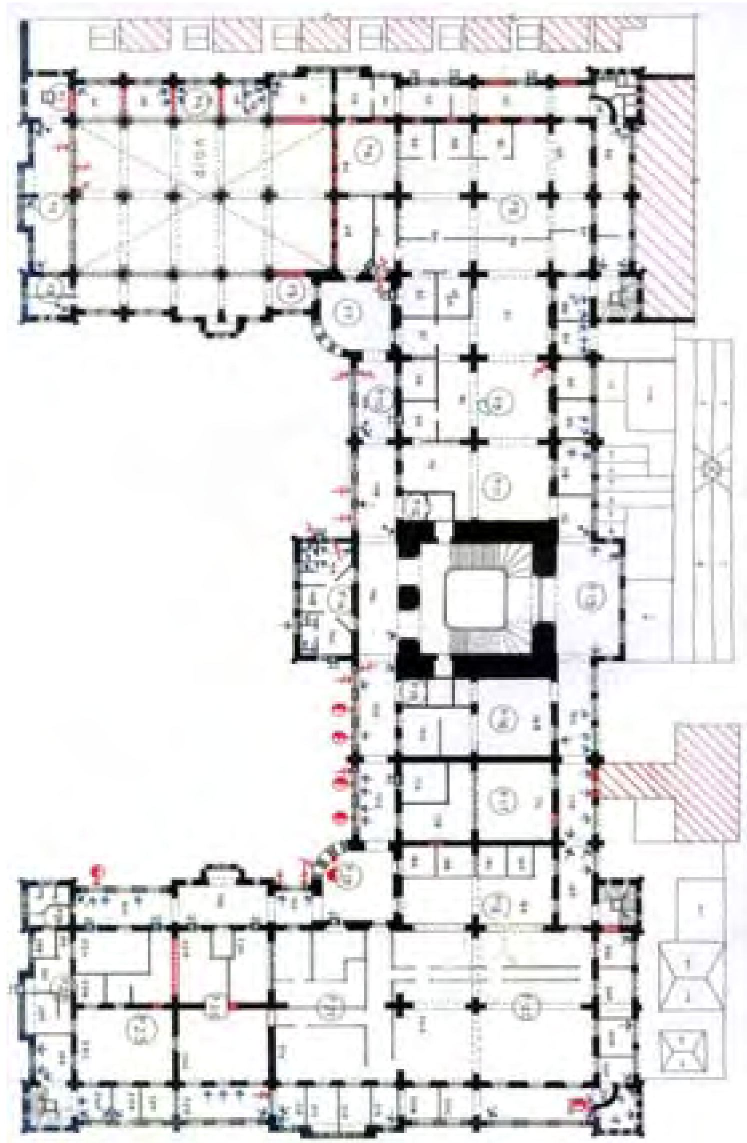
F S1	**Wireman's room**	**FLOOR**	Original Minton tiles.	Good		L.L.
		WALLS	Stone, painted blue.	OK		S.S. / L.P.
		OPENINGS	1 stone arch door.	OK	I.A.- Shutters & fanlights not original.	S.U.
					1 door shutter not openable.	
F S2	**NOT ACCESSIBLE**					
		OPENINGS	1 stone arch door.	OK	I.A.- Shutters & fanlights not original.	S.U.
					1 door shutter not openable.	



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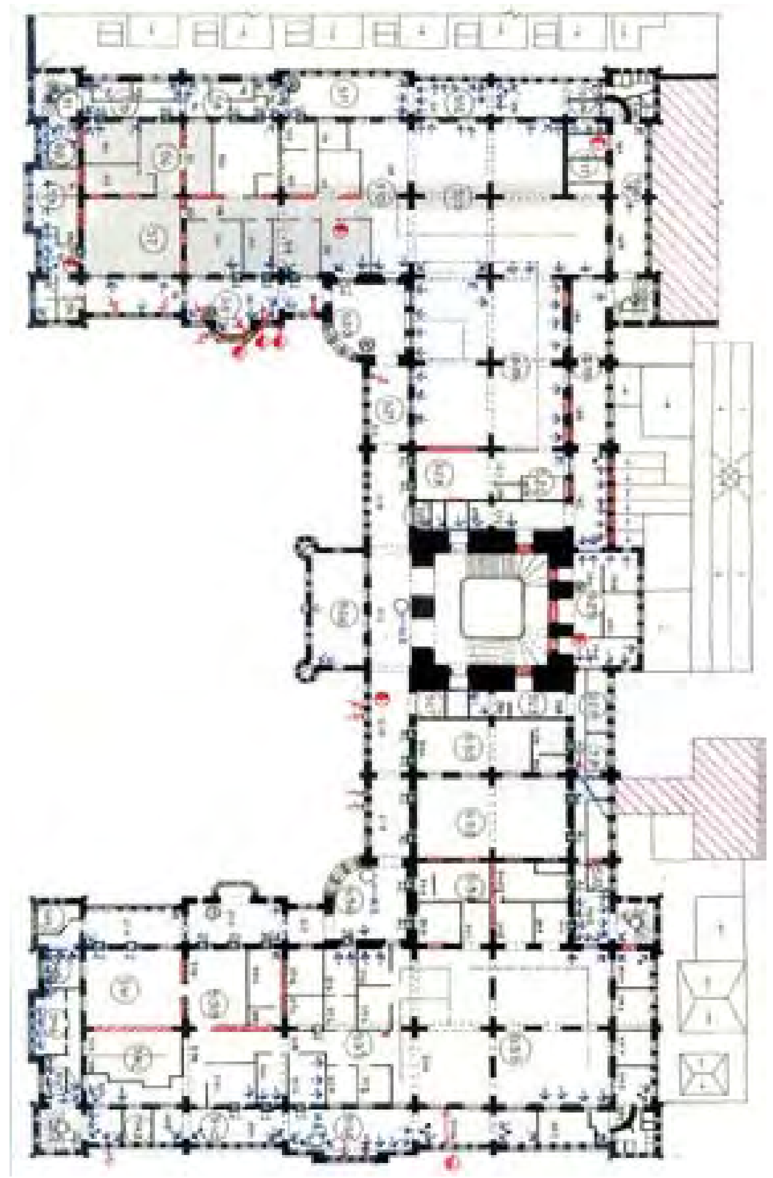
SPACE	CURRENT USAGE	ELEMENT	MATERIAL DESCRIPTION	CONDITION	DEFECTS	PRIORITY
S 1	Staircase	Floor	T.W. boarding plastered & painted.	Good	Seepage at inner periphery.	SI
		Walls	Stone walls, plastered & painted	OK		LP
		Openings	N- 2 Stone arch windows.	OK	Wndows need to be consolidated.	SS
			S- Stone arch.	OK		LP
			E- Stone arch.	OK		LP
			W- 2 stone arch windows.	Bad	I.A.- New brickwork upto stll level	SI
					Seepage above openings at NW corner.	SI
S 2	Tele. Exch.	Floor	Marble Mosaic.	OK		LL
		Ceiling	Original T.W. boarding.	OK	Seepage on NE corner.	SI
		Wall	N, E & W- Stone. S- Ply partition.	OK		LL
		Openings	N - 1 Stone arch.	OK		LP
			E - 1 Stone arch.	OK	I.A.- Arch covered with ply.	LL
			W - 2 Stone arch windows.	Bad	Seepage above openings at NW corner.	SI
S 3	Office	Floor	Marble Mosaic Tiles	OK	Covered with cement at some places.	LL
		Ceiling	False ceiling-White laminate in Al. frame	OK	I.A.-	LL
		Walls	E&W- Stone walls plastered& painted. N&S- Ply partitions.	OK	Dampness seen on bottom of walls & partitions. Seepage on W wall. W-wall covered with boarding upto sill level.	SI
		OPENINGS	E - 3 Stone arches.	OK	I.A.- 2 arches infilled with ply & 1 partly infilled with ply.2 window A.Cs.in arch.	LL
					Cable wires running along the arch.	SI
			S - Stone arch.	OK	I.A.- Arch divided into 2 parts for door openings.	SU / LL
			W - 3 Stone arch windows.	OK	I.A.- Covered with Al. sliding frame. Wash basin inserted in 1 opening.	SU/LL
					Seepage above basin & arch.	SI



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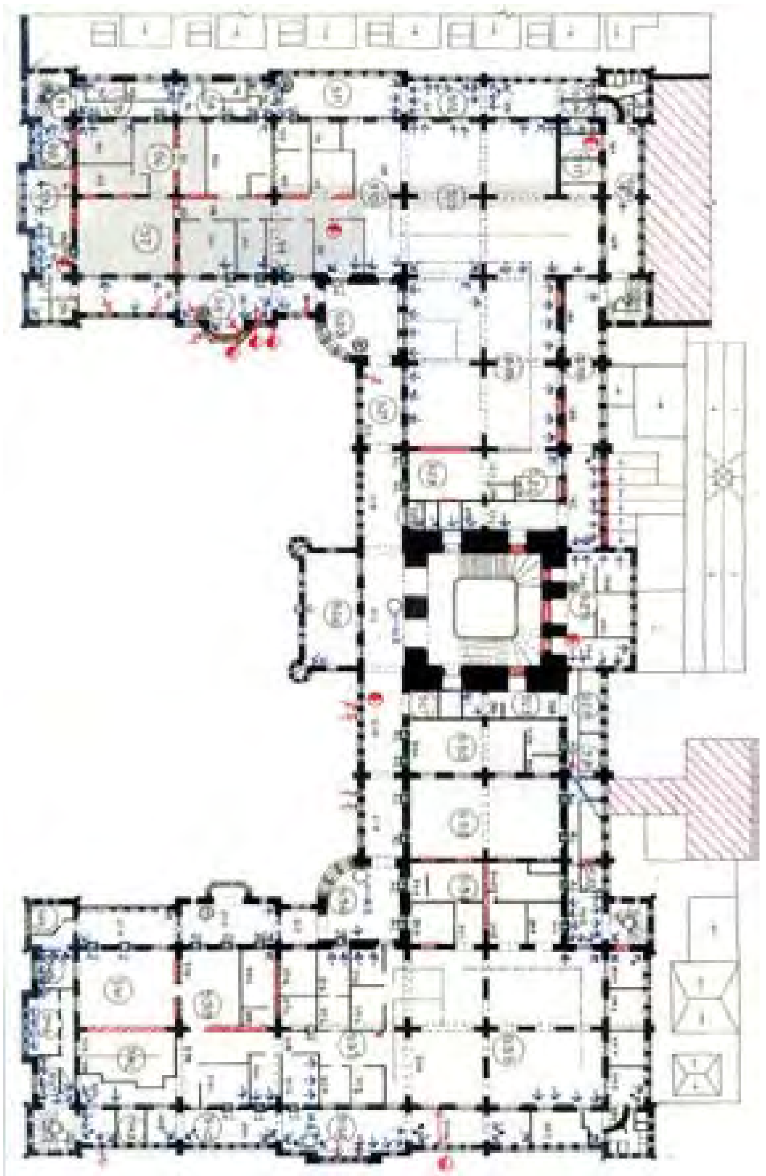
S 4	**Toilet**	**FLOOR**	Brown ceramic tiles	OK	Tile drops are small	LL
		CEILING	T.W. Boarding	OK	Seepage on SW corner & N wall.	SI
		WALLS	Stone walls, plastered & painted. Dado of ceramic tiles.	OK		SU / LL
		OPENINGS	W & S-2 stone arches.	OK	I.A.- Arch with Al. frame, sliding shutters.	
			N- Stone arch.	OK	Seepage above basin.	SU
					I.A.- Arch is divided into 2 doors.Top of arch is open.	SI
			E- Stone arch.	OK	I.A. - Arch partly covered with partition.	SI



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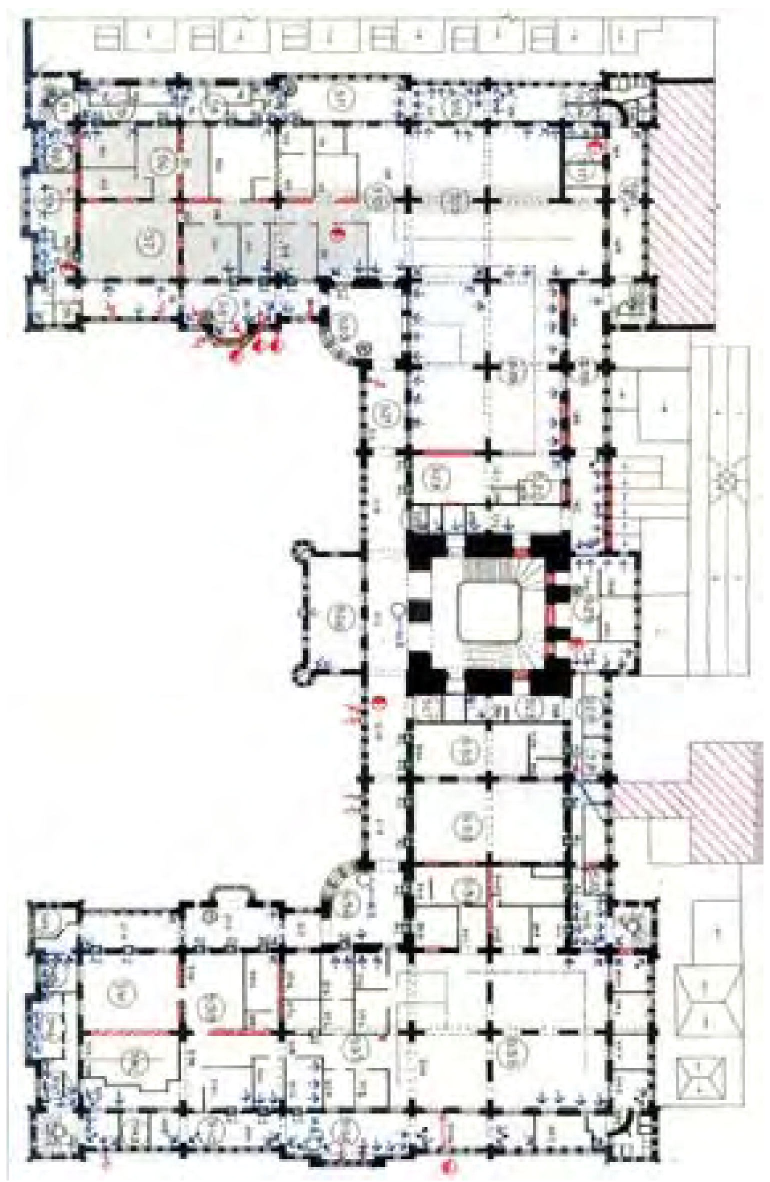
S 5	**Corridor**	**Floor**	Stone tiles in passage & ceramic tiles in cabins.	OK	Cracks at some places.	SI
		Ceiling	T.W. Boarding	OK		LP
		Walls	Stone walls. Cabins- low partitions.	OK		LL
		Openings	N- 2 Stone arch windows.	Bad	I.A.- Arches covered with wooden shutters. Seepage above NW & NE corners.	SI
			S- 3 stone arches.	OK	Cables running along arch. I.A.- 2 A.Cs.on arches.	SI / SU
			E- Stone arch.	OK	Opening is partly accessible.	SU
			W- Stone arch.	OK		
S 6A	**Office**	**Floor**	Original cement tiles covered with linoleum.	OK		
		Ceiling	Ply sheet.	OK	Seepage on NE & NW corner.	SI
		Walls	N&W -Stone walls. S&E -Ply partition.	OK	Seepage on NE corner.	SI
					I.A.-Stone walls covered with cement sheets.	LL
		Openings	W- Stone arch.	Bad	I.A.- Arch infilled with ply. Window shutters not openable.	SU
			N- 2 Stone arches.	Bad	I.A.- Fanlight infilled with A.C.	SU
S 6B	**C.E's. rest rm.**	**Floor**	Ceramic tiles.	OK		LL
		Ceiling	False ceiling of 'perforated fibre board.	OK		LL
		Walls	N & E- Painted ply partitions.	OK		LL
			S& W- Stone walls, painted.			LP
		Openings	S - 2 Stone arches	OK	I.A.-Arches infilled with A.C sheet.	SS
			W - 1 Stone arch.	OK	I.A.- Arch infilled with A.C. sheet.	SS
S 6C	**Office**	**Floor**	Ceramic Tiles	OK		LL
		Ceiling	Cement sheet boards with Al. frames.	Bad	Seepage at some points on the ceiling.	SI
		Walls	N,E & W- Stone, plastered & painted.	OK		LP
			W-Ply partition.			LL
		Openings	N- 1Stone arch	OK	I.A.- Window A.C. in arch.	SU
			S- 1 Stone arch.	OK	I.A.- Arch covered with ply.	SI
			E- 1 door opening.	OK		



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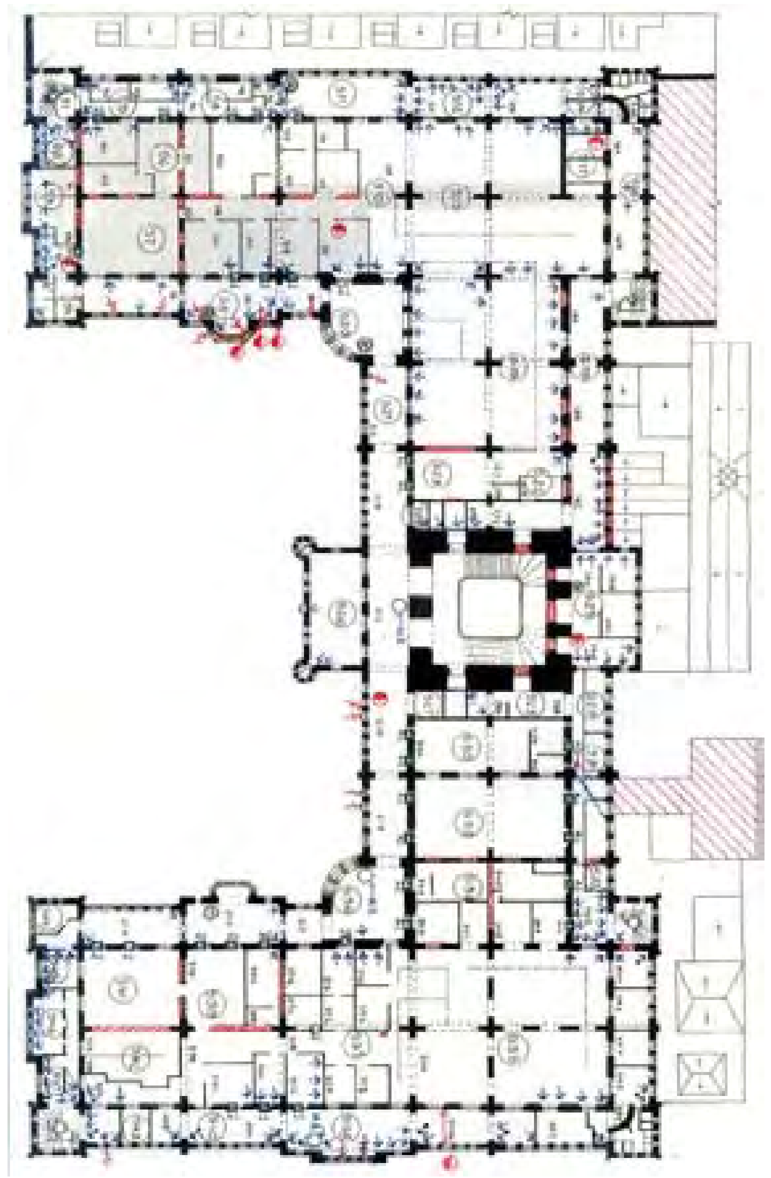
SPACE	CURRENT USAGE	ELEMENT	MATERIAL DESCRIPTION	CONDITION	DEFECTS	PRIORITY
S 7	**Chief Engn. Cabin**	**Floor**	Light brown ceramic tiles.	OK		LL
		Ceiling	Perforated fibre board with Al.frame punctures for tube lights.	OK	I.A.-	LL
		Walls	Stone walls, plastered & painted.	OK		LP
		Openings	N- 3 stone arches.	OK	I.A.- 2 infilled with A.C. sheets.	SI
			S- 3 stone arches.	OK	I.A.- 2 ply doors not original.	SI
			E- 3 stone arches.	OK	I.A.- 2 infilled with brick work. Window A.C. in arch.	SU
			W- 2 stone arches.	OK	I.A.- Arches blocked with cement sheets. 1 arch has small opening with A.C. above.	SU
S 8 A,B & C	**Corridor**	**Floor**	Marble mosaic tiles covered with red carpet			LL
		Ceiling	T.W. joists, painted white.			
		Walls	Stone, plastered & painted.			LP
		Openings	N- 7 stone arch doors with original shutters & fanlight	OK	I.A.- 8B & 8C :Fanlights infilled with ply for A.C	SU
			S- Stone arches & basalt stone balusters.	OK	Cracks seen through the arches	LP
					I.A.- Arches covered ith Al frame	SS
					window shutters.	
S 9	**Passage**	**Floor**	Cement mortar, ceramic tile	OK		SI
		Ceiling	T.W. boarding	Bad	Seepage on NE & NW corner.	SI
		Wall	Plastered & painted	OK	Large seepage on N wall.	SI
		Openings	N- 2 Stone arch windows.	OK		
			S- 3 Stone arches.	OK	Seepage on SE corner. Cables running along arch. I.A.- 2 openings not accessible : fitted with A.Cs.	SI
			E- Stone arch.	Bad	I.A.- Infilled with ply. Seepage on NE corner.	SI
			W- Stone arch.	Bad	Opening partly accessible. Seepage on NW corner.	SI



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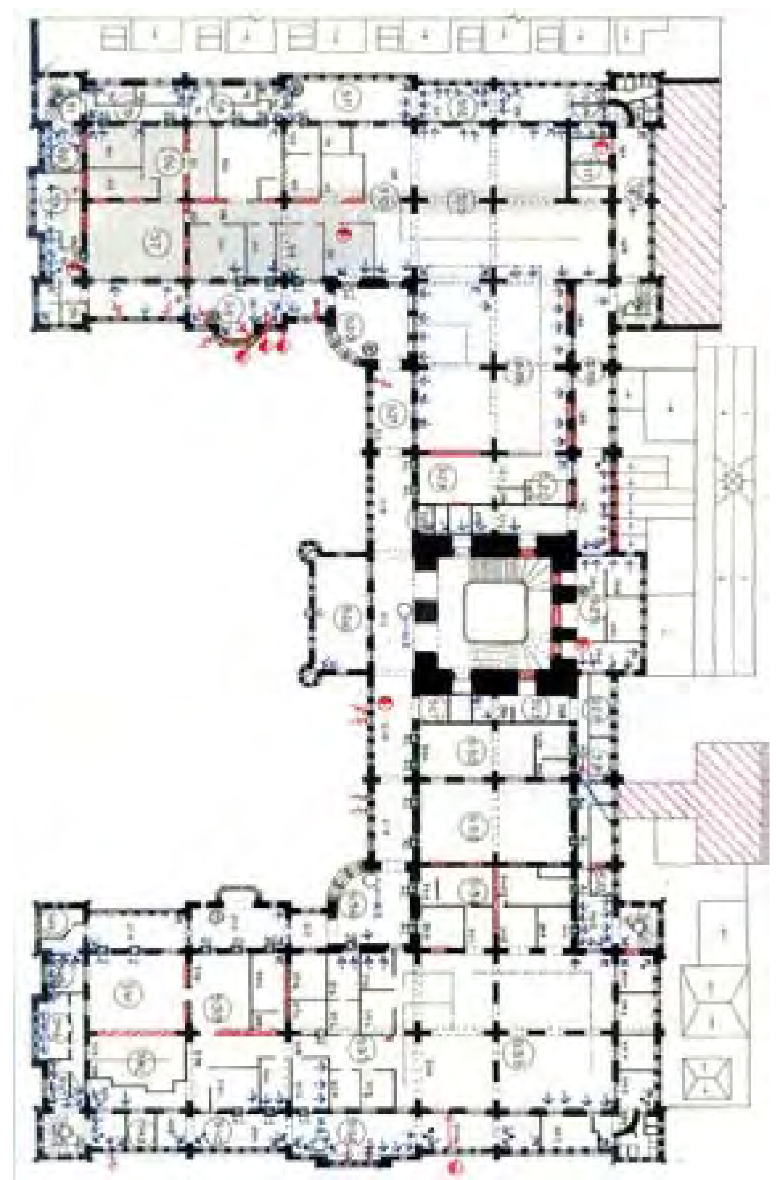
S 10A	**Corridor**	**Floor**	Ceramic tiles	OK		SI
		Ceiling	A.C.sheet, wiring not concealed.	OK		SI
		Walls	Plastered & painted E-Ply partition.	OK	Middle panel of partition in bad condition.	LL / LP
		Openings	N- Stone arch.	OK	Fanlight not covered, wiring passing through fanlight.	SU / SI
			S- Stone arch.	OK	I.A.- Arch with partly glazed smoke glass.	SU
			W- Stone arch.	OK	I.A.- Fanlight infilled with ply partition.	LL
S 10B	**Passage**	**Floor**	Original minton tiles.	Good		LL
		Ceiling	T.W. joists, painted white.	OK		LP
		Walls	N- Arch infilled with brick.	OK		LL
			S- Ply partition.			SU
S 10C	**Office**	**Floor**	Light brown ceramic tiles	OK		LL
		Ceiling	A.C. Sheet panels	OK	Wiring not concealed.	SI
		Walls	S & W- Stone wall- plastered & painted.	OK		LP
			N & E- A.C. sheet partition.			SS
		Openings	S- 2 Stone arches.	OK	Original shutters-partly glazed.	LL
					Fanlight partly hidden.	SU
			E- 2 Stone arches.	OK	I.A.- Infilled with brick work.	LL
S 10D	**Office**	**Floor**	Ceramic tiles in cabins, Linoleum in passage.	OK		LL
		Ceiling	T.W. Boarding	OK	Patches at some places.	SI
		Walls	N, E & S- Stone walls. W- Ply partition.	OK	Cables running along the walls.	
		Openings	N- 3 stone arch doors.	OK	I.A.- Fanlight infilled with ply for AC. 1 not accessible	SU
			S- 1 Stone arch.	OK	I.A.- 1 infilled with brick work & panel with 2 panel doors.	SU



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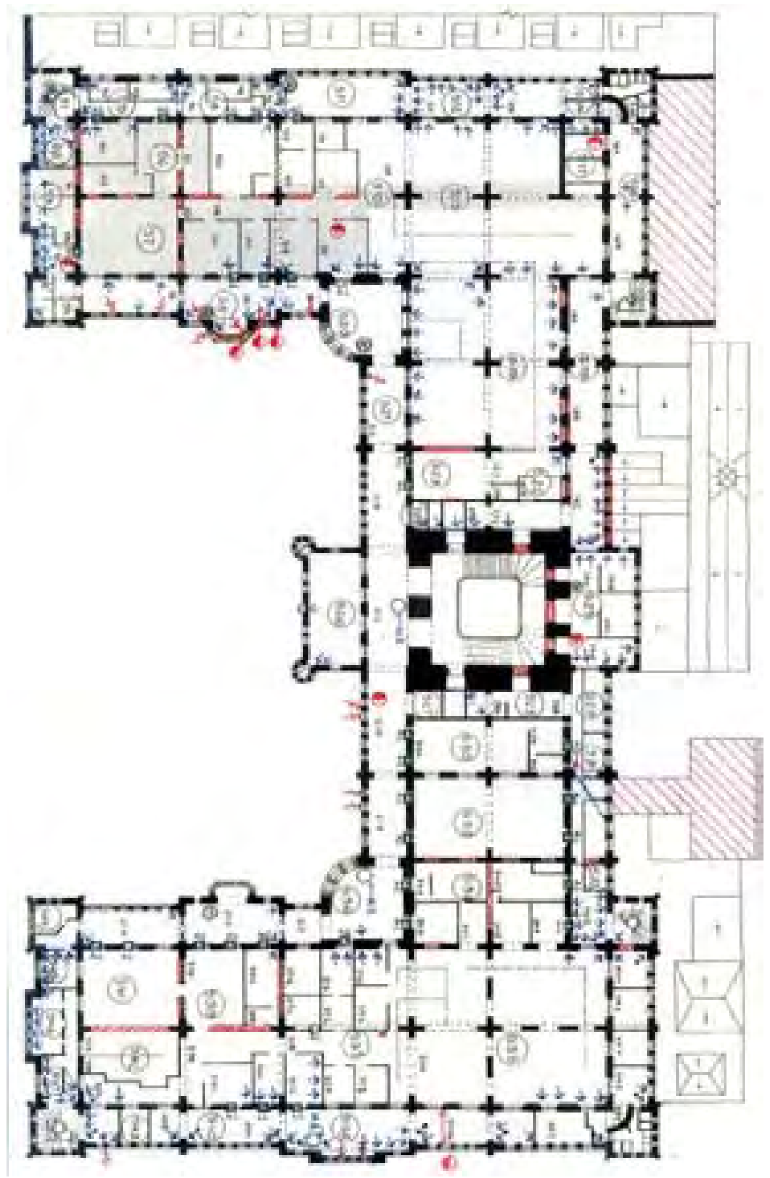
S 10E	**Office**	**Floor**	White ceramic tiles	OK		LL
		Ceiling	False ceiling - Cement sheets.	OK	Wiring & lighting not concealed. Seepage on SE corner.	SI
		Walls	S- Stone wall-plastered & painted. N,E& W - A.C.sheet partition.	OK	Wiring not concealed. Punctures made on top of the partitions to pass the wiring. On the southern corner the panel has left an opening.	SI
		Openings	N- 1 door opening. 1partly louvered window.	OK	Door not original, partly glazed.	
			S- Stone arch.	OK	I.A.- A.C. box in the fanlight. Smoke glass fanlight partly hidden above ceiling.	SU
S 10F	**OFFICE**	**FLOOR**	Original Minton tiles.	Good		LL
		CEILING	Timber roof truss & T.W. joists	Good		LP
		WALLS	S, E & W- Ply partitions.			LL / LP
			N- Stone walls, painted above			
			arches.			
		OPENINGS	N- 1 stone arch	OK	I.A.- Partly infilled with ply partititon	LL
					Wires running along arch.	SI
S 10G	**Office**	**Floor**	Light brown ceramic tiles	OK		LL
		Ceiling	False ceiling - Cement sheets	OK	Wiring not concealed.	SI
		Walls	S- Stone wall.	OK	Stone wall painted green.	LP
			N,E & W- A.C. sheet partition.			SU
		Openings	N- 1 door opening.	OK		SU
			S- 1 original fly door with glazed shutters-1/2 smoke, 1/2 clear.	Bad	I.A.- Fanlight infilled with A.C. box. Fanlight partly hidden in the ceiling.	SU
S 10H	**Office**	**Floor**	Red & white cement tiles.			LL
		Ceiling	T.W. joists.			LP
		Walls	Stone, painted above arches.	OK		LP
		Openings	N--2 stone arch doors with			SU/LP
			original shutters.			
			S & E- 1 stone arch			LP



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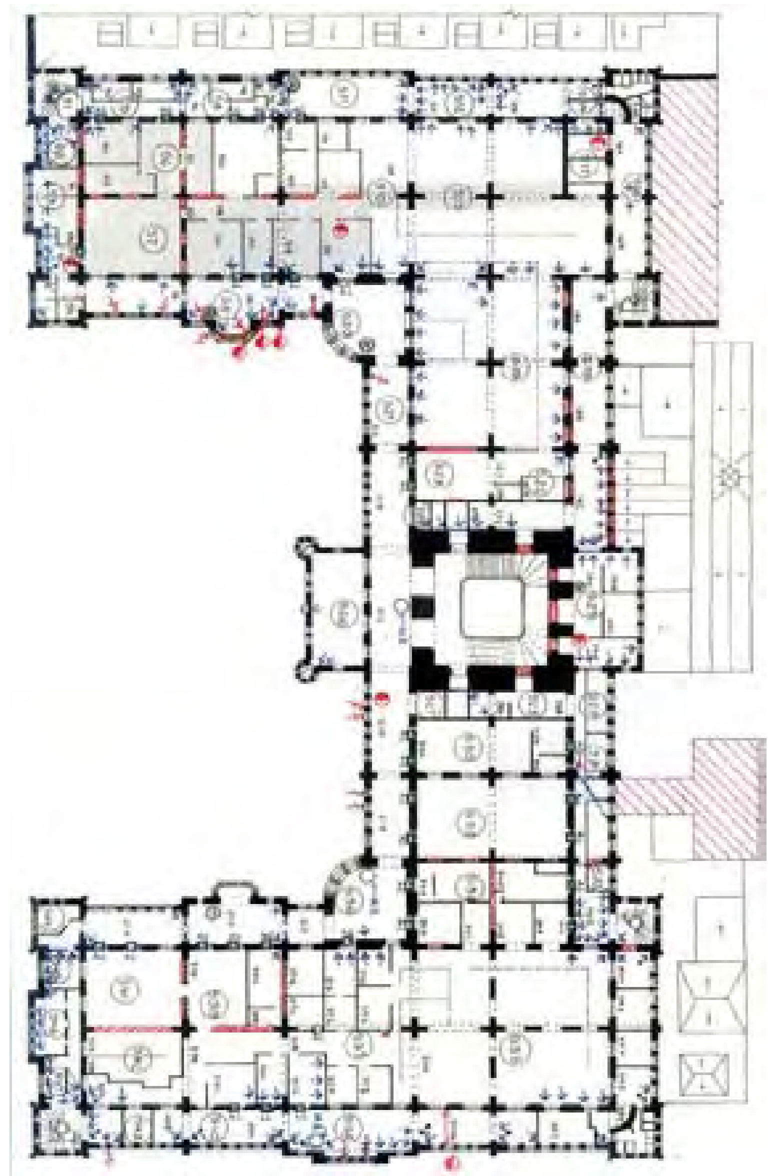
S 10I	Office	Floor	Linoleum Sheet	OK	Come out from one corner, needs to be checked.	LL
		Ceiling	A.C. Sheet	OK		SS
		Walls	S- Stone wall. N,E&W- Ply partitions.	OK	Seepage on SE & SW corner of the wall.	SI
					S-Paint blistering.	SU / LP
					Ply partition show dampness	
					T.W. skirting in bad condition.	SU
		Openings	S- 1 Stone arch. Original door, partly glazed - 1/2 smoke glass, 1/2 clear glass.	OK	I.A.- Fanlight infilled with A.C.	
S 11	Corridor	Floor	Cement Mortar	OK	Cracks at some places	SI
		Ceiling	T.W. Boarding	Bad		LP
		Walls	Stone walls, plastered & painted. T.W. boarding upto sill level.	OK	Seepage on E & W walls.	SI
		Openings	N- 7 stone arch windows, basalt stone balusters.	Bad	I.A.- 6 are covered with T.W. frames & shutters.	LL / LP
			S- 4 stone arches.	OK	I.A.- 1 not accessible with window A.C.	SU
			E & W- 1 stone arch	OK	W- I.A.-	SU
S 12A	Corridor	Floor	Cement Mortar	Bad	Crack at some places	SI
		Ceiling	T.W. Boarding	Very Bad	Seepage through entire ceiling.	SI
		Walls	Stone walls, plastered & painted T.W. boarding upto sill.	OK	Seepage on all walls. .	SI / LP
					Staining of masonry	SS
		Openings	N- 4 stone arch windows. Basalt stone balusters.	Bad	I.A.-Arches covered with T.W. frame.	SS
					Seepage above arches	SI
			S- 2 arches.	Bad	Seepage above arches.	SI
			E- 1 Stone arch.	Bad	Seepage on SE corner.	SI
			W- 1 Stone arch	Bad	Seepage above arch.	SI
S 12B	Corridor	Floor	Cement Mortar	Bad	Crack at some places	SI
		Ceiling	T.W. Boarding	Bad	Leakage & seepage on NW corner	SI
		Walls	Stone walls, plastered & painted	OK	I.A.- T.W. boarding upto sill level.	SS / LP
		Openings	N- 5 stone arch windows, basalt stone balusters.	OK	I.A.- Window covered with T.W. frame & panel.	SS / LP
			S- 2 Stone arches.	OK		



Legend	
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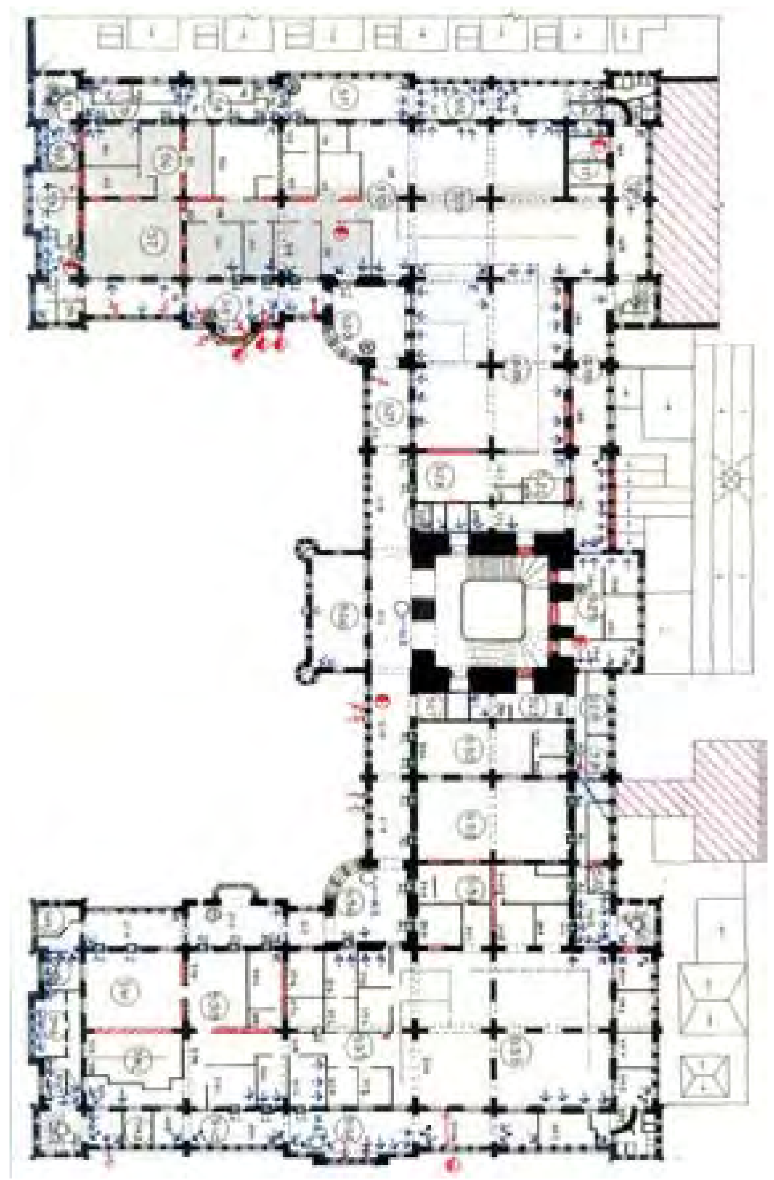
SPACE	CURRENT USAGE	ELEMENT	MATERIAL DESCRIPTION	CONDITION	DEFECTS	PRIORITY
S 13	**Office**	**Floor**	Red & black cement tiles	Bad	Broken at some places.	LL
		Ceiling	T.W. boarding	Bad	Seepage on S side.	SI
		Walls	Stone walls, plastered & painted	OK	Mezzainine running along wall, thus N wall dusty.	LP
		Openings	N- 4 stone arch doors.	OK	Seepage above doors.	SI
			S- 2 stone arches.	Bad	Seepage above arches.	SI
			E- 2 stone arch doors.	OK		LL / LP
			W- 2 stone arches.	OK		LL / LP
S 14	**Corridor**	**Floor**	Ceramic tiles in cabin, cement mortar in passage.	OK	Cracks at some places.	SI
		Ceiling	T.W. Boarding	Bad	Seepage on E side.	SI
		Walls	Stone walls, plastered & painted T.W. boarding upto sill.	OK	Seepage on NE corner.	SI
		Openings	N- 2 arch windows, basalt stone balusters.	OK	I.A.- Arch covered with T.W. boarding.	SU / LP
			S- 1 Stone arch.	Bad	I.A.- Not accessible.	SU
			E- 2 Stone arches.	Bad	Seepage above arches.	SI
					1 window opening infilled with brick work	SU
			W- Stone arch.	OK	I.A.- More thah 1/2 is covered with cabin partition.	SU
S 15	**Toilet**	**Floor**	Ceramic tiles	Bad	Broken at some places.	LL
		Ceiling	T.W. Boarding	Bad	Seepage.	
		Walls	Stone walls, plastered & painted	OK		LP
		Openings	N- 3 arched windows.	OK		LP
			E- 3 arched windows.	OK		LP
S 16A	**Corridor**	**Floor**	Cement Mortar	Bad	Cracks at some places	SI
		Ceiling	T.W. boarding	Bad	Seepage on NE corner.	SI
		Walls	Stone walls, plastered & painted	OK		LP
		Openings	N- 2 opening. 1 with door shutter	Bad		SU
			S- 1 Stone arch.	Bad	Seepage above arch.	SI
			E- 4 stone arch window openings.	OK	Not accessible.	SI
			W- 2 stone arch openings. (1 passage door).	OK		



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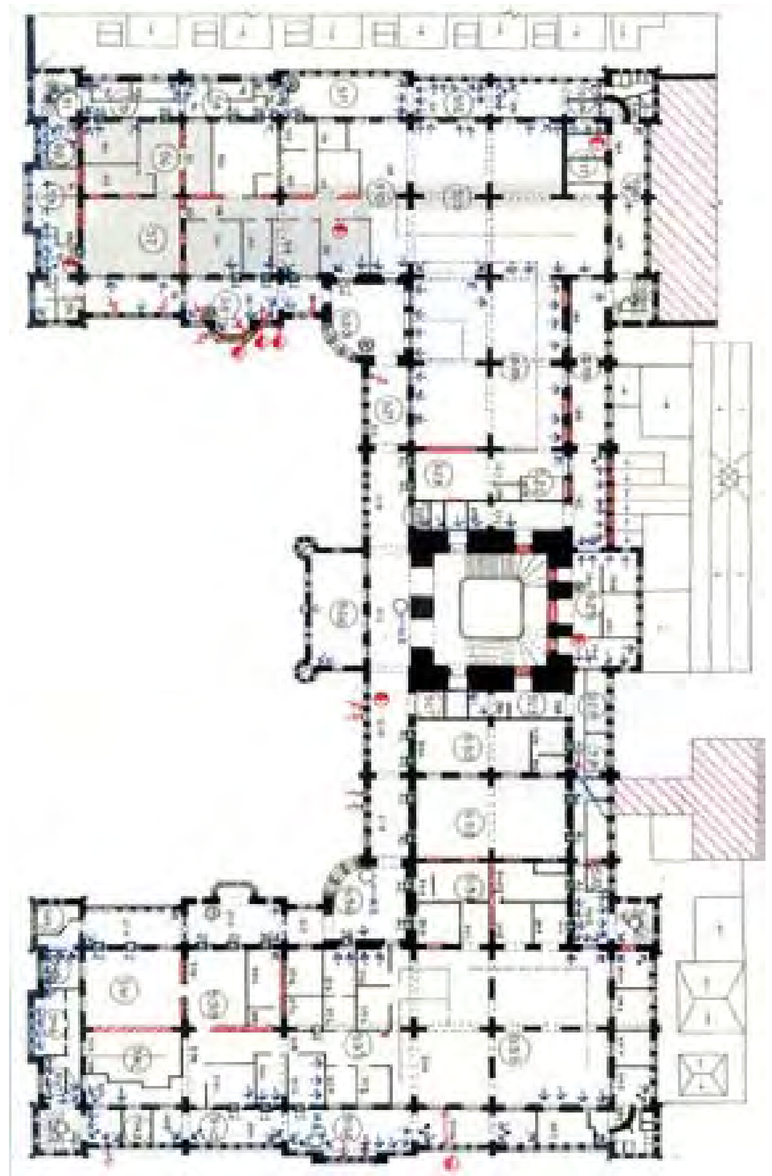
S 16B	**Corridor**	**Floor**	Cement Mortar	Bad	Cracks at some places	SI
		Ceiling	T.W. boarding	Bad	Seepage on SE corner.	SI
		Walls	Stone walls, plastered & painted.	OK		LP
		Openings	N- 1stone arch.	OK	Seepage above arch.	SI
			S- 1stone arch.	OK	I.A.- Covered with Al. jali. Cables running along arch.	SI
			E- 4 stone arch windows.	Good	I.A.- 1 door opening connecting new wing.	SU
			W- 2 stone arch doors.	OK		LP
S 17	**Office**	**Floor**				
		Ceiling				
		Walls	Stone, plastered & painted.			SU / LP
			Int.- Ply partitions.			
		Openings	N,S- 1 stone arch.			LP
			E- 2 stone arch doors.	OK		
S 18 A,B,C	**Office**	**Floor**	Cement mortar.	OK		LL
		Ceiling	T.W. boarding, painted white.	Good		LP
		Walls	Stone, plastered & painted.	OK	Seepage on S wall & SE corner.	SI
		Openings	N- 1 stone arch.	OK	Seepage above arch.	SI
			S- 1 stone arch.	OK		
			E- 12 stone arch windows, 1 access to staircase.	OK	Seepage above access to staircase.	SI
					I.A.- I8 C- Stone arches- E wall infilled with ply partition.	SU / LP
			W- 8 stone arch doors.	OK		
S 19	**Office**	**Floor**	Red & black cement tiles.	OK		LL
		Ceiling	T.W. boarding.	Bad	Seepage on E & W side.	SI
		Walls	Stone walls, plastered & painted Ply partition with Al. Frame (int).	OK		SU / LP
		Openings	N- 2 stone arch.	OK		
			S- 2 stone arch.	Bad	I.A.- 1 Infilled with ply, with 1 door.	SU
					I.A.- 1 Infilled with brickwork.	SU
			E- 5 stone arch doors.	OK	I.A.- 4 Infilled with ply- not accessible.	SI
			W- 6 stone arch doors with original shutters.	Good	Seepage above doors.	SI



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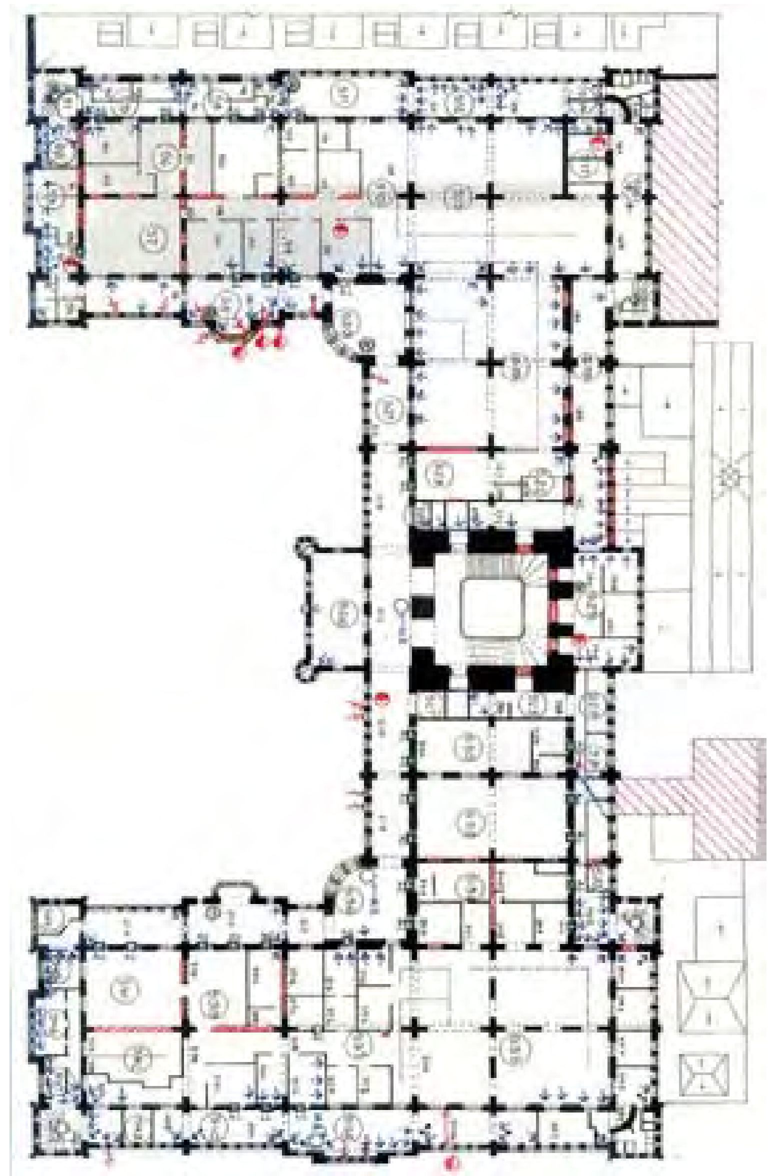
S 20	**Corridor**	**Floor**		OK		SI
		Ceiling	T.W. boarding, painted white.	Good		LP
		Walls	Stone, plastered & painted.	OK		LP
		Openings	N- 2 stone arch doors with original shutter & fanlight.	OK	I.A.- I fanlight infilled with ply for AC	SU / LP
			S- Basalt stone balusters & stone arches.			LP
			E- 3 stone arch doors with	Good		LP
			original shutters & fanlight.			
S 21A, B, C, D, E	**Corridor**	**Floor**	Marble mosaic tiles, covered with red carpet.	Good		SI
		Ceiling	T.W. joists, painted white.	Good	S 21D- Joists covered with tin	SU / LP
					sheets & packed with ply.	
					Distress- splitting joists.	
		Walls	Stone, plastered & painted.	OK		LP
		Openings	W- Stone arches & basalt stone	OK	Weathering of balusters.	LP
			balusters.		Cracks seen through arches in	LP
					S 21A, S 21D & S 21E	
S 21F	**Corridor**	**OPENINGS**	S- 1 stone arch door with original shutter & fanlight.	OK	I.A.- Fanlight infilled with ply & louvers.	SU / LP
S 21G	**Corridor**	**OPENINGS**	S- 3 stone arch doors with original shutter & fanlight.	OK	I.A.- Mmiddle door shutter not original. Fanlight infilled with ply for A.C.	SU / LP
S 21H	**Corridor**	**OPENINGS**	S- 3 stone arch doors with original shutter & fanlight.	OK	I.A.- Fanlight infilled with ply.	SI / LP
					Seepage in ceiling.	
S 22A	**Passage**	**Floor**	Red & black cement tiles.	OK		LL
		Ceiling	T.W. Boarding.	Bad	Seepasge in NE corner .	SI
		Walls	E,W- Stone, plastered & painted N,S- Ply partitions.	OK	Wood rot on N & S partitions.	SI
		Openings	N- 1 stone arch.	OK	I.A.- Infilled with ply.	SU / LP
			E- 2 stone arch doors.	OK		
			W- 1 stone arch.	Bad	I.A.- Partly infilled with ply partition.	SU / LP



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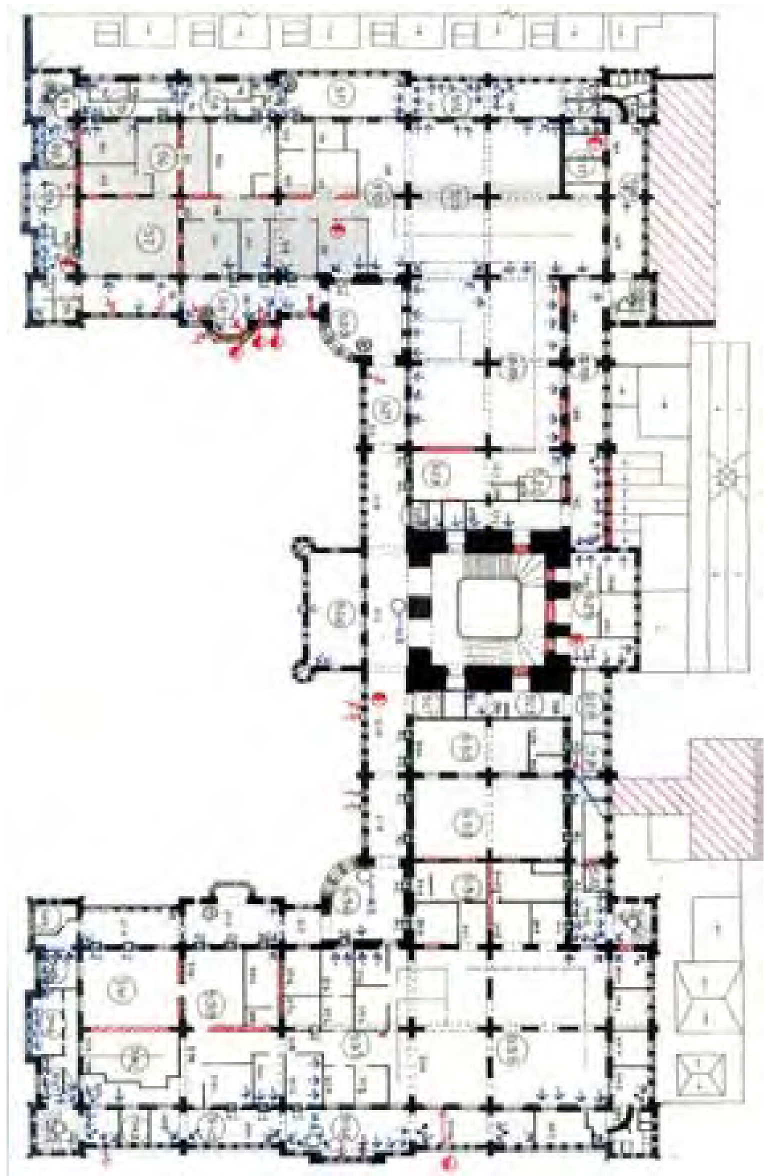
S 22B	**Office**	**Floor**	Red & yellow cement tiles.	OK		LL
		Ceiling	T.W. boarding.	Bad	Seepage on S side.	SI
		Walls	Stone walls, plastered & painted	OK		LP
		Openings	N- 1 stone arch.	OK	I.A.- Infilled with ply.	SU / LP
			S- 1 stone arch.	OK	I.A.- Infilled with brick.	SU / LP
			E- 1 stone arch.	OK		
			W- 1 stone arch.	Bad	I.A.- Infilled with ply & stanchion supporting machine room.	SU / LP
S 23	**Office**	**Floor**	Linoleum	OK		LL
		Ceiling	Perforated fibre boards.	Bad	Few boards uprooted from frame. Seepage at some points.	SI
		Walls	N & S- Stone, painted. Ply runs along the centre. E & W- Stone walls.	OK		SU / LP
		Openings	N- 1stone arch.	OK	I.A.- Infilled with ply.	SU
			S- 1 stone arch.	OK		LP
			E- 1 stone arch.	OK	I.A.- Partly infilled with partition.	LP
			W- 2 Original doors. Door shutters, 1/2 glazed, 1/2clear.	OK	I.A.- Infilled with T.W. panel. Fan light infilled with A.C. box.	SU
	Rest rm.	**Floor**	Linoleum	OK		LL
		Ceiling	False ceiling- Particle board.	Good		LL
		Walls	N, E & W- Ply partitions. S- Stone wall, plastered & painted.	OK	Wood rot at some points on N partition.	SI
		Openings	W- Stone arch.	OK	I.A.- T.W. skirting on door.	SI
S 24, 27	**Lift**					LL
S 25A	**Passage**	**Floor**	Red & yellow cement tiles.	OK		LL
		Ceiling	T.W. boarding.	Bad	Dampness seen on joists.	SI
		Walls	N&W-Stone,plastered & painted S & E- Ply partition (Al.frame)	OK	Dampness seen on the ply partition	SI
		Openings	N- 1 stone arch.	OK	I.A.- Arch infilled with ply partition.	SU / LP
			W- 3 stone arches.	OK	I.A.- Arches infilled.	SU / LP



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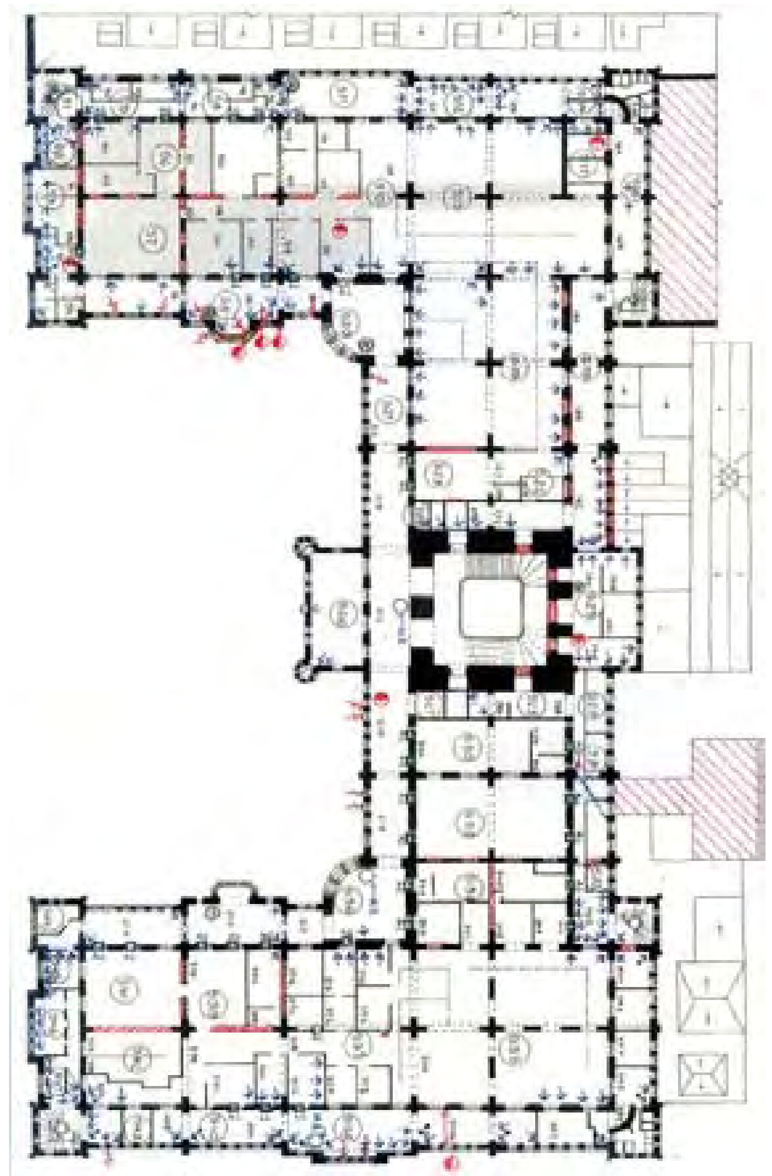
S 25B	**Office**	**Floor**	Red & yellow cement tiles.	OK		LL
		Ceiling	T.W. boarding.	Bad	Joists need to be checked. Seepage on N side.	SS SI
		Walls	N & E- Plastered & painted. S & W- Ply partitions.	OK		SU / LP
		Openings	N- 1 stone arch.	Bad	Seepage above arch.	SI
			E- 2 stone arch windows.	OK	Need to be consolidated.	SS
S 25C	**Office**	**Floor**	White ceramic tiles.	OK		LL
		Ceiling	T.W. boarding.	Bad	Wood rot. Joists need to be checked.	SI
		Walls	E- stone, plastered & painted. N,S&W- Ply partitions (Al.frame)	OK	Wood rot on N partition.	SI
		Openings	E- 3 stone arch windows.	OK	Need to be consolidated.	SS
S 25D	**Office**	**Floor**	Ceramic tiles.	OK		LL
		Ceiling	T.W. boarding.	Bad	Seepage on the N side.	SI
					Distress observed.	
		Walls	S, E- stone, plastered & painted. N&W- Ply partitions (Al. frame)	OK		SU / LP
		Openings	S- 2 stone arches.	Bad	I.A.- 1 infilled with ply.	SU
			E- 1 stone arch window.	OK	Needs to be consolidated.	SS
			W- 1 stone arch.	OK	I.A.- Infilled with ply.	SU
S 26	**Meeting Room**	**FLOOR**	Red carpet	Good		LL
		CEILING	False ceiling	Good		LL
		WALLS	Stone, plastered & painted.	OK	Seepage on W wall & SW corner.	SI
					Walls upto sill cladded with laminate.	SU / LL
		OPENINGS	W- 1 stone arch			LP
			E- 4 stone arch doors with original shutters.	OK	I.A.- Fanlights infilled with ply.	SU / LP
					Windows not openable. Window	
					glass with Garware film.	
			N & S- 1 stone arch window with original fanlight	OK	I.A.- Fanlights infilled with axhaust fan.	SU / LP
					Fanlight & shutter painted white.	SU
					Windows not openable.	SI



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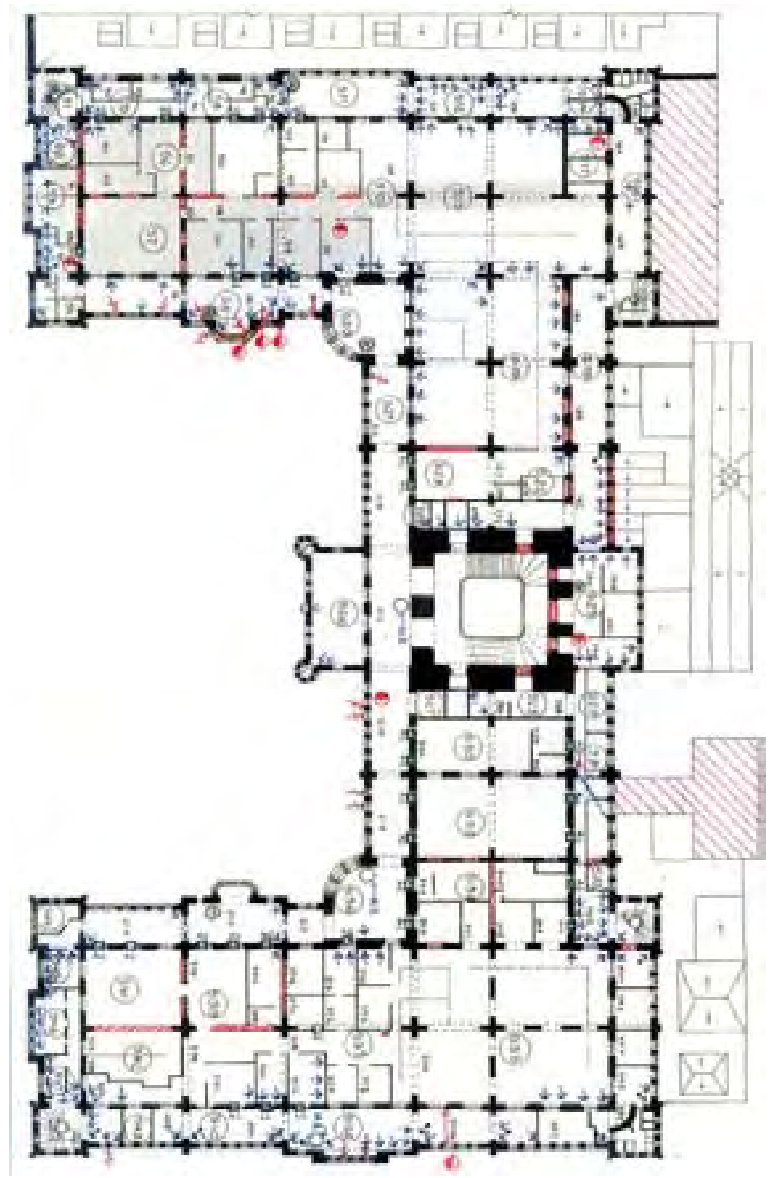
S 26 T1 & T2	Toilets	FLOOR	White marble	OK		LL
		CEILING	False ceiling	Good		LL
		WALLS	Stone, cladded with ceramic tiles	OK		SU / LP
		OPENINGS	Slit windows with louvres.	OK	Some louvres missing.	SS
S 28A		FLOOR	Light brown linoleum tiles.	OK	Flooring patched.	LL
		CEILING	T.W. joists, painted.	OK	I.A.- Part mezzaine for lift.	LL / LP
		WALLS	N & S- Stone wall.	OK		LP
			E & W- Ply partitions.	OK	E- Partition cracking.	SI
		OPENING	N- 1 stone arch	OK	I.A.- Cables & wires running along	
			E- 1 stone arch.	OK	the soffit of the arch.	SI
S 28B		FLOOR	Red & Grey linoleum	OK		LL
		CEILING	Ply wood false ceiling.	OK	Seepage through the false ceiling.	SI
		WALLS	N & E- Stone walls	OK		LP
			W- Ply partitions	OK		SU
			S- Brick wall.	OK		SU
		OPENINGS	E- 1 stone arch.	Bad	I.A.- Part of the fanlight hidden by	SU / LP
					false ceiling. Arch partly infilled	
					with brick. Fanlight infilled with ply.	
S 29	Canteen & Store	Floor	Kota & Kadappa	Bad	Broken at some places - infilled with cement mortar.	LL
		Ceiling	T.W. boarding.	OK		LP
		Walls	Stone walls, plastered & painted	OK	Cables running along W wall.	SI
		Openings	N- 1 stone arch.	Bad	Dampness seen above arch.	SI
			S- 1 stone arch.	Bad	I.A.- Partly enclosed by canteen partition. Door in bad condition.	SI
			E- 6 stone arch windows.	Bad	I.A.- Covered with frame & shutters Dampness above arches.	SI
			W- Stone arches.	OK	I.A.- 1 A.C. in fanlight, 1 opening infilled with ply.	SU



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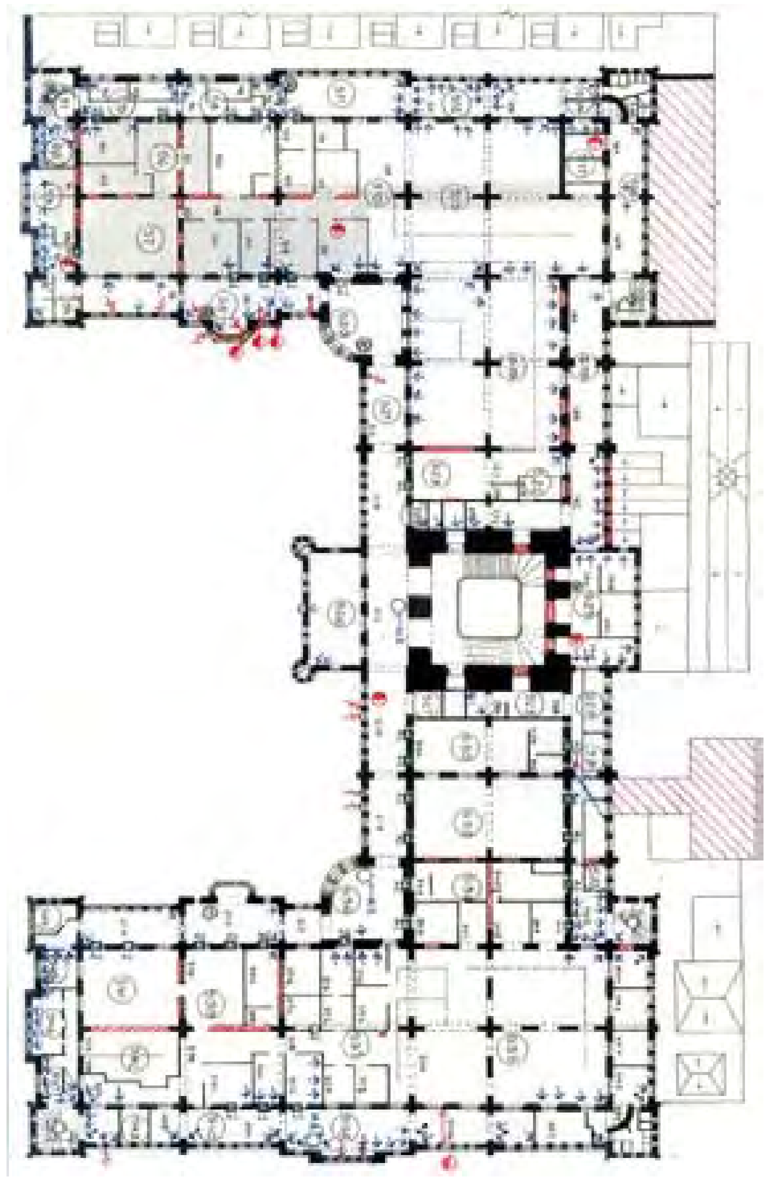
SPACE	CURRENT USAGE	ELEMENT	MATERIAL DESCRIPTION	CONDITION	DEFECTS	PRIORITY
S 30	**Office**	**Floor**	Rugged	Good		LL
		Ceiling	Perforated fibre boards.	Bad	Seepage on E & W side.	SI
		Walls	Stone walls, plastered & painted	OK		LP
		Openings	S- 4 stone arches.	OK	I.A.- Infilled with ply.	SU / LP
			E- 3 stone arches.	OK	I.A.- A.C.box above 1 opening. Exhaust fan above arch. Only 1 door accessible.	SU / LP
			W- 2 original doors.	OK	I.A.- 2 A.Cs in fanlight. 1 door not accessible.	SI
S 31	**Store**	**Floor**	Kota	Bad	Borken at some places. Brick walls added later for toilets.	LL
		Ceiling	T.W. boarding.	OK	Joists need to be checked.	LL
		Walls	Stone walls, plastered & painted	OK	Cables running along W wall.	SI
		Openings	W- 2 original door openings.	Bad	I.A.- 4 A.Cs above 2 doors.	SU
			E- 4 stone arch windows.			
S 32	**Conf. Room**	**FLOOR**	Beige carpet	Good		LL
		CEILING	Coffered false ceiling with tube light fittings.	OK		LL
		WALLS	Stone walls, plastered & painted above arches.	OK	I.A.- Split A.C. units on E & W wall.	LL / LP
			Dado original.			
		OPENINGS	N & S- 4 stone arch doors with original shutters.	OK	I.A.- Fanlights infilled with ply.	LL
			E & W- 2 stone arch doors with original shutters.	OK	I.A.- Fanlights infilled with ply.	LL
S 33	**Wash area**	**Floor**	Red cement tiles.			LL
		Ceiling	T.W. joists			LP
		Walls	N & E- Stone, plastered & painted			SU / LP
			S & W- Ply partitions.			
		Openings	N- 1 stone arch.			LP
			E- 2 stone arch windows.	Bad	Windows need to be consolidated.	LL



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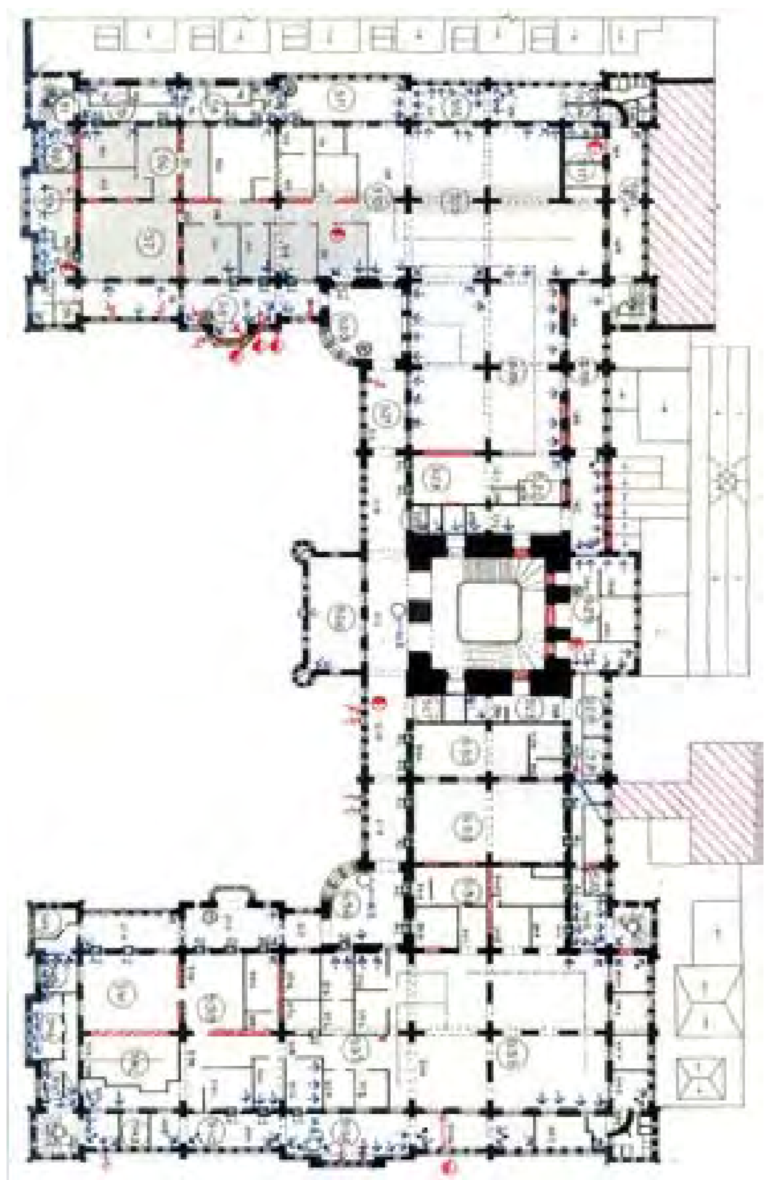
S 34A	OFFICE	FLOOR	Grey & white ceramic tiles.	OK		LL
		CEILING	False ceiling fixed in Al frame.	OK		LL
		WALLS	N & W- Stone wall S & E- Ply partition	OK	I.A.- Ply wood panelling running along the centre of the wall.	SU
		OPENINGS	N- 2 stone arches.	OK	I.A.- Infilled with brick.	SU
			W- 1 stone arch door with original T.W. shutters.	OK	I.A.- Fanlight infilled with 2 A.C units	SU
S 34B	Corridor	Floor	Kota	OK		SI
		Ceiling	T.W. boarding.	Bad	Seepage on S, E & W sides.	SI
		Walls	Stone walls, plastered & painted	OK		LP
		Openings	S- 1 stone arch.	Bad	Seepage above arch.	SI
			E- Stone arch to staircase.	OK	Seepage above arch.	SI
			W- 2 original doors.	OK	I.A.- A.Cs infilled into arches.	SU
S 34 C	OFFICE	FLOOR	Grey & white ceramic tiles.	OK		LL
		CEILING	False ceiling fixed in Al frame.	OK		LL
		WALLS	N- Ply partition	OK		LL
			E, W & S- Ston, plastered & painted.	OK		LP
		OPENINGS	W- 1 Stone arch door.	OK	I.A.- Fanlight infilled with ply for AC	SU
			S- 1 stone arch & 1 stone arch	OK	I.A.- Stone arch infilled in brick.	SU
			door.		I.A.- Fanlight infilled with ply for AC & shutter painted.	SU
S 34D	OFFICE	FLOOR	Grey linoleum tiles.	OK		LL
		CEILING	False ceiling fixed in Al frame.	OK		LL
		WALLS	N & E- Stone, plastered & painted	OK	I.A.- E- Stone wall cladded with ply	SU / LP
			S & W- Ply partition, painted.	OK		
		OPENINGS	Stone arches	OK	I.A.- All arches infilled with brick.	SU



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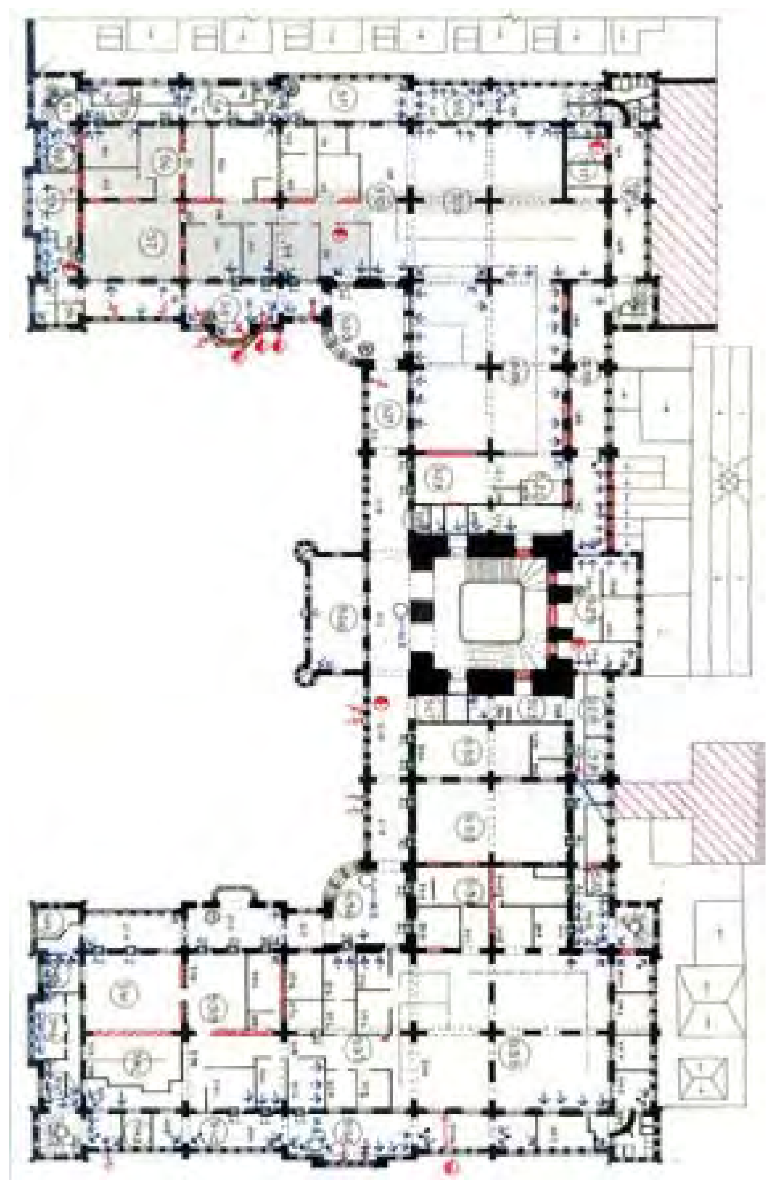
S 34E	OFFICE	FLOOR	Grey linoleum sheets.	OK		LL
		CEILING	False ceiling fixed in Al frame.	OK		LL
		WALLS	N & E- Ply partition, painted.	OK		LL / LP
			S- Stone walls, plastered painted	OK		
		OPENINGS	S- 1 stone arch door.	OK	I.A.- Fanlight infilled with ply.	SU
					Al frame door shutters.	
S 34F	OFFICE	FLOOR	Grey linoleum tiles.	OK		LL
		CEILING	False ceiling fixed in Al frame.	OK		LL
		WALLS	N- Ply partition	OK		SU / LP
			E, W & S- Stone, plastered & painted.	OK		
		OPENINGS	W- 1 stone arch door.	OK	I.A.- Fanlight infilled with ply for A.C	SU
			S- 1 stone arch door & 1 stone	OK	I.A.- Fanlight infilled with ply for A.C	SU
			arch		Shutter painted. Stone arch infilled with brick.	SU
S 35A	Office	Floor	Red & black cement tiles.	OK		LL
		Ceiling	T.W. boarding.	Bad	Seepage on S side.	SI
		Walls	Stone walls, plastered & painted	OK	Seepage on SE & NE corner.	SI
		Openings	Stone arches.	Bad	Seepage above arches on SE corner	SI
S 35B	Corridor	Floor	Kota	OK		LL
		Ceiling	T.W. boarding.	Bad	Leakage due to plumbing & Seepage at SW corner.	SI
		Walls	Stone walls, plastered & painted	OK		LP
		Openings	N- 2 stone arches.	Bad	Distress seen in arches. Window frames - bad condititon.	SU SU
			S- 4 stone arch windows.	Bad	Distress seen in arches.	SU
			E & W- Stone arches.	OK	Leakage due to plumbing & Seepage above arches.	SI



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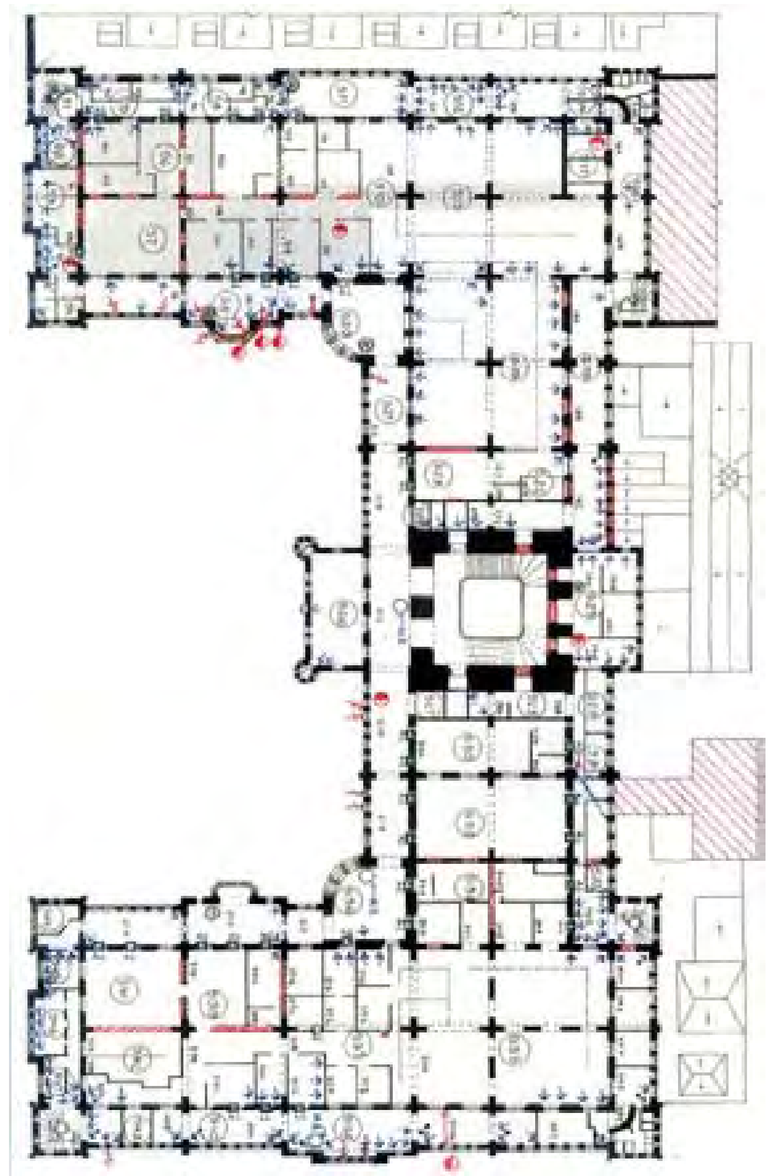
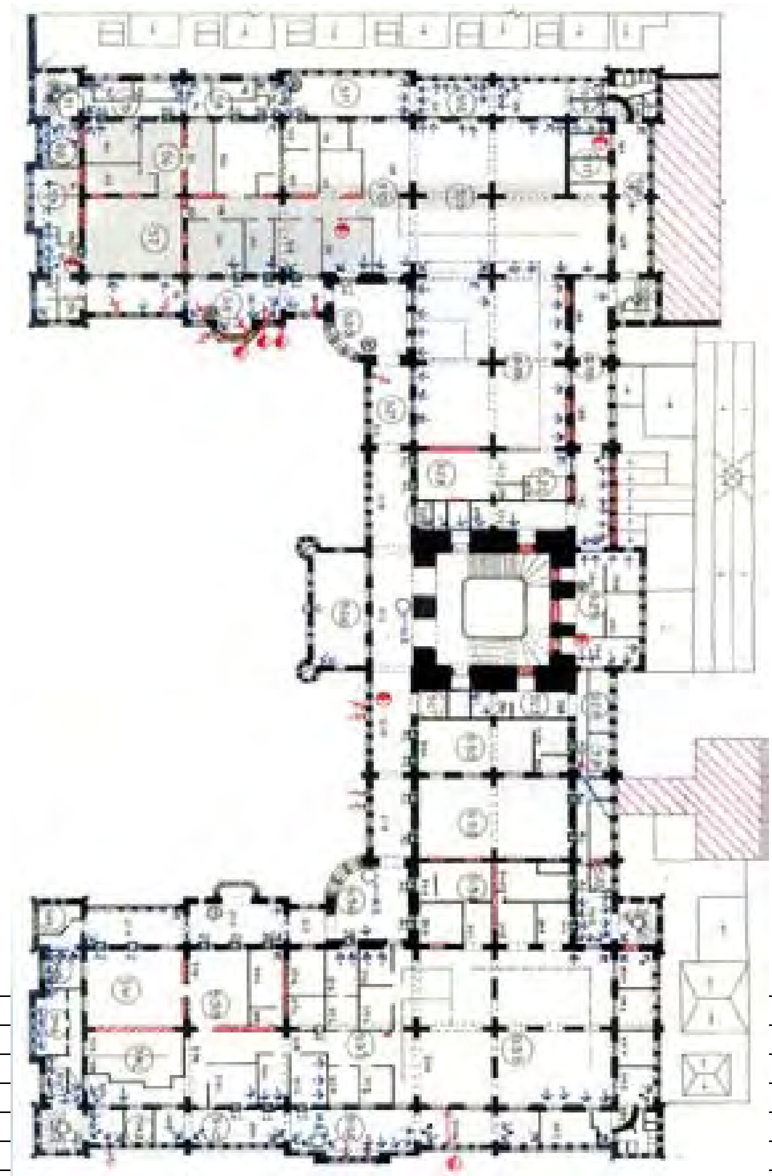
S 35C	**Corridor**	**Floor**	Kota	OK		SI
		Ceiling	T.W. boarding	OK		LL
		Walls	Stone, plastered & painted.	OK	Leakage due to plumbing on SE corner.	SI
		Openings	N- 2 stone arch doors with original shutters.	OK	Shutters painted white.	SU
			S- 4 stone arch windows & basalt stone balusters.	OK	I.A.- Arches infilled with ply.	SU
			E- 1 stone arch door.			LP
S 35D	**Office**	**Floor**	Kota			LL
		Ceiling	Perforated fibre board ceiling	OK		LL
		Walls	S, E & W- Stone, painted.	OK	Seepage & leakage due to plumbing on SE corner.	SI
		Openings	E- 2 stone arch windows	OK	I.A.- Partly covered with ply. Ply upto sill level.	SU
			W- 1 stone arch door with original shutter.	OK	Shutter painted white.	
S 35 E & F	**Office**	**Floor**	Kota	OK		LL
		Ceiling	Perforated fibre board.	Bad	Few places only framework of ceiling remains. Seepage & leakage at SE & NE corners.	SI
					Leakage due to plumbing on NE corner.	
		Walls	Stone walls, plastered & painted N & S- Ply partitions.	OK		LP
		Openings	E- 4 stone arch windows.	OK		LP
			W- 2 original stone arch doors.	OK		LP
S 36	**Corridor**	**FLOOR**	Marble mosaic tiles.	OK	Covered with red carpet.	SI
		CEILING	T.W. joists painted white	Good		SI
		WALLS	S & E- Stone, plastered & painted	OK	Seepage on S wall.	SI
		OPENINGS	N- Basalt stone ballusters & 4			
			pairs of columns.			
			S- 2 stone arch doors with original shutters & fanlights	OK	I.A.- 1 arch fanlight infilled with ply for A.C.	SU
			E- 2 stone arch doors with original shutters.	OK	I.A.- Fanlight infilled with ply for A.C	SU



Legend	
	Long Term Duration
LL	Long Term Later
LP	Long Term Periodic
	Short Term Duration
SI	Short Term Immediate
SU	Short Term Urgent
SS	Short Term Soon

SPACE	CURRENT USAGE	ELEMENT	MATERIAL DESCRIPTION	CONDITION	DEFECTS	PRIORITY
S 37A	**Asst. Secretary**	**Floor**	Marble tiles with black kadapa border.	OK		LL
		Ceiling	False ceiling- perforated board in Al frame.	OK	Some boards are sagging.	LL
		Walls	Ply partitions.	OK		LL
S 37A1	**Protocol Officer**	**Floor**	Marble tiles with black kadapa border.	OK		LL
		Ceiling	Plastic false ceiling in Al frame.	OK		LL
		Walls	S, E & W- Ply partition.	OK		LL / LP
			N- Stone, plastered & painted.	OK		
		Openings	N- 1 stone arch door with original shutter.	OK	I.A.- Fanlight infilled with ply & fitted with glass louvers.	SU
S 37B	**Office Deputy G.M.**	**Floor**	Cement tiles	OK		LL
			Red carpet.	OK		LL
		Ceiling	Perforated fibre boards	Bad	Damaged at some points. Seepage on N side.	SI
		Ceiling	False ceiling- perforated boards	OK		LL
		Walls	S, E & W- T.W. panel partitions. N- Stone, plastered & painted. in Al frame.	Bad	Large seepage on N wall.	SI / LP
		Openings	N- Stone arch.	Bad	Seepage above arch.	SI
		Walls	S, E & W- Ply partitions.	OK		LL
			N- Stone, plastered & painted.	OK		LP
		Openings	N- 1 stone arch door with original shutter.	OK	I.A.- Fanlight with ply for A.C.	SU
S 37C	**Office**	**Floor**	Original minton tiles.	Good		LL
		Ceiling	False ceiling- perforated boards in Al frame.	OK	Some boards are cracked.	LL
		Walls	All ply partitions. Stone column plastered & painted.			LL / LP
S 37D	**P.A. to secretary**	**Floor**	Original minton tiles.	Good		LL
		Ceiling	False ceiling in Al frame.	OK		LL
		Walls	S, E & W- Ply partitions.	OK		LL
			N- Stone, plastered & painted.	OK	Seepage on N wall.	SI / LP



SI	Short Term Immediate
SU	Short Term Urgent
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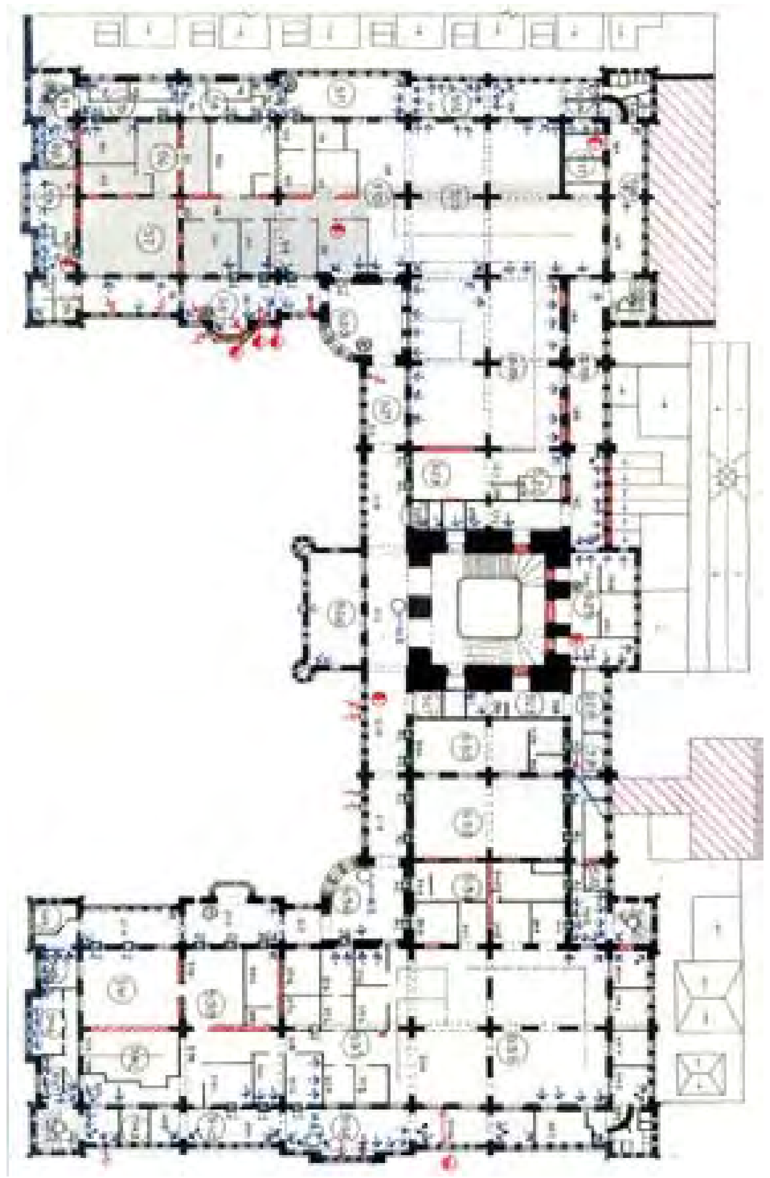
SPACE	CURRENT USAGE	ELEMENT	MATERIAL DESCRIPTION	CONDITION	DEFECTS	PRIORITY
S 37E	**Asst. secretary**	**Floor**	Grey linoleum sheets on minton tiles.	OK		LL
		Ceiling	False ceiling in Al frame.			LL
		Walls	All ply partitions.			LL
S 37F	**Cabin**	**Floor**	Marble	OK		LL
		Ceiling	Cement sheets	Bad	Seepage. Ceiling needs to be checked.	SI SI
		Walls	N, E & W- Ply partitions	OK		LL
			S- Stone, plastered & painted.	OK		LP
		Openings	S- 1 stone arch door.			LP
S 37G	**Cabin**	**Floor**	Cement tiles	OK		LL
		Ceiling	Cement sheets- painted white.	OK		LP
S 37 H	**Office**	**Floor**	Cement tiles.	OK		LL
		Ceiling	Cement sheets.			LL
		Walls	N, E & W- Ply partitions.			LL / LP
			S- Stone, plastered & painted.			
		Openings	S- 1 stone arch door.		I.A.- Fanlight infilled with ply for AC	SU
S 38	**Corridor**	**Floor**	Kota tiles	OK		SI
		Ceiling	T.W. boarding.	Bad	Seepage on S side.	SI
		Walls	Stone walls, plastered & painted	OK	Seepage on S wall.	SI
		Openings	E & W- Stone arch.	Bad	Seepage above arches.	SI
			N- 4 arched doors.	OK	I.A.- 1 fanlight infilled with A.C. box.	SU
			S- 5 stone arched windows.	Bad	Arches show cracks.	LP
S 39A	**OFFICE**	**FLOOR**	Brown carpet	Good		LL
		CEILING	Ply wood false ceiling.	OK		LL
		WALLS	E- Ply partition, painted.	OK		LL / LP
			W, N & S- Stone, plastered & painted.	OK		
		OPENINGS	N- 2 stone arch doors with original shutters & fly door.	Good	I.A.- Fanlight infilled with ply for A.C	SU
			S- 2 stone arches.	OK	Arches infilled in brick.	SU
			W- 2 stone arch windows	OK	Arches infilled in brick.	SU
			1 stone arch door.			



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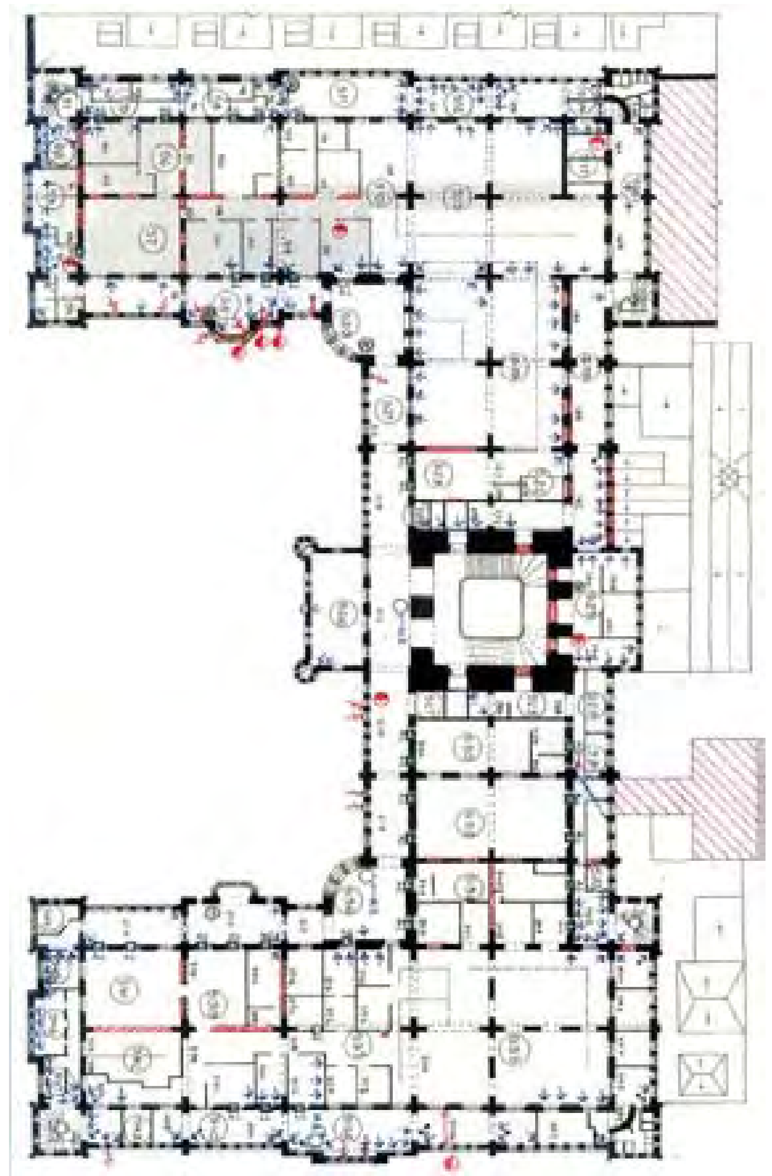
SPACE	CURRENT USAGE	ELEMENT	MATERIAL DESCRIPTION	CONDITION	DEFECTS	PRIORITY
S 39C	**Cabin**	**Floor**	Marble (not original), covered with rug.	OK		LL
		Ceiling	Perforated fibre board.	OK		LL
		Walls	N, E & W- Ply partitions. S- Stone, plastered & painted.	OK	Seepage on SE corner. I.A.- S wall with T.W. skirting.	SI / LP
		Openings	S- 1 stone arch. Original shutters.	OK	I.A.- Fanlight enclosed for A.C. Seepage above arch.	SU SI
S 39D	**Office Cabin**	**Floor**	Marble	OK		LL
		Ceiling	T.W. panelling (False ceiling).	OK		LL
		Walls	N, E & W- Ply partitions. S- Stone, plastered & painted.	OK	Seepage on S wall. I.A.- N- Lockers for files as partition	SI LP
		Openings	S- 1 stone arch. 3 shutters.	Bad	I.A.- Fanlight enclosed. 1 shutter absent.	SU
S 39E	**OFFICE**	**FLOOR**	Dark brown carpet.			LL
		CEILING	Perforated fibre board in Al frame	OK	Seepage through the false ceiling.	SI
		WALLS	N- Stone wall.			LP
			E & S- Brick wall			LP
			W- Ply partition.			SU
		OPENING	N-1 stone arch door with original shutter & fanlight.	OK	I.A.- Fanlight infilled with ply for A.C	SU
S 40	**Office**	**Floor**	Kota tiles	OK		LL
		Ceiling	Perforated boards. 2 A.C. ducts	OK	Ceiling needs to be checked	SI
		Walls	Stone walls, plastered & painted	OK	Seepage on SE corner.Leakage due to plumbing on SW corner.	SI SI
		Openings	S- 6 stone arch windows.	Bad	Seepage above arches.	SI
			N- 3 original doors.	OK	I.A.- 2 A.Cs infilled in 2 fnlights.	SU
			E & W- Stone arch.	OK	Seepage above arches.	SI
S 41	**G.M's Cabin**	**NOT ACCESSIBLE**				



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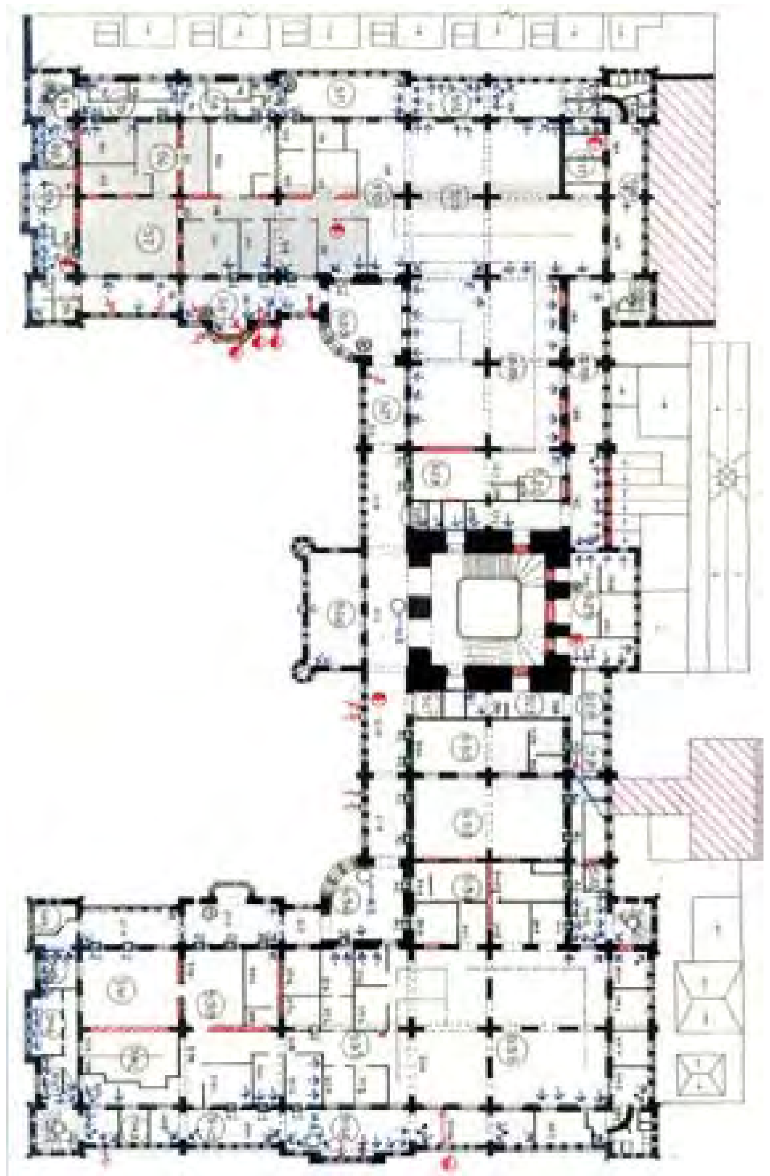
SPACE	CURRENT USAGE	ELEMENT	MATERIAL DESCRIPTION	CONDITION	DEFECTS	PRIORITY
S 42A	PANTRY	FLOOR	Green kota tiles.	OK		LL
		CEILING	Perforated fibre board in Al frame	Bad	Mostly all boards missing. seepage in the ceiling.	LL
		WALLS	N, S & W- Stone walls	OK	I.A.- S- Marble platform.	
			E- Ply partition.	OK	Kadapa platform mounted on wall.	
		OPENINGS	N- 1 stone arch door			
			S- 2 stone arch windows &			
			basalt stone balusters.			
			W- 1 stone arch access to stair.			
S 42B	Office	Floor	Ceramic tiles.			
		Ceiling	Perforated fibre board ceiling.	OK	Boards missing at a few places.	
		Walls	N & S- Stone walls, painted.			
		Openings	N- 1 stone arch door with fly door			
			S- 2 stone arches & basalt stone	OK	I.A.- Balusters covered with ply.	
			balusters.		Stone arches covered with Al shutters.	
S 42C	Kitchen	Floor	Kota tiles	OK		
		Ceiling	Perforated Boards	Bad	Most of them missing.	
		Walls	Stone walls, plastered & painted. W- Ply partition.	OK	Seepage on SE corner.	
		Openings	N- 1 stone arch.	OK	Seepage above arch.	
			S- 2 stone arch windows.	Bad	Seepage above arches. I.A.- Arches covered with shutters & cement sheets.	
			E- 1 stone arch.	OK	Seepage above arches.	
S 43	OFFICE	FLOOR	Green kota tiles with black kadappa border.	OK		LL
		CEILING	Perforated fibre board in Al frame	OK	Some boards missing.	LL
		WALLS	N & S- Stone walls, painted above arches.			LP
			E & W- 1/2 ply partition.			LL
		OPENINGS	N-1 stone arch door with original shutter & fanlight.	OK	I.A.- Fly door added.	LL
			S-1 stone arch window.	Bad	I.a.- Window partly covered with ply panels.	LL
S 44	TOILET	FLOOR	Off white ceramic tiles.	OK		LL
		CEILING	False ceiling of plastic sheets.	OK		LL
		WALLS	N, E & W- Stone walls	OK	I.A.- Cladded with ceramic tiles.	LL / LP
			S- Brick wall	OK	I.A.- Cladded with ceramic tiles.	LL / LP



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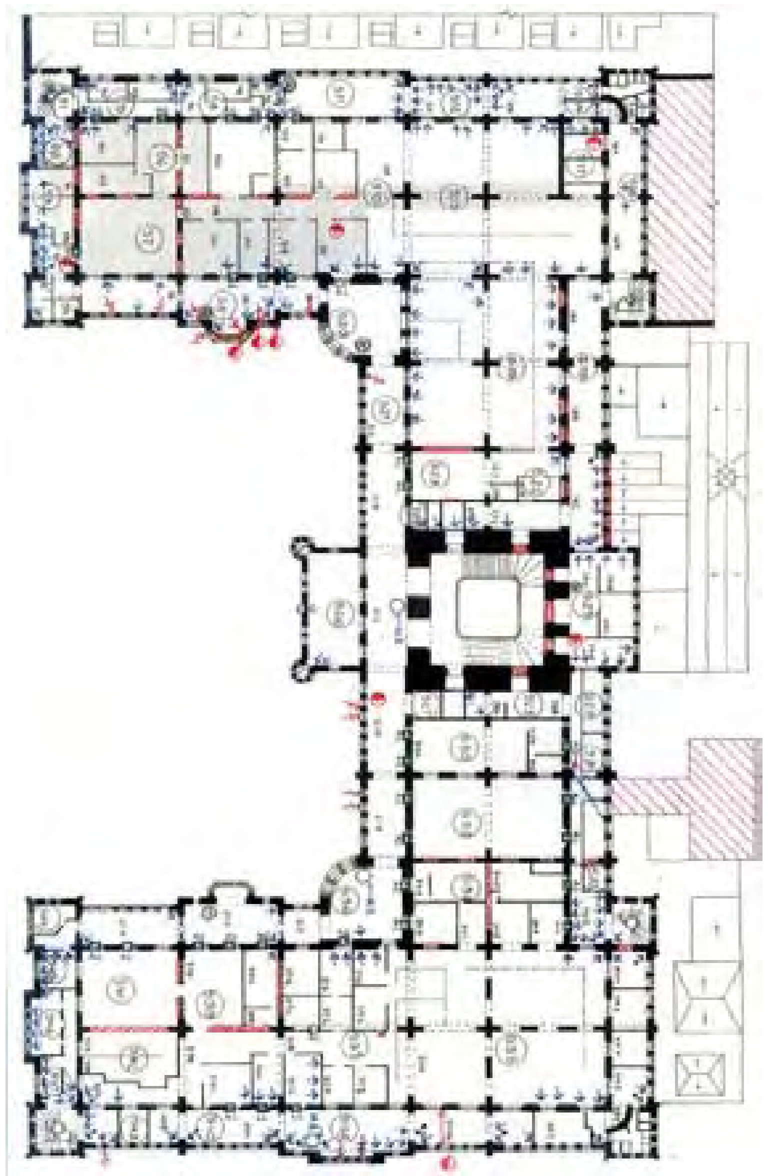
SPACE	CURRENT USAGE	ELEMENT	MATERIAL DESCRIPTION	CONDITION	DEFECTS	PRIORITY
S 45	**G.M's Rest Rm.**	**FLOOR**	Red carpet	Good		LL
		CEILING	Ply wood false ceiling.	OK		LL
		WALLS	E & W- Stone	OK	I.A.- Cladded with ply.	LL
			N & S- Ply partitions.	OK		LL
S 46	**SIT OUT**	**FLOOR**	White marble tiles with green marble border.	OK		LL
		CEILING	T.W. joists, painted white.			LP
		WALLS	W- Stone wall			LP
			N, E & W- Ply partition			LL
		OPENINGS	W- 4 stone arch windows.	Bad	Window frames need to be consolidated.	LL
					I.A.- Fanlight infilled with brick. Arch infilled with ply.	SU
S S1	**STORE ROOM**	**FLOOR**	Original minton tiles.	Good		LL
		WALLS	Stone, plastered & painted.			
		OPENINGS	S- Stone arch	OK	I.A.- Partly infilled with brick.	SI
					Fanlight completey blocked.	SI
S S2		**FLOOR**	Original minton tiles.	Good		LL
		WALLS	Stone, plastered & painted.			LP
		OPENINGS	N- Stone arch	OK	I.A.- Partly infilled with brick.	SI
					Fanlight completey blocked.	SU



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THE TEAM

In-House

Principal Coordinator:

Mr. B.V.B. Pai

Principal Conservation Architect - Engineer:

Mr. R.G. Rao

Architects:

Sharmila Naik, Architect
Vaishali Latkar,Conservation Architect
Ramesh Bhole, Conservation Architect

Engineers :

Shiv Kumar Vishwakarma
Nilesh Thakkar
Vinay Nikam

Material Scientists:

Dr. Jayashree Chitale
Dr. S.C. Patra

Computer Documentation:

Manoj Aravindakshan
Ulhas Fernandes

Building Services:

Electrical Department, RCD
Water Supply and Sanitation Department, RCD
Photography & Video documentation, RCD

Consultants

The Bombay Collaborative

Chhatrapati Shivaji Terminus (India)

No 945 rev

1. BASIC DATA

State Party: India

Name of property: Chhatrapati Shivaji Terminus (formerly Victoria Terminus) Station

Location: City of Mumbai, Maharashtra State

Date received: 30 January 2003

Category of property:

In terms of the categories of cultural property set out in Article 1 of the 1972 World Heritage Convention, this is a *monument*.

Brief description:

The Chhatrapati Shivaji Terminus, formerly Victoria Terminus Station, in Mumbai, is an outstanding example of Victorian Gothic Revival architecture in India, blended with themes deriving from Indian traditional architecture. The building was designed by the British architect F.W. Stevens, and it became the symbol of Bombay as the 'Gothic City' and the major international mercantile port of India.

2. THE PROPERTY

Description

The Victoria Terminus (VT), now called Chhatrapati Shivaji Terminus (CST), was built to the design of the consulting British architect, Frederick William Stevens (1848-1900). Work began in 1878 and was completed ten years later. It is in High Victorian Gothic style based on late medieval Italian models. This style was acceptable to both European and Indian taste, since it is compatible in its use of colour and ornamentation with the Mughal and Hindu architecture of the sub-continent. The skyline, turrets, pointed arches, and eccentric ground plan are close to traditional Indian palace architecture.

The VT was constructed using high level of engineering both in terms of railway engineering and civil engineering. In India it is one of the first and the best products of use of industrial revolution technology merged with revival of the Gothic Revival style. The centrally domed office structure has a 330 feet deep platform connected to a 1,200 feet long train shed, and its outline provides the skeleton plan for building. VT's dome of dovetailed ribs, built without centering, was a novel achievement of the era. The use of dome was more for aesthetics and drama rather than for use.

The interior of the building was conceived as a series of large rooms with high ceilings. It is a utilitarian building and has had various changes required by the users, not always sympathetic. Its C-shaped in plan is symmetrical on an east-west axis. All the sides of the building are given equal value in the design. It is crowned by a high central dome, which acts as the focal point. The dome is an octagonal ribbed structure with a colossal female figure symbolizing Progress, holding a torch pointing upwards in her right hand and a spoked wheel in her left hand.

The side wings enclose the courtyard, which opens on to the street. The wings are anchored by monumental turrets at each of their four corners, which balance and frame the central dome. The façades present the appearance of well proportioned rows of windows and arches. The ornamentation in the form of statuary, bas-reliefs, and friezes is exuberant yet well controlled. The columns of the entrance gates are crowned by figures of a lion (representing Great Britain) and a tiger (representing India).

The constructional materials were selected with care. The main structure is built from a judicious blend of India sandstone and limestone, whilst high-quality Italian marble was used for the key decorative elements. The main interiors are also lavishly decorated: the ground floor of the North Wing, now as the Star Chamber, which is still the booking office, is embellished with Italian marble, polished Indian blue stone. The stone arches are covered with carved foliage and grotesques.

History

The site on which this property is situated, Bori Bunder, is of great historical importance and is associated with the origins of Bombay (now Mumbai) as a city. The city derives its name from the goddess Mumba Devi, and the earliest temple dedicated to her is believed to have stood at the site of the Victoria Terminus. The original shrine was demolished in 1317 by Mubarak Shah and reconstructed. This was demolished by the Portuguese in 1760.

The Bombay Island had formed a coastal outpost of the Hindu in Western India, but was not used for commerce. It was first passed to the Portuguese and then, in 1661, to the British. In 1667, the island was transferred to the East India Company, who was principally responsible for its commercial development. Merchants started settling here from elsewhere, and ship building industry and cotton trade prospered. The town flourished especially after the building of railway connections with the inland and the opening of the Suez Canal in 1869.

With the development of trade, the governor of Bombay planned a series of works aiming at the construction of a more representative city. This involved land reclamation and the construction of a magnificent ensemble of High Victorian public buildings along the sea front. The Victoria Terminus, the most impressive of these buildings, was named after Queen Victoria, Empress of India, on whose Silver Jubilee it was formally opened in 1887. Originally intended only to house the main station and the administrative offices of the Great Indian Peninsula Railway, a number of ancillary buildings have been added subsequently, all designed so as to harmonise with the main structure. A new station to handle main line traffic was erected in 1929. The original building is still in use to handle suburban traffic and is used by over three million commuters daily. It is also the administrative headquarters of the Central Railway.

Management regime

Legal provision:

All legal rights of the property are vested in the Ministry of Railways, Government of India.

Mumbai was the first city in India to have heritage legislation, enacted by Government Regulation in 1995 (N° 67). The CST and the Fort area, of which it is part, are protected on the basis of this legislation. There are 63 grade I buildings, which include the Terminus.

Management structure:

The property, including its moveable and immoveable assets, is owned by Central Railway under the Ministry of Railways, Government of India.

A multidisciplinary committee, called Mumbai Heritage Conservation Committee (MHCC) was established to ensure protection of heritage buildings. There are 624 listed buildings in the whole city.

The administrative control and the management of this property are with the Divisional Railway Manager, Mumbai division, Central Railway. The day-to-day maintenance and protection of the building is also the responsibility of the Divisional Railway Manager.

On a regional level, the Railways are in the process of formulating a re-structuring plan regarding the zoning of the railways across the country. As a result, this would lead to decongesting and reducing the pressures on this Terminus Station, which is now over-crowded by traffic. The Mumbai Metropolitan Regional Development Authority (MMRDA) is working on the Mumbai Urban Transportation Plan, aiming at up-grading the transport network.

On the local level, there will be changes in the management system, which will have consequences on the area of the eastern water front of the city. The Terminus, which is situated in this area is in a strategic position, and will therefore also be affected by these developments.

There is a five-year management plan for the CST, which was initiated in 1997-2003 by the appointment of the Architectural Conservation Cell (ACC) as Consultants to the Central Railway for the Terminus building. The Central Railway has accepted this plan. At the moment, the second phase, 2004-2009, has been initiated involving the restoration of the Terminus station, the management of traffic around the site, tourism management, and training of personnel.

Resources:

The funding of the management of the Terminus station comes from the Indian government. The Railways have the means to set aside funds for conservation work required for the upkeep of their buildings.

Justification by the State Party (summary)

Criterion i: CST or VT when designed was the first terminus station in the subcontinent, a trendsetter, a commercial palace representing the new economic wealth of the nation. It was the symbol or signature of the city that claimed to be the jewel in the crown. … The scale and grandeur of this building produce a sense of wonder and awe. It is the most prominent and symbolic landmark of Mumbai. Bombay city has been described as the finest Victorian city East of the Suez. The Gothic Revival style was deliberately chosen as most suitable to express the aspirations of the wealthiest and most dynamic of Indian cities. …

Criterion ii: CST is the physical representation par excellence of the meeting of two great cultures. The British conceptualised and planned the architecture of the city to represent dramatically the new ideas of progress and modernity. British architects worked with Indian craftsmen to include Indian architectural tradition and idioms, in the process forging a new style unique to Bombay. …

Criterion iii: CST is one of the finest buildings in the world to have a stone dome. It is also amongst the first grand public buildings of this scale to be built in the city and the country that integrated the industrial revolution technology with a historic architectural style. It introduces the technique of dome construction, which became popular with all later public buildings in the city.

Criterion iv: It must surely stand among the half dozen greatest railway stations of the world. The railway epitomises the industrial revolution. The technological development is also highlighted in the architecture of the concourse, which covers the large uninterrupted spans of the concourse with extensive structural steel. This use of decorative ironwork and structural steel is the earliest example of industrial architecture adapted to public buildings in Mumbai.

Criterion v: The station is still very much in use as a terminus and administrative headquarters of the Central Railway, as it was planned 115 years ago. Unlike many other stations of the world that have become redundant on account of a drop in rail passengers, this station has expanded its use and is as active as ever. …

Criterion vi: CST is a statement of national pride, a symbol of the city because of the transport and technological revolution it celebrates. The building is therefore directly associated with the ideas of Indo-British development, and has become a symbol of national pride.

3. ICOMOS EVALUATION

Actions by ICOMOS

The property was presented for inscription under the name: ‘Victoria Terminus (Chhatrapati Shivaji Terminus)’ in 1998. An ICOMOS expert mission visited the site in 1999. ICOMOS then recommended that further consideration be deferred to allow the State Party to ‘undertake a properly formulated conservation programme, to be implemented under the direction of properly qualified professionals in this specialisation field. A relevant comparative study of historic railway termini on a worldwide basis should also be carried out.’

A second ICOMOS expert mission visited the site in September 2003.

Conservation

Conservation history:

The CST station has been in constant use since its inauguration in the late 19th century. The building has been protected since 1995. Furthermore it is part of the so-called 'Fort precinct', which has been identified for protection and conservation. There is a proposal to extend the eventual World Heritage nomination with a series of other buildings in this precinct dating from the same period with the CST.

During the more than a century of utilisation, the spaces of the building have been adapted to the new requirements on an ad hoc base. Many of such changes are now considered reversible, being additional ceilings, light partition walls or balconies. A relatively small amount of these changes have caused alteration to the original structure.

State of conservation:

There has been a recent analysis of the condition of the building, which has indicated that it is structurally sound, but there are a series of problems that need to be tackled, involving maintenance and repair.

Regarding the changes that have taken place over the years, the report has classified them according to their impact and amount. It is considered feasible to revert most of the alterations back to the original condition. In a few cases, this work will require limited reconstruction. In case, such changes cannot be removed, e.g. being essential for the functioning of the station, the aim is to treat them sensitively in relation to the original context. Particular attention is proposed to be given to the public or otherwise visible areas of the building.

Management:

The State Party has made an important effort to establish a management system for the proposed property and its buffer zone, following the recommendations of 1999. Several initiatives have been taken in the whole area, which are expected to lead to some improvements. Since 1995, the area of which the Terminus station is part has been listed for protection. A part of this area is defined as the buffer zone for the nomination. There is however the project to extend this buffer zone, and to include a fairly large area, including several grade I listed buildings. Mumbai is considered to have the most advanced urban conservation policy in India.

There have been two comprehensive reports on the property, one in 1997-1998 by the Architectural Conservation Unit, the other in 2003 by The Indian National Trust for Art and Cultural Heritage (INTACH). The second report has considered the larger urban context, proposing that an eventual cluster nomination be presented for World Heritage List as the area contains a large number of good-quality buildings from the same period as the Terminus station itself.

The ICOMOS mission was informed that the Railways have already commissioned the first phase of the restoration project of the Terminus, but that the contractor has no previous experience in similar building conservation work. ICOMOS considers it necessary to assure that the work is carried out by qualified firms, which was the recommendation already in 1999, and that there should be continuity in the project management. This is all the more important considering the need to conserve and occasionally replace damaged elements of 19th-century manufacture.

The ICOMOS mission was also informed about the proposed extension of three more railway lines and a new station to be built as an extension behind the old Terminus station. The new building would have parking areas, taxi station, and other facilities. However, no information was provided regarding the height and volume of the proposed construction.

Risk analysis:

The Terminus is one of the major railway stations in the Metropolis of Mumbai, and there are some 3 to 3.5 million people using it on a daily base. In fact, from an initial 4 railway tracks, the terminus now has 6 suburban and 10 separate out-station tracks. This has led to restructuring of several areas in the surroundings, and the addition of new buildings. Nevertheless, according to recent plans, the Railways are working to decongest this terminus and to deviate some of the traffic to other stations.

The area is part of the central city area, and it is subject to huge development pressures and potential redevelopment. At the same time, it is noted that the area is legally protected and there is a large number of listed buildings. However, considering the business interests in such a central area, it is obvious that there is a continuous challenge regarding development control.

Another risk comes from intensive traffic flow and the highly polluted air in the region around the railway station. Industrial pollution in the area is reported to have been reduced due to reduction in industrial and harbour activities. Another problem is the saline air from the sea.

The management of the building has already taken steps to update fire protection, which is planned to be checked and upgraded.

Authenticity and integrity

The Terminus station has been recently analysed in detail regarding its authenticity. As a general conclusion, structurally the original building is considered to be nearly intact even though, over time, there have been numerous alterations. These have been mainly additions and adjustments to accommodate the immediate needs of the personnel working in the building, resulting in the construction of partition walls, new ceilings, the instalment of lifts, etc. According to the analysis, most of these alterations are reversible, and the present restoration project is expected to improve the legibility of the original architecture by removing the undesirable additions, and restoring the original aspect.

Regarding the context of the building, there are many changes that have taken place here as well. Further changes will certainly be forthcoming as part of the on-going development process in this busy part of the metropolis. Nevertheless, the urban fabric of the surrounding area as a whole represents an important heritage from the late 19th and early 20th centuries, which merits protection at the highest level. Steps in this direction have already been taken, when the area was listed for protection. The practical implementations of the consequences are still a challenge to be faced. There are also proposals for development, the impact of which is not yet to be foreseen.

As a conclusion, the Terminus building itself has maintained its authentic structural system and most of the original surfaces. The area has retained much of its integrity from the early 20th century, even though there have been changes.

Comparative evaluation

The nomination document includes a comparative study on railway architecture, and comparing particularly with St. Pancras station in London as well as with other railway stations in India. From the 1860s, and especially after the opening of the Suez Canal in 1869, Bombay flourished as the main trading port with Europe on the west coast of India. It was conceived as a free trading and commercial city, a European city, not as a city under the British rule, but as a meeting place of two civilisations at an equal level. Gothic revival style came to be accepted by Europeans as well as by Indians. It is commonly recognised that the work of Sir G.G. Scott and particularly his St. Pancras station are the closest reference to the design of the Victoria Terminus in Bombay by F.W. Stevens. However, the Victoria Terminus has its own distinctive character, marked by its massive masonry dome, its exuberant Italian Gothic revival detailing in polychrome stone, decorated tile, marble and stained glass. When the Victoria Terminus was built (completed 1887), it was considered the grandest Gothic Revival building in the British Commonwealth, and it came to mark the specific character of Bombay as the 'Gothic City' in India.

Outstanding universal value

General statement:

The Chhatrapati Shivaji Terminus, formerly Victoria Terminus Station, in Mumbai, is an outstanding example of Victorian Gothic Revival architecture in India, blended with themes deriving from Indian traditional architecture. The building is considered the most splendid expression of its period and type of construction. It was the first terminus station in India, and it was built using innovative industrial technology of high quality. It is part of the Gothic Revival fashion that distinguished the late-19th century construction of 'Gothic Bombay'.

The development of Bombay in this period was part of the mercantile development of the 19th century, which characterized Liverpool as a major mercantile harbour in the British Commonwealth, as well as Valparaiso in Chile. In this context, Bombay is distinguished for its architectural and mercantile character, of which the Terminus Station became a symbol.

Evaluation of criteria:

It is proposed that the CST/VT would qualify for inscription under criteria ii and iv, but not under criteria i, iii, v and vi.

Criterion i: Whilst recognizing the quality of the architecture of the CST/VT, ICOMOS does not consider that this criterion is appropriate to characterise its outstanding universal value, which is more relevant under criteria ii and iv.

Criterion ii: The CST/VT exhibits an important interchange of human values related to late 19th century mercantile culture and the early industrial era. It is an exceptionally splendid example of influences from Europe, i.e. Victorian Italianate Gothic Revival architecture, and from India, reflecting the traditional forms of Hindu and Moghul buildings. The Terminus building became a symbolic monument for Bombay as a major mercantile port city on the Indian Subcontinent within the British Commonwealth.

Criterion iii: While recognizing the quality of CST/VT as an example of the early industrial period, ICOMOS believes that this aspect is better covered by criterion iv referring to the type of construction.

Criterion iv: The CST/VT is considered an outstanding example of railway architecture in the Indian subcontinent and in the British Commonwealth in general. It is characterized by its architecture, which has blended influences from European and Indian cultures. The structural and technical solutions represent some of the most advanced in the period. The building symbolizes the introduction of industrial and mercantile technologies to India.

Criterion v: While recognizing that area of the CST/VT in Bombay developed as part of a project to reclaim land from sea, the nomination is not considered to represent an outstanding example of a traditional human settlement or land-use as required by this criterion.

Criterion vi: While the CST/VT certainly is a statement of national pride and a symbol of the city, such association is not considered sufficient to justify the outstanding universal value on the basis of this criterion.

4. ICOMOS RECOMMENDATIONS

Recommendation for the future

Considering the architectural quality and character of the CST/VT, ICOMOS strongly recommends that restoration be undertaken by appropriately trained and qualified firms and specialists.

Taking note of the high quality of the urban fabric in the Fort Precinct, where the CST/VT is the focal point, ICOMOS stresses the importance for the State Party to make every effort to guarantee its integrity for the future.

ICOMOS welcomes the proposal to extend the buffer zone to cover the entire precinct area which in itself forms a fine example of the development in the 19th century Bombay.

Taking into account that the nomination refers to late 19th century development, when the station was inaugurated as Victoria Terminus, ICOMOS proposes that the State Party consider changing the name back to the first proposal: 'Victoria Terminus (Chhatrapati Shivaji Terminus).'

Recommendation with respect to inscription

That the property be inscribed on the World Heritage List on the basis of ***criteria ii and iv***:

> ***Criterion ii****:* The Victoria Terminus of Bombay/Mumbai exhibits an important interchange of influences from Victorian Italianate Gothic Revival architecture, and from Indian traditional buildings. It became a symbol for Bombay as a major mercantile port city on the Indian Subcontinent within the British Commonwealth.
>
> ***Criterion iv****:* The Victoria Terminus is an outstanding example of late 19^{th} century railway architecture in the British Commonwealth, characterized by Victorian Gothic Revival and traditional Indian features, as well as its advanced structural and technical solutions.

ICOMOS, March 2004

Gare Chhatrapati Shivaji (Inde)

No 945 rev

1. IDENTIFICATION

État partie : Inde

Bien proposé : Gare Chhatrapati Shivaji (anciennement gare Victoria)

Lieu : Ville de Mumbai, État du Maharashtra

Date de réception : 30 janvier 2003

Catégorie de bien :

En termes de catégories de biens culturels, telles qu'elles sont définies à l'article premier de la Convention du patrimoine mondial de 1972, il s'agit d'un *monument*.

Brève description :

La gare Chhatrapati Shivaji, anciennement gare Victoria, dans la ville de Mumbai, est un exemple remarquable de l'architecture néo-gothique victorienne en Inde mêlée à des thèmes dérivés de l'architecture indienne traditionnelle. L'édifice fut conçu par l'architecte britannique F.W. Stevens et il devint le symbole de Bombay comme « ville gothique » et le principal port de commerce international de l'Inde.

2. LE BIEN

Description

La gare Victoria, aujourd'hui appelée Chhatrapati Shivaji, fut bâtie selon les plans de l'architecte britannique Frederick William Stevens (1848-1900). La construction commença en 1878 et dura dix ans. Son style gothique victorien s'inspire des modèles de la fin du Moyen Âge en Italie. Ce style convenait à la fois aux goûts européen et indien, car il admet l'utilisation de couleurs et d'ornementations qui s'accordent avec l'architecture hindoue et moghole du sous-continent indien. La ligne des toits, les tourelles, les arcs brisés et le plan excentré rappellent l'architecture des palais indiens traditionnels.

La gare Victoria fut construite avec un niveau d'ingénierie élevé tant du point de vue de la réalisation ferroviaire que sur le plan du génie civil. C'est un des premiers et des plus beaux exemples en Inde d'utilisation de la technologie de la révolution industrielle associée au style néo-gothique naissant. La structure centrale avec son dôme possède un quai long de 330 pieds relié à un hangar de 1200 pieds. Sa silhouette fournit le plan squelette de l'édifice. Le dôme de la gare Victoria avec ses nervures à queue d'aronde, construites sans centrage, est une réussite originale de l'époque. Le dôme fut utilisé pour des raisons plus esthétiques et spectaculaires qu'utilitaires.

L'espace intérieur fut conçu comme une série de grandes salles aux plafonds hauts. Ce bâtiment utilitaire a connu diverses modifications requises pour ses utilisateurs, qui n'ont pas toujours été du plus bel effet. Son plan en forme de C est symétrique selon un axe est-ouest. Tous les côtés du bâtiment sont de valeur égale dans la conception. Il est surmonté d'un dôme central qui sert de point de convergence. Le dôme de forme octogonale sur tambour est orné d'une représentation féminine colossale qui symbolise le progrès. Elle brandit une torche de la main droite et tient une roue à rayons dans la main gauche.

Les ailes du bâtiment entourent la cour qui s'ouvre sur la rue. Elles sont reliées au corps principal du bâtiment par des tourelles monumentales disposées aux quatre coins, qui équilibrent et encadrent le dôme central. Les façades présentent une série de fenêtres et d'arcades aux proportions élégantes. L'ornementation, composée de statues, de bas-reliefs et de frises, est à la fois exubérante et maîtrisée. Les colonnes des portes d'entrées sont surmontées d'un lion qui symbolise la Grande-Bretagne et d'un tigre qui symbolise l'Inde.

Les matériaux de construction ont été choisis avec soin. Le bâtiment principal présente un arrangement harmonieux de grès et de pierre calcaire du pays, tandis que les principaux éléments décoratifs sont de marbres italiens de grande qualité. Les salles principales sont aussi richement décorées : dans l'aile nord, les sols de la « Star Chamber », où se trouvent toujours les guichets de vente des billets, sont ornés de marbres italiens, de pierres bleues d'Inde polies, et les arcades en pierre sont décorées de feuillages et de grotesques sculptés.

Histoire

Le lieu d'édification de ce bien, Bori Bunder, d'une grande importance historique, est associé aux origines de la ville de Bombay (aujourd'hui appelée Mumbai). La ville tire son nom de la déesse Mumba Devi, et le premier temple, qui lui était dédié, est supposé se trouver à l'emplacement de la gare Victoria. Le temple d'origine fut détruit en 1317 par Mubarak Shah, puis reconstruit. Ce deuxième temple fut à son tour détruit par les Portugais en 1760.

L'île de Bombay formait un avant-poste côtier des Hindous en Inde de l'Ouest, mais n'était pas utilisé pour le commerce. Elle fut d'abord remise aux Portugais, puis, en 1661, aux Britanniques. En 1667, l'île fut cédée à la Compagnie anglaise des Indes orientales qui fut principalement chargée de son développement commercial. Les marchands étrangers y affluèrent et l'industrie de la construction navale et du coton s'y développèrent. La ville prospéra surtout après la construction des liaisons ferroviaires avec l'intérieur des terres et l'ouverture du canal de Suez en 1869.

Avec le développement du commerce, le gouverneur de Bombay planifia une série de constructions pour rendre la ville plus représentative. Il était prévu de viabiliser des terrains et de construire un magnifique ensemble de bâtiments publics de style victorien sur le front de mer. La gare Victoria, le plus impressionnant de ces bâtiments, fut nommée en l'honneur de la reine Victoria, impératrice des Indes, dont le vingt-cinquième anniversaire de règne coïncida avec l'inauguration officielle de la gare en 1887. Destinée à l'origine à accueillir uniquement la gare principale et les bureaux de l'administration du *Great Indian Peninsula Railway* (Les chemins de fer de la grande péninsule indienne), un certain nombre de bâtiments annexes lui furent ajoutés, tous conçus de manière à s'harmoniser avec la structure principale. Une nouvelle gare pour le trafic des grandes lignes fut érigée en 1929. Le bâtiment d'origine est aujourd'hui utilisé pour le service de la banlieue et fréquenté quotidiennement par plus de trois millions de voyageurs. C'est également le siège de l'administration de la *Central Railway* (Chemins de fer Centraux).

Politique de gestion

Dispositions légales :

La gare Victoria est la propriété du ministère des Chemins de fer du gouvernement de l'Inde.

Mumbai fut la première ville de l'Inde à disposer d'une législation sur le patrimoine, mise en application par la réglementation n°67 du gouvernement en 1995. La gare Chhatrapati Shivaji et la zone du Fort, sur laquelle elle est implantée, sont protégées par cette législation. Il existe 63 bâtiments de niveau I, dont fait partie la gare Chhatrapati Shivaji.

Structure de la gestion :

Le bien, y compris ses biens mobiliers et immobiliers, est la propriété de la *Central Railway* placée sous la tutelle du ministère des Chemins de fer du gouvernement de l'Inde.

Un comité pluridisciplinaire, appelé *Mumbai Heritage Conservation Committee* (MHCC – Comité de conservation du patrimoine de Mumbai) a été créé pour assurer la protection des bâtiments patrimoniaux. La ville de Mumbai possède au total 624 bâtiments classés.

La surveillance administrative et la gestion du bien sont confiées au directeur de la division des chemins de fer de Mumbai de la *Central Railway*, de même que l'entretien quotidien et la protection des bâtiments.

Sur un plan régional, les chemins de fer préparent un plan de restructuration visant les découpages par zones des lignes à travers le pays. Cela pourrait conduire à décongestionner et alléger la pression sur la gare Chhatrapati Shivaji qui est actuellement totalement engorgée. L'établissement public de développement régional de l'agglomération de Mumbai (MMRDA) travaille à un plan d'amélioration des transports urbains, le plan des transports urbains de Mumbai.

Au plan local, les futurs changements du système de gestion auront des conséquences dans l'est de la zone de front de mer de la ville. La gare Chhatrapati Shivaji, qui est située en un point stratégique de cette zone, sera donc touchée par ces modifications.

Il existe un plan de gestion quinquennal pour la gare Chhatrapati Shivaji qui a commencé en 1997 par une mission de conseil auprès de la *Central Railway* pour la gare Chhatrapati Shivaji, confiée à la Cellule de conservation de l'architecture (ACC), et se termine en 2003. La *Central Railway* a accepté ce plan. Actuellement, la deuxième phase 2004-2009 a été lancée et consiste à restaurer la gare, gérer la circulation autour du site et gérer le tourisme et la formation du personnel.

Ressources :

Le financement de la gestion de la gare Chhatrapati Shivaji est assuré par le gouvernement indien. La *Railway* a les moyens de mettre de côté des fonds pour les travaux de conservation requis par l'entretien des bâtiments.

Justification émanant de l'État partie (résumé)

Critère i : La gare Chhatrapati Shivaji, ou gare Victoria, lorsqu'elle fut conçue, fut la première gare du sous-continent indien, un modèle, un palais commercial représentant la nouvelle richesse économique de la nation. Elle était le symbole ou la signature de la ville qui revendiquait le titre de joyau de la couronne. … L'échelle et la grandeur de ce bâtiment provoquent un sentiment d'admiration et d'émerveillement C'est le monument le plus impressionnant et le plus symbolique de Mumbai. Bombay a été décrite comme la plus belle ville victorienne à l'est de Suez. Le style néo-gothique fut choisi à dessein pour exprimer le mieux possible les aspirations de la ville la plus opulente et la plus dynamique de l'Inde. …

Critère ii : La gare Chhatrapati Shivaji est la représentation physique par excellence de la rencontre de deux grandes cultures. Les Britanniques ont conçu et planifié l'architecture de la ville pour représenter de manière spectaculaire les nouvelles idées de progrès et de modernité. Les architectes britanniques ont travaillé avec les artisans indiens pour y intégrer les expressions et les traditions indiennes, forgeant dans ce processus un nouveau style unique à Bombay. …

Critère iii : La gare Chhatrapati Shivaji est l'un des plus beaux bâtiments à dôme de pierre qui existent au monde. Il compte aussi parmi les premiers bâtiments publics grandioses construits dans cette ville et ce pays qui intègrent à la fois la technologie de la révolution industrielle et un style architectural historique. Il introduit la technique de la construction d'un dôme qui devint par la suite un élément populaire dans tous les grands bâtiments publics de la ville.

Critère iv : Elle doit certainement figurer parmi la demi-douzaine de grandes gares de chemins de fer au monde. Les chemins de fer incarnent la révolution industrielle. Le développement technologique est également souligné dans l'architecture du hall, dont la structure métallique couvre d'une seule portée la totalité du hall. Cet usage de l'acier, à des fins décoratives et structurelles, est l'exemple le plus ancien d'architecture industrielle adaptée à la construction de bâtiments publics à Mumbai.

Critère v: La gare est encore en usage en tant que gare centrale et centre administratif de la *Central Railway*, telle qu'elle a été planifiée il y a cent quinze ans. À l'inverse de beaucoup d'autres gares dans le monde qui ont été abandonnées en raison d'une fréquentation insuffisante, l'utilisation de la gare Chhatrapati Shivaji s'est développée et elle est aussi active que jamais. …

Critère vi : La gare Chhatrapati Shivaji est une marque de fierté nationale, un symbole de la ville par la révolution technologique et des transports qu'elle célèbre. Le bâtiment est par conséquent directement associé aux idées du développement indo-britannique et il est devenu un symbole de fierté nationale.

3. ÉVALUATION DE L'ICOMOS

Actions de l'ICOMOS

Le bien a été présenté pour inscription sous le nom de « Gare Victoria (Gare Chhatrapati Shivaji) » en 1998. Une mission d'expertise de l'ICOMOS a visité le site en 1999. L'ICOMOS a alors recommandé que son examen soit différé pour permettre à l'État partie « d'entreprendre un programme de conservation correctement défini sous l'autorité de professionnels qualifiés. Une étude comparative des gares historiques devrait également être entreprise au niveau mondial. »

Une deuxième mission d'expertise de l'ICOMOS a visité le bien en septembre 2003.

Conservation

Historique de la conservation :

La gare Chhatrapati Shivaji a connu une utilisation ininterrompue depuis son inauguration à la fin du XIXe siècle. Le bâtiment est protégé depuis 1995. De plus, il fait partie dudit « quartier du Fort » qui fait l'objet de mesures de protection et de conservation. Il existe une proposition d'extension du bien proposé pour inscription sur la Liste du patrimoine mondial à une série d'autres bâtiments de ce quartier datant de la même période que la gare Chhatrapati Shivaji.

Pendant plus d'un siècle d'utilisation, les espaces du bâtiment ont été adaptés à de nouvelles exigences sur une base *ad hoc*. Nombre de ces changements sont aujourd'hui considérés comme réversibles, par exemple des plafonds supplémentaires, des cloisons ou des balcons. Une quantité relativement faible de ces changements ont affecté la structure originelle de manière irréversible.

État de conservation :

Une analyse récente de l'état du bâtiment indique que sa structure est saine mais qu'une série de problèmes doivent être résolus concernant l'entretien et les réparations.

Le rapport classe les changements qui sont survenus au fil des ans en fonction de leur impact et de leur ampleur.

On considère qu'il est possible d'éliminer la plupart des modifications pour revenir à l'état d'origine. Dans certains cas, ce travail demandera une reconstruction limitée, dans d'autres, les modifications ne pourront pas être supprimées ; par exemple, quand elles sont essentielles au fonctionnement de la gare, l'objectif est de les traiter de manière délicate en rapport avec le contexte d'origine. Il est proposé d'apporter une attention particulière aux zones visibles et publiques du bâtiment.

Gestion :

L'État partie a fourni un effort important pour créer un système de gestion du bien proposé pour inscription et de sa zone tampon, suivant les recommandations qui lui ont été faites en 1999. Plusieurs initiatives ont été prises dans la totalité de la zone, qui devraient conduire à quelques améliorations. Depuis 1995, la zone à laquelle appartient la gare a été classée au titre de la protection. Une partie de cette zone est désignée comme zone tampon du bien proposé pour inscription. Il est toutefois prévu d'étendre cette zone tampon et d'inclure une zone assez vaste qui contient des bâtiments classés de niveau I. On estime que Mumbai dispose de la politique de conservation urbaine la plus avancée en Inde.

Deux rapports généraux ont été rédigés, l'un en 1997-1998 par le service de la conservation de l'architecture, l'autre en 2003 par la Caisse nationale indienne des arts et du patrimoine (*The Indian National Trust for Art and Cultural Heritage* - INTACH). Le deuxième rapport a pris en compte le contexte urbain élargi, proposant que soit présentée une éventuelle proposition élargie pour inscription sur la Liste du patrimoine mondial, car la zone contient un grand nombre de bâtiments de bonne qualité datant de la même période que la gare elle-même.

La mission de l'ICOMOS a été informée que la *Railway* a déjà lancé la première phase du projet de restauration de la gare, mais l'entreprise engagée n'a pas d'expérience en matière de travaux de conservation sur des bâtiments de cette nature. L'ICOMOS considère qu'il est nécessaire de s'assurer que les travaux sont entrepris par des entreprises qualifiées, ce qui était déjà recommandé en 1999, et qu'il devrait y avoir une continuité dans la gestion du projet. Cela est d'autant plus important qu'il est nécessaire de préserver et parfois de remplacer des éléments endommagés de fabrication du XIXe siècle.

La mission de l'ICOMOS a aussi été informée de l'extension envisagée de trois lignes de chemin de fer supplémentaires et d'une nouvelle gare qui serait construite en annexe derrière la vieille gare. Le nouveau bâtiment comporterait des zones de stationnement, une station de taxi et d'autres aménagements. Toutefois, aucune information n'a été fournie concernant la hauteur et le volume de la construction envisagée.

Analyse des risques :

La gare est une des principales gares de la métropole de Mumbai et voit passer 3 à 3,5 millions d'usagers chaque jour. La gare, qui comportait 4 voies à l'origine, en a actuellement 6 pour desservir la banlieue qui se subdivisent en 10 lignes hors de la gare. Ces extensions ont entraîné la restructuration de plusieurs zones des environs et l'ajout de nouveaux bâtiments. Néanmoins, selon des plans récents, la *Railway* prévoit de désengorger la gare et le report d'une partie du trafic vers d'autres gares.

La zone de la gare est implantée en centre-ville ; elle est soumise à d'énormes pressions de développement et des réaménagements potentiels. En même temps, on note qu'elle est protégée par la loi et qu'elle comporte un grand nombre de bâtiments classés. Toutefois, étant donné l'intérêt économique de cette zone centrale, il pèse sur elle un défi continuel au niveau du contrôle du développement.

Un autre risque provient du trafic intense et de l'air très pollué autour de la gare. La pollution industrielle de la zone a, semble-t-il, diminué en raison de la réduction des activités industrielles et portuaires. Un autre problème est causé par l'air salin de la mer.

L'organe de gestion du bâtiment a déjà pris des mesures pour mettre aux normes la protection incendie qu'il est prévu de vérifier et d'améliorer.

Authenticité et intégrité

La gare a été récemment analysée en détail quant à son authenticité. On peut en déduire que, d'un point de vue structurel, le bâtiment d'origine est quasiment intact même si, au fil du temps, il a connu de nombreuses modifications. Il s'agit essentiellement d'ajouts et de modifications destinées à satisfaire des besoins immédiats du personnel travaillant dans le bâtiment, à savoir la construction de cloisons, de nouveaux plafonds, l'installation d'ascenseurs, etc. L'analyse révèle que la plupart de ces modifications sont réversibles et le projet actuel de restauration devrait améliorer la lisibilité de l'architecture d'origine et retrouver l'aspect d'origine en supprimant les ajouts indésirables.

Les abords du bâtiment ont également connu de nombreux changements. D'autres changements suivront certainement dans le cadre du développement de cette partie active de la métropole. Néanmoins, le tissu urbain de la zone environnante dans son ensemble constitue un patrimoine important de la fin du XIXe et du début du XXe siècle qui mérite une protection au plus haut niveau. Des mesures dans ce sens ont déjà été prises au moment du classement de cette zone au titre du patrimoine à protéger. La mise en œuvre pratique de ces mesures n'a pas encore été appliquée. Il existe aussi des propositions de développement, dont l'impact n'est pas encore envisagé.

En conclusion, le bâtiment de la gare a conservé son ancienne structure authentique et la plus grande partie de ses surfaces d'origine. Les abords ont conservé la plus grande partie de leur intégrité du début du XXe siècle, même si des changements ont eu lieu.

Évaluation comparative

Le dossier de proposition d'inscription comporte une étude comparative de l'architecture des gares ferroviaires, en particulier une comparaison avec la gare St. Pancras à Londres ainsi qu'avec d'autres gares en Inde. À partir des années 1860, en particulier après l'ouverture du canal de Suez en 1869, Bombay devint le principal port de commerce avec l'Europe sur la côte ouest de l'Inde. La ville fut conçue non pas comme une ville sous l'autorité britannique mais comme une ville franche et indépendante, à l'européenne, où se rencontraient deux civilisations à niveau égal. Le style néo-gothique fut accepté par les Européens comme par la population autochtone. Il est communément admis que l'œuvre de Sir G.G. Scott et en particulier sa gare de St. Pancras sont la plus proche référence à la conception de la gare Victoria de Bombay que l'on doit à F.W. Stevens. Toutefois, la gare Victoria possède un caractère distinct, marqué par un dôme massif, l'appareillage de ses murs en pierres polychromes, un style néo-gothique italien exubérant, ses tuiles décoratives, ses marbres et ses verrières colorées. Au moment de sa construction (achevée en 1887), la gare était considérée comme le plus majestueux des bâtiments de style néo-gothique dans le Commonwealth britannique et il imprima sa marque sur la ville de Bombay, connue comme la « ville gothique » des Indes.

Valeur universelle exceptionnelle

Déclaration générale :

La gare Chhatrapati Shivaji, anciennement gare Victoria, à Mumbai, est un exemple admirable de l'architecture de style néo-gothique victorien en Inde, adoptant des thèmes dérivés de l'architecture traditionnelle du sous-continent indien. Le bâtiment est considéré comme la plus splendide expression de son époque et de ce type de construction. Ce fut la première gare en Inde et elle fut construite en utilisant une technologie industrielle novatrice de grande qualité. Il relève de la mode des constructions de style gothique qui fait l'originalité de la construction de la fin du XIXe siècle du Bombay « gothique ».

Le développement de Bombay à cette époque est à rapprocher du développement marchand du XIXe siècle qui caractérise celui de Liverpool, principal port commercial du Commonwealth britannique, ainsi que celui de Valparaiso au Chili. Dans ce contexte, Bombay se distingue par son architecture et son caractère de place marchande, dont la gare Victoria devint le symbole.

Évaluation des critères :

Il est proposé que la gare Chhatrapati Shivaji/Victoria soit inscrite sur la Liste du patrimoine mondial sur la base des critères ii et iv, et non pas des critères i, iii, v et vi.

Critère i : Tout en reconnaissant la qualité de l'architecture de la gare Chhatrapati Shivaji/Victoria, l'ICOMOS considère que ce critère ne caractérise pas sa valeur universelle exceptionnelle qui relève davantage des critères ii et iv.

Critère ii : La gare Chhatrapati Shivaji/Victoria témoigne d'un échange de valeurs humaines considérable liées à la culture du négoce de la fin du XIXe siècle et au début de l'ère industrielle. C'est un exemple d'une splendeur exceptionnelle qui illustre les influences de l'Europe, à savoir l'architecture néo-gothique victorienne italianisante, et de l'Inde, avec l'adoption de formes architecturales traditionnelles hindoue et moghole de l'Inde. Le bâtiment de la gare est un monument symbolique pour la ville de Bombay en tant que principale ville portuaire de commerce du sous-continent indien faisant partie du Commonwealth britannique.

Critère iii : Tout en reconnaissant la qualité de l'architecture de la gare Chhatrapati Shivaji/Victoria en tant qu'exemple du début de la période industrielle, l'ICOMOS estime que cet aspect est mieux couvert par le critère iv qui se réfère au type de construction.

Critère iv : La gare Chhatrapati Shivaji/Victoria est considérée comme un exemple éminent d'architecture ferroviaire dans le sous-continent indien, et dans le Commonwealth britannique en général. Elle se caractérise par son architecture qui comporte des influences issues des cultures européennes et indiennes. Les solutions structurelles et techniques figurent parmi les plus avancées de leur période. Le bâtiment symbolise l'introduction des technologies industrielles et commerciales en Inde.

Critère v : Tout en reconnaissant que le quartier de la gare Chhatrapati Shivaji/Victoria de Bombay fait partie d'une zone gagnée sur la mer, le bien proposé pour inscription n'est pas considéré comme étant un exemple éminent d'établissement humain ou d'occupation du territoire traditionnels tel que ce critère le requiert.

Critère vi : Tout en reconnaissant que la gare Chhatrapati Shivaji/Victoria est certainement une expression de fierté nationale et un symbole de la ville, ces deux dernières caractéristiques ne sont pas considérées comme suffisantes pour justifier la valeur universelle exceptionnelle du bien sur la base de ce critère.

4. RECOMMANDATIONS DE L'ICOMOS

Recommandations pour le futur

Considérant les caractéristiques et la qualité architecturales de la gare Chhatrapati Shivaji/Victoria, l'ICOMOS recommande vivement que les travaux de restauration soient effectués par des entreprises et des spécialistes formés et qualifiés pour ce type d'édifice.

Étant donné la grande qualité du tissu urbain dans le quartier du fort, dont la gare Chhatrapati Shivaji/Victoria est l'élément central, l'ICOMOS souligne l'importance pour l'État partie de faire tous les efforts nécessaires au maintien de son intégrité dans le futur.

L'ICOMOS accueille de manière positive la proposition d'étendre la zone tampon pour couvrir la totalité du quartier qui, en soi, constitue un bel exemple du développement de Bombay au XIXe siècle.

En tenant compte du fait que la proposition d'inscription se réfère au développement de la fin du XIXe siècle, au moment où la gare fut inaugurée sous le nom de gare Victoria, l'ICOMOS préconise que l'État partie envisage de revenir au nom de la première proposition : « Gare Victoria (Gare Chhatrapati Shivaji) ».

Recommandation concernant l'inscription

Que le bien soit inscrit sur la Liste du patrimoine mondial sur la base des ***critères ii et iv*** :

> ***Critère ii*** *:* La gare Victoria de Bombay/Mumbai témoigne d'un échange d'influences considérable de l'architecture de style néo-gothique victorien italianisant et de l'architecture traditionnelle indienne. Elle est devenue le symbole de Bombay en tant que principale ville portuaire de commerce du sous-continent indien dans le Commonwealth britannique.
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> ***Critère iv*** *:* La gare Victoria est un exemple éminent de l'architecture ferroviaire de la fin du XIXe siècle dans le Commonwealth britannique, se distinguant par l'association de caractéristiques du style néo-gothique victorien et du style traditionnel de l'Inde ainsi que par des solutions structurelles et techniques avancées.

ICOMOS, mars 2004