

Mumbai University Convocation Hall



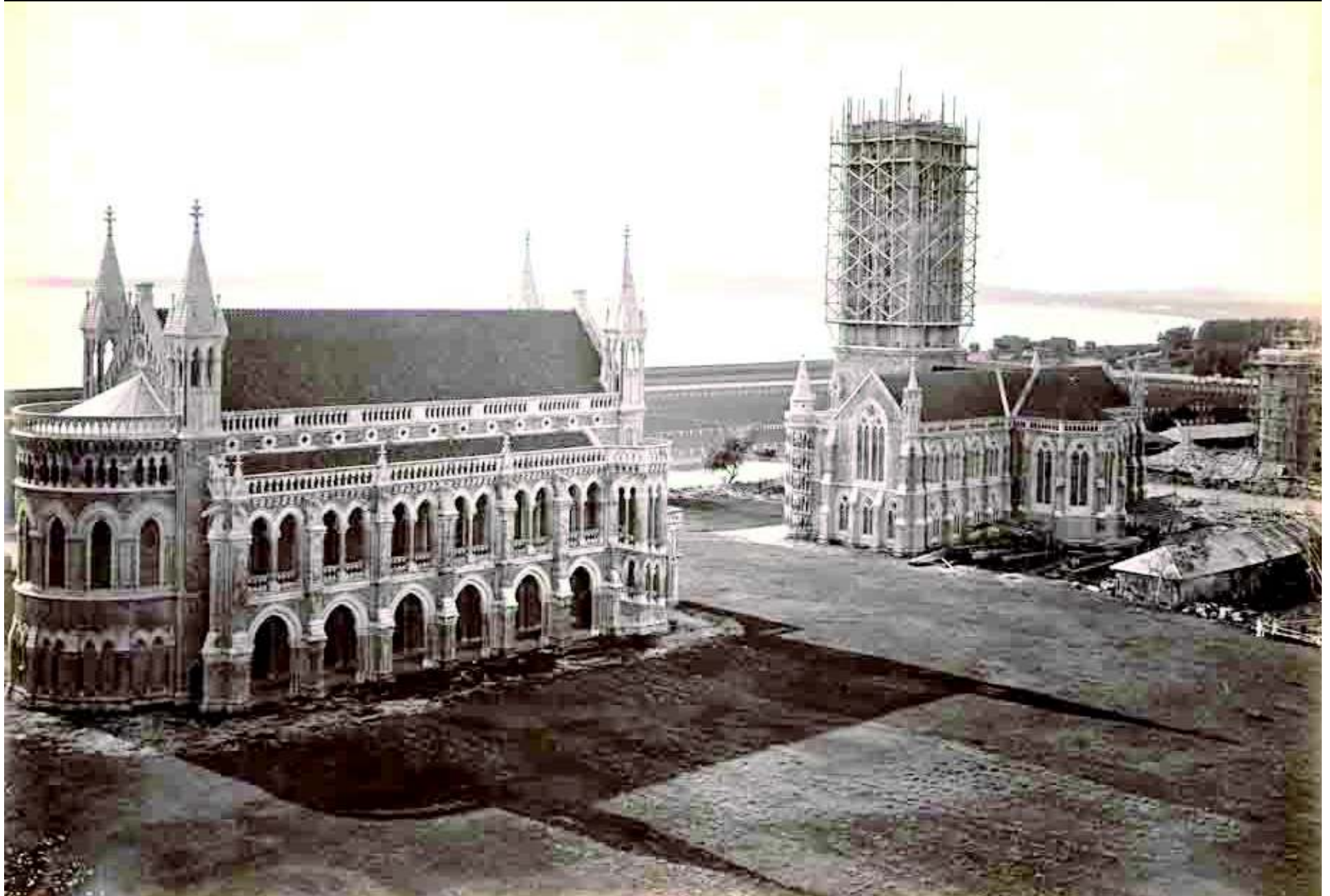
Scheme for Restoration

Abha Narain Lambah Associates – Conservation Architects & Historic Building Consultants

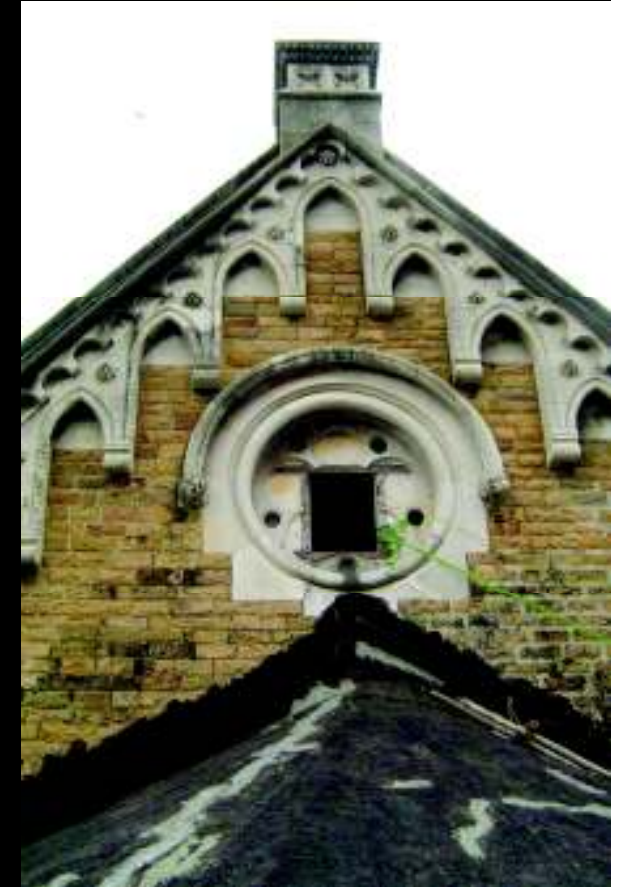
Archival Research : INDIA OFFICE LIBRARY, BRITISH LIBRARY



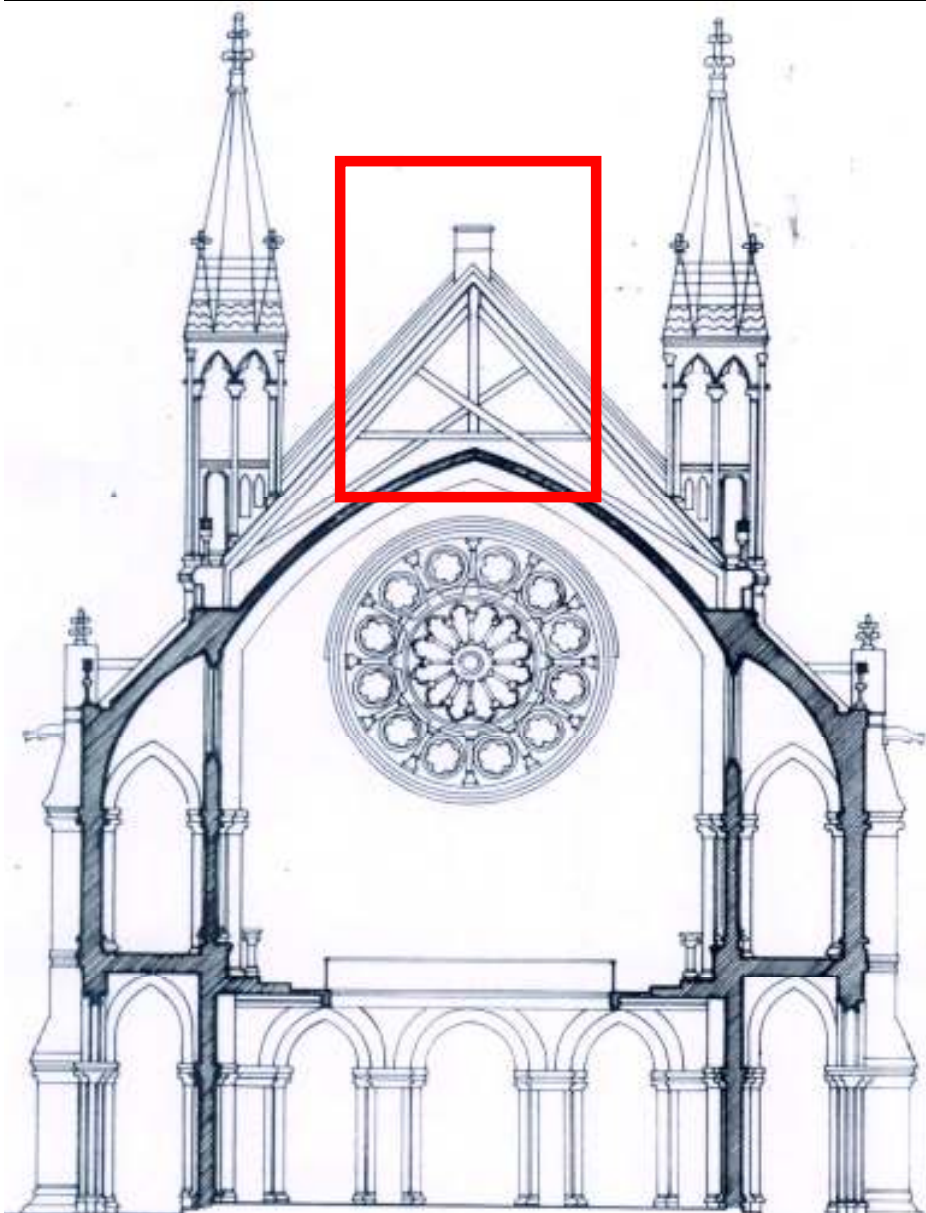
Archival Research : INDIA OFFICE LIBRARY, BRITISH LIBRARY



Archival Research : CHANGE OF ROOF COVERING MATERIAL



FABRIC INSPECTION & FINDINGS: Construction of Roof



Trusses above the vault examined for cracks & white ants

FABRIC INSPECTION & FINDINGS: Construction of Roof



FABRIC INSPECTION & FINDINGS: Construction of Roof



Trusses above the vault examined for cracks & white ants

FABRIC INSPECTION & FINDINGS: Construction of Roof



Junction between 2 vaults

FABRIC INSPECTION & FINDINGS: Construction of Roof



Timber boarding affected by white ants

FABRIC INSPECTION & FINDINGS: Construction of Roof



**North eastern corner between
vault & north gable-high
dampness observed**

FABRIC INSPECTION & FINDINGS: TESTING & INVESTIGATION

TEST PITS FOR FOUNDATION

USPV: ULTRA SONIC PULSE VELOCITY TESTS TO ASSESS VAULTS, WALLS ETC

ENDOSCOPIC EXAMINATION OF EMBEDDED ENDS OF TIMBER MEMBERS

USPV TESTS TO ASSESS CONDITION OF VAULTED CEILING

TESTS FOR WHITE ANT INFESTATION

CHEMICAL ANALYSIS OF LIME MORTAR & PLASTER SAMPLES

PULL OUT TESTS & CHEMICAL ANALYSIS OF ACOUSTIC LAYER

CHEMICAL ANALYSIS OF BITUMEN WATERPROOFING

PETROGRAPHIC ANALYSIS OF STONE SAMPLES

ACOUSTIC TESTS TO RECORD ENVIRONMENT NOISE BY SPL METER

REVERBRATION TIME RT60 TEST BY SOUND LEVEL

VISUAL EXAMINATION AND PHOTODOCUMENTATION



6



5

- 1 Gable end over Rose Window
- 2. Roof tiles over timber truss
- 3. Upper verandah cluttered
- 4. Extensive damp & termite seen along flying buttress
- 5. Incremental layers of tar felt have choked the water outlets
- 6. Vault and stone ribs under wooden truss roof

1



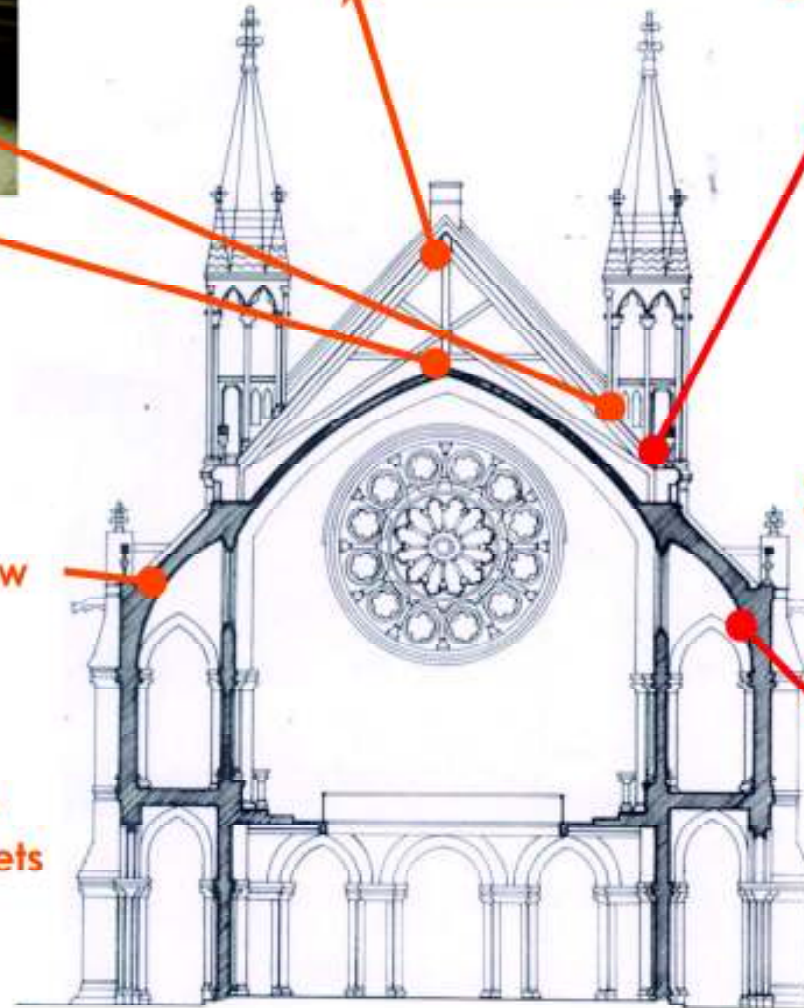
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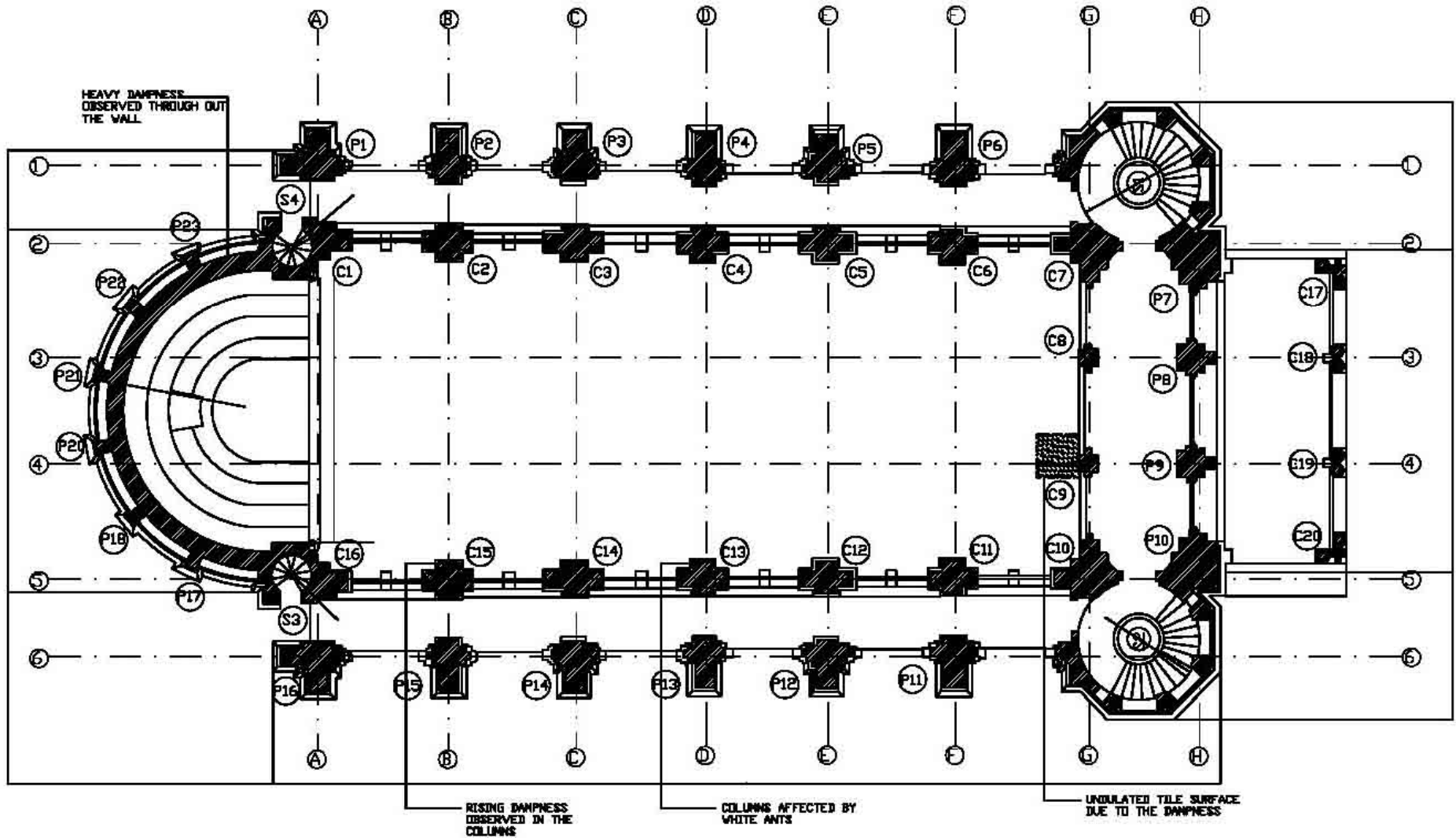
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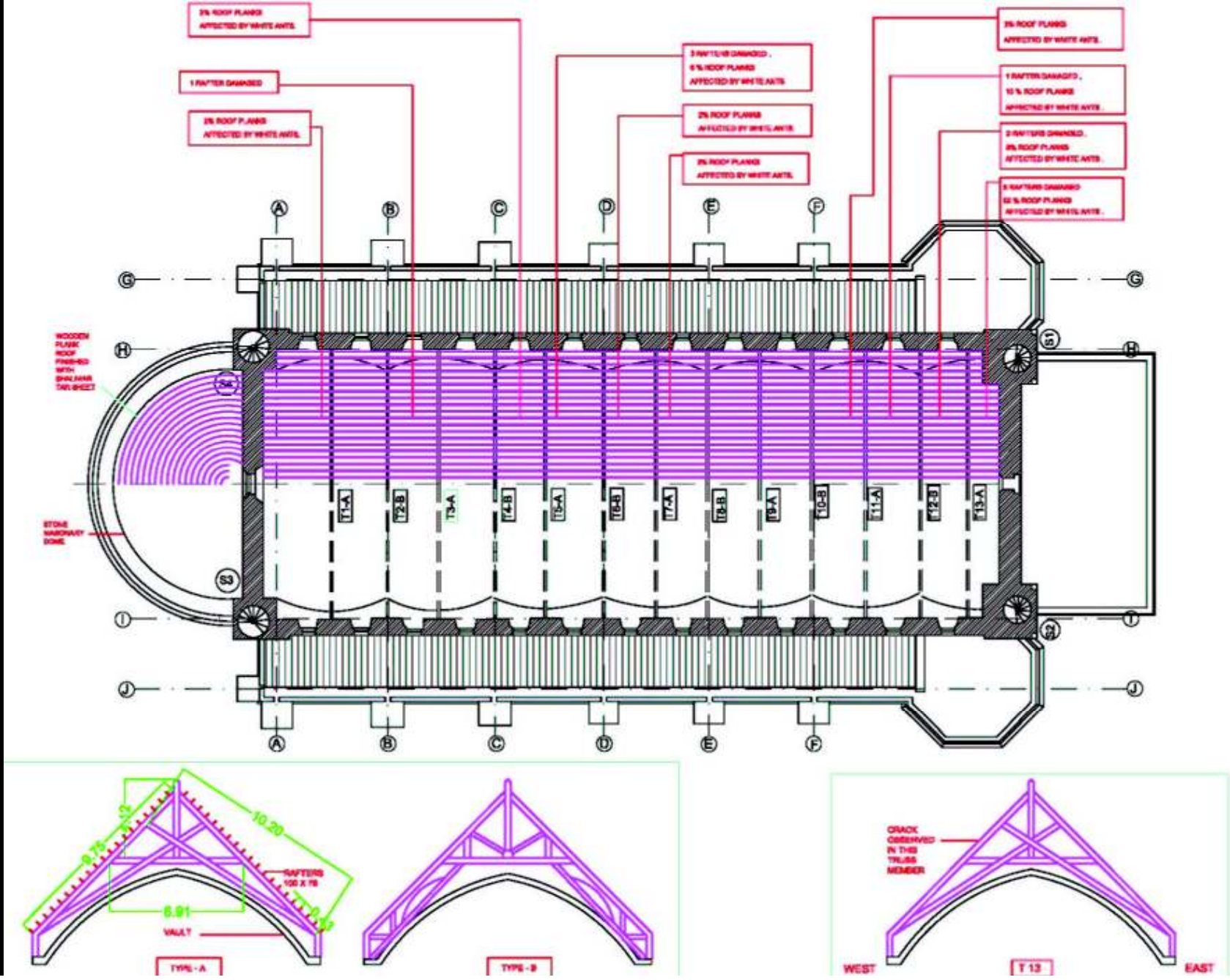
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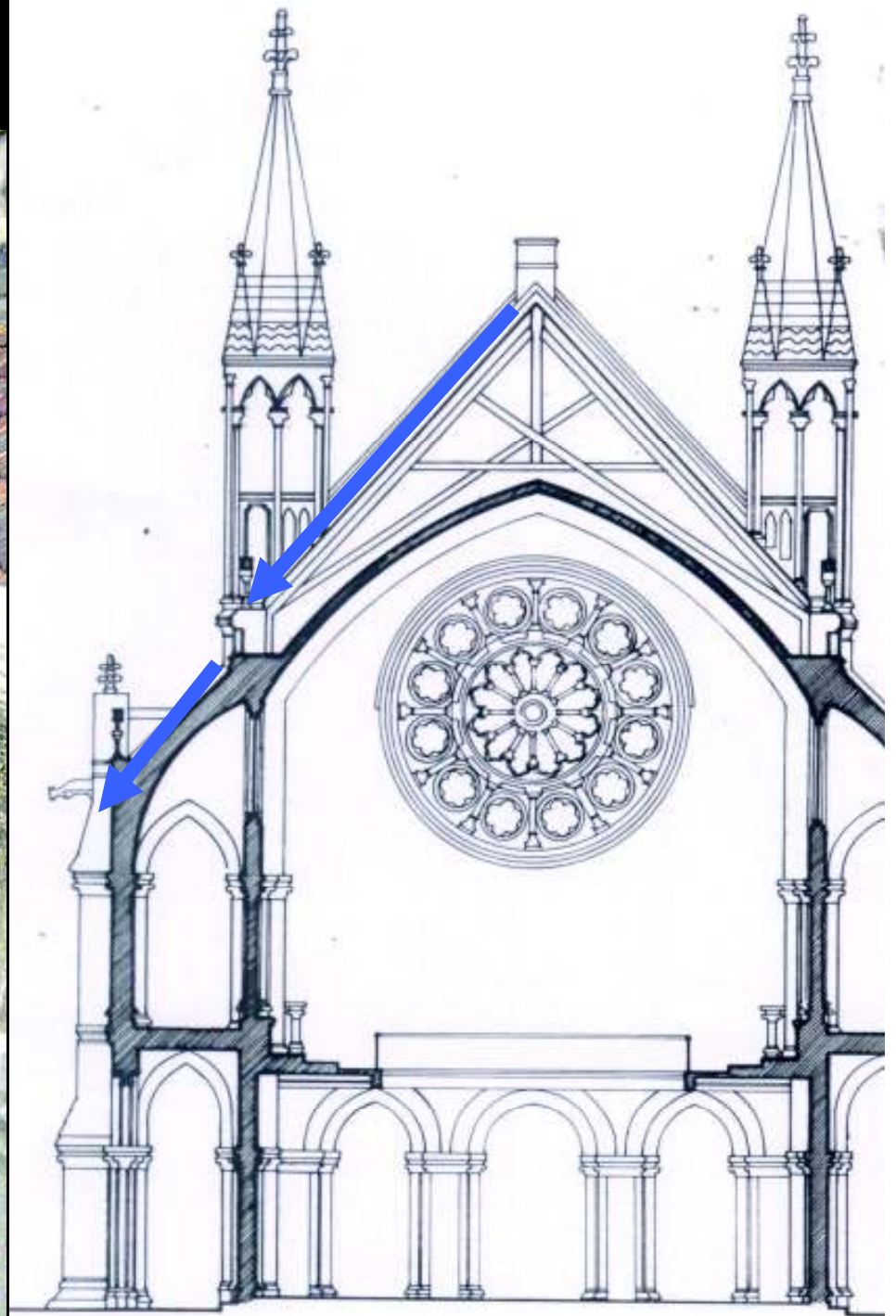
FABRIC INSPECTION & FINDINGS: Construction of Roof



FABRIC INSPECTION & FINDINGS: Construction of Roof



ROOF DRAINAGE



ROOF DRAINAGE



Upper Level Gutter

Lower Level Gutter



Gutter along Gable end

Upper & Lower Level Gutter



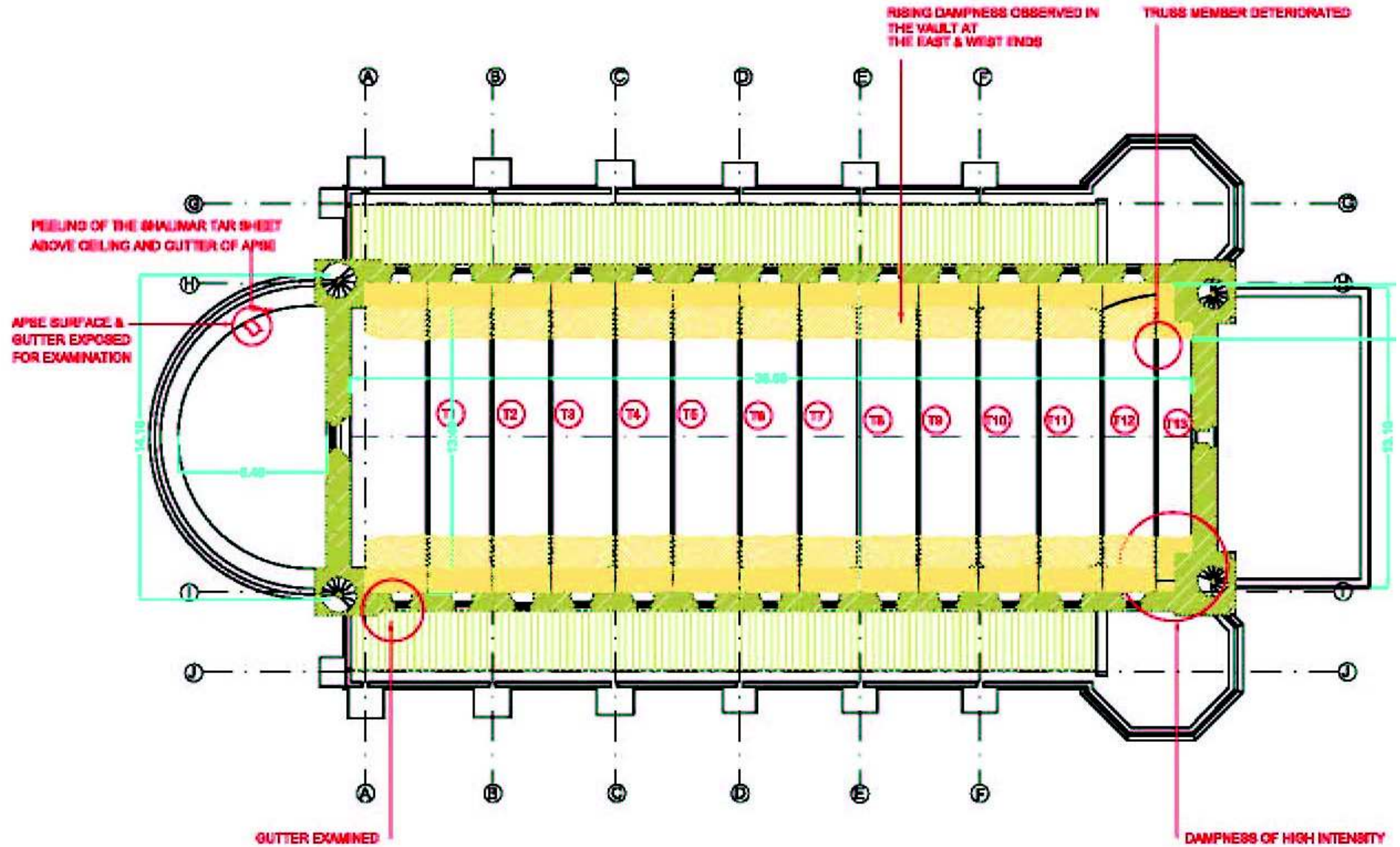
STRUCTURAL ISSUES: ROOF



STRUCTURAL ISSUES: ROOF



FABRIC INSPECTION & FINDINGS: Construction of Roof



STRUCTURAL ISSUES: ROOF LEAK & CONDITION OF VAULTS



STRUCTURAL ISSUES: ROOF



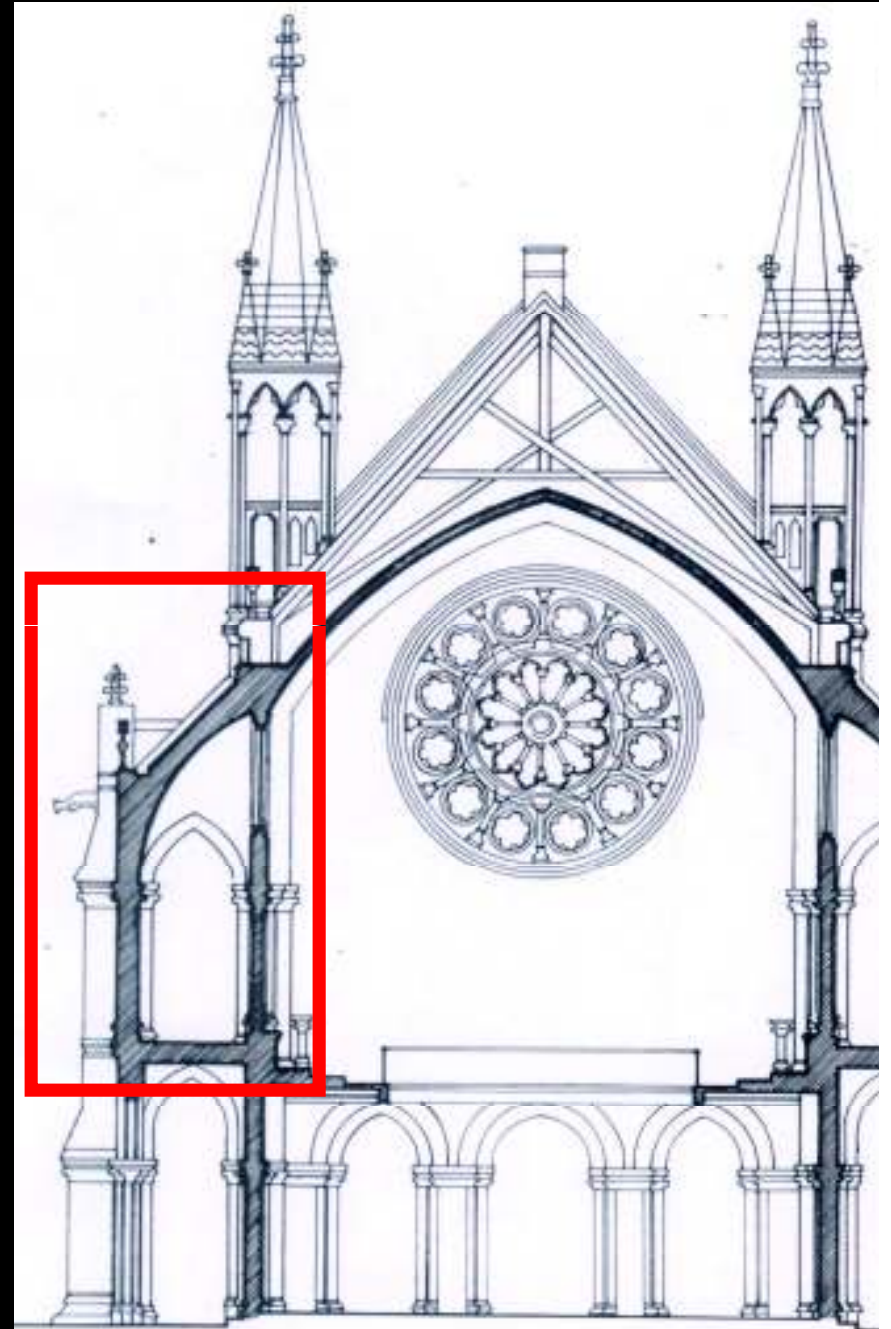
STRUCTURAL ISSUES: LEAKAGE AT APSE



STRUCTURAL ISSUES: LEAKAGE AT APSE



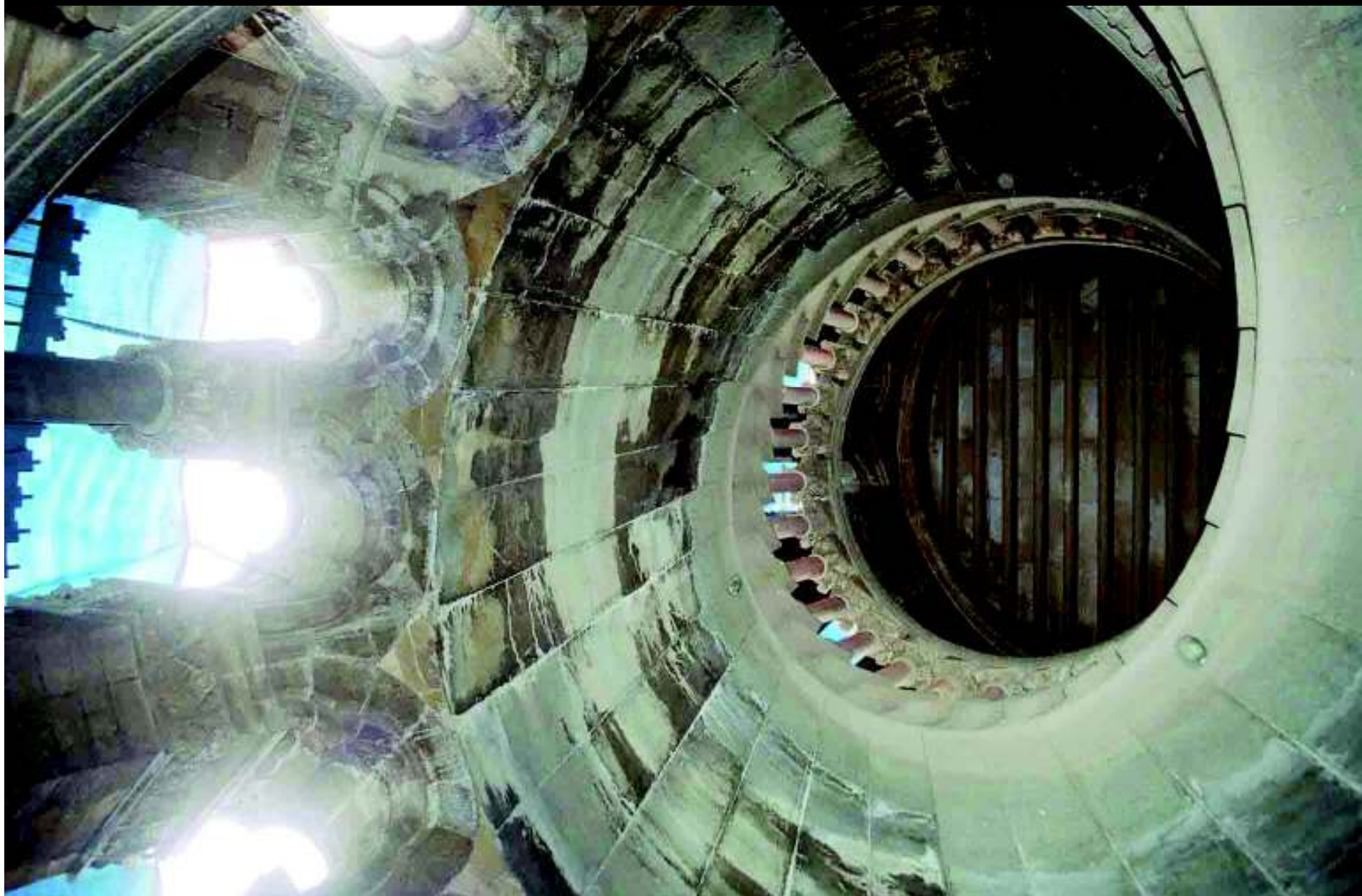
STRUCTURAL ISSUES: CONDITION OF BUTTRESS VAULTS & VERANDAHS



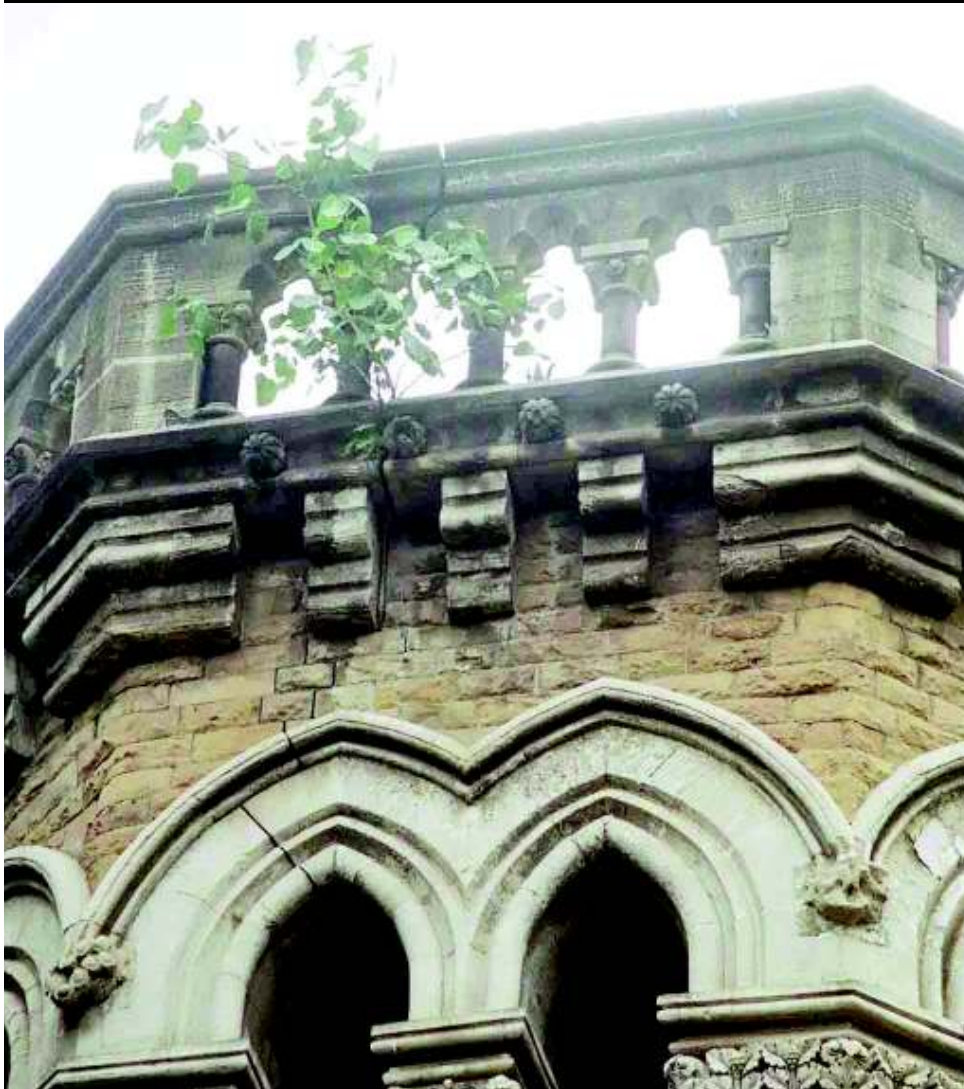
STRUCTURAL ISSUES: CONDITION OF BUTTRESS LEAKAGE & TERMITE RUNS



STRUCTURAL ISSUES: STAIRCASE LEAKAGE & ROOF RAFTERS



STRUCTURAL ISSUES: CRACKS, SETTLEMENT & DISPLACEMENT



STRUCTURAL & WATERPROOFING ITEMS

Roof Level Items

Replacement/Repair of Mangalore Tiled roofing

Removal of infected timber boarding and rafters

Repair and structural strengthening of trusses & timber boarding

Termite treatment and fumigation

Removal of bitumen layers, damaged planks from apse roof

Restoration of old metal sheet roofing over apse

Correction of terrace gutters and removal of bitumen layers

Provision of lead flashing/ sheeting as protection layer

Cleaning blockages in stone gargoyles & spouts

Repair and restoration of old CI perforated covers

Infusing lime grout in vault/ strengthening/ lime screeding

Strengthening/ Replacement of damaged stairwell rafters

STRUCTURAL & WATERPROOFING ITEMS

Walls & Parapets

Sealing joints of external walls with lime pointing

Removal of bitumen stains and providing lead flashing

Resetting cracks / settlement in parapets and other cracks

Removal of ficus roots and plant growth in stone masonry

Columns, Piers & Arches

Grouting of cracks and fissures

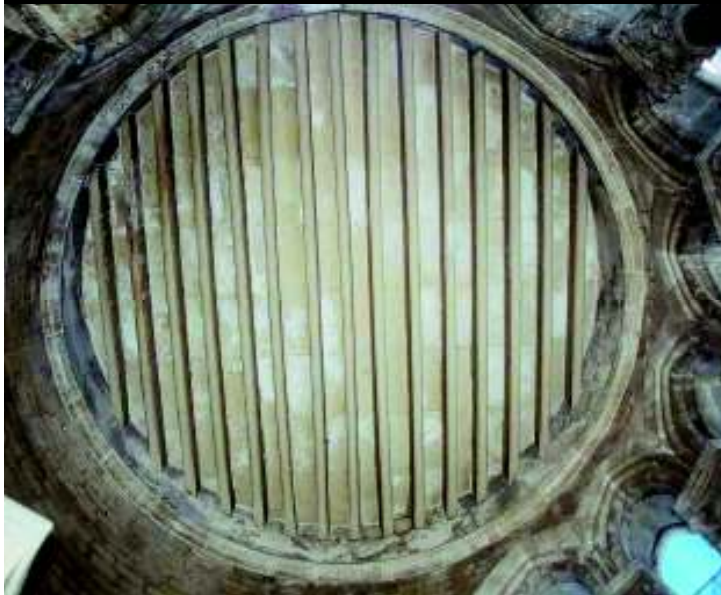
Resetting displacement in arches and misalignment of stones

Addressal of Rising Damp

Provision of plinth protection & Correction of site slopes

Sub surface grouting of foundation and plinth for rising damp

ARCHITECTURAL ISSUES: STAIRCASE



Ficus Growth



Cracks



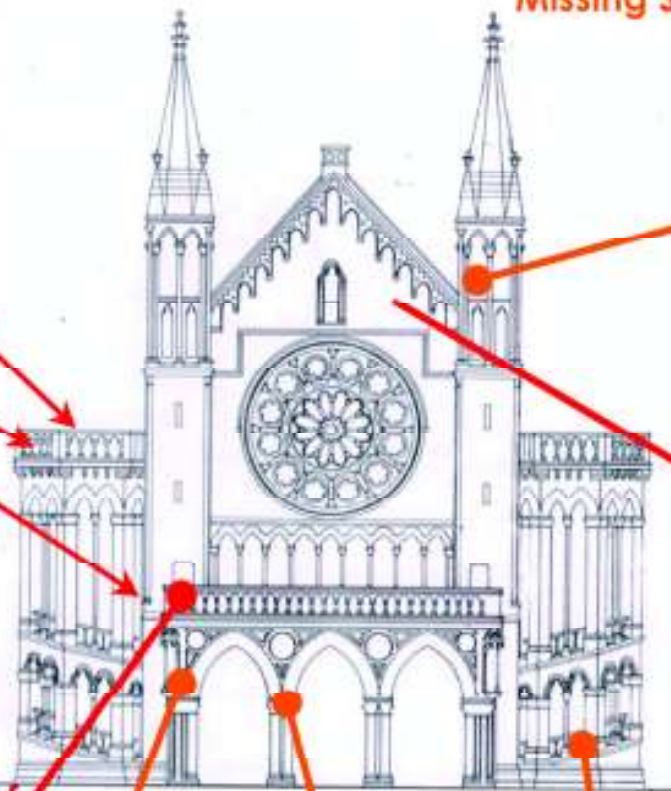
Insensitive routing of services



Missing Sandstone column shaft



Pointing re-touched on 1/2 of gable



Splitting & Cracks in column shafts

ARCHITECTURAL ISSUES: RESTORATION & DUTCHMAN REPAIR OF STONE



ARCHITECTURAL ISSUES: RECONSTITUTION OF MISSING STONE SHAFTS



ARCHITECTURAL ISSUES: INSENSITIVE ADDITIONS & SITE ACCRETIONS



ARCHITECTURAL ISSUES: INSENSITIVE ADDITIONS & SITE ACCRETIONS



ARCHITECTURAL ISSUES: STONE STAINING/ ALGAE, FICUS



9



Missing stone shaft

1 Ficus Growth



2 Roof over Apse distressed

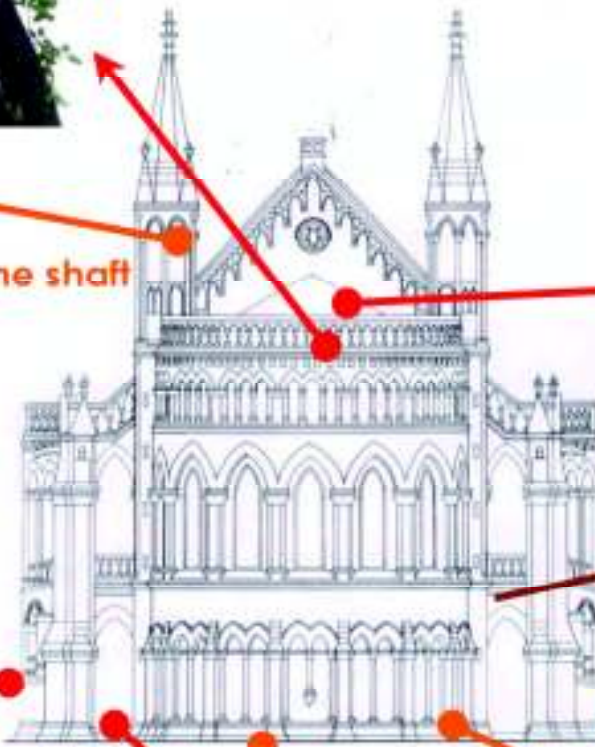


Stairwell masonry in need of pointing



8

Insensitive location of Tank



3



Gate & fencing design

4



7

Incongruous Sheds



6 Ugly Wire mesh



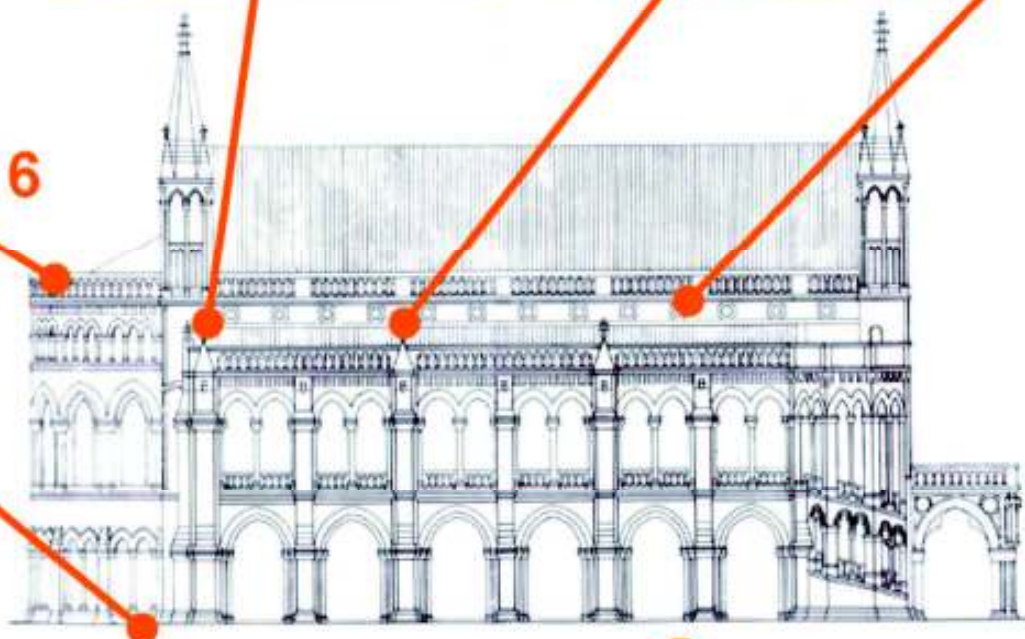
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Stone Staining & Damaged Mouldings





Choked Gargoyles



5 Peepal Tree too close to historic plinth



6 Staining of Stone masonry



1

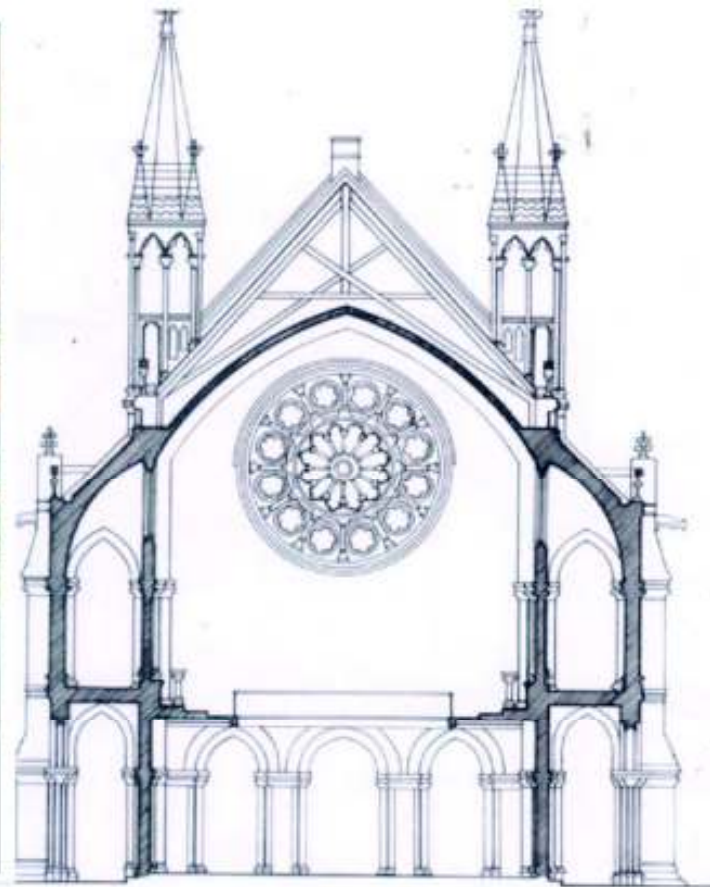
- 1 Zodiac Rose Window with damp on north gable end. Acoustic felt de-lamination
- 2. Centre piece of Rose Window by Heaton Butler & Bayne
- 3. Detail of Rose window showing Cancer and Leo
- 4. Iron Brackets designed by George Twigge Molecey
- 5. Insensitive installation of Tube lights



2



3



4



5



ARCHITECTURAL ISSUES: RESTORATION OF DOORS / WINDOWS



MUMBAI UNIVERSITY CONVOCATION HALL – A Proposal for Restoration

Abha Narain Lambah Associates

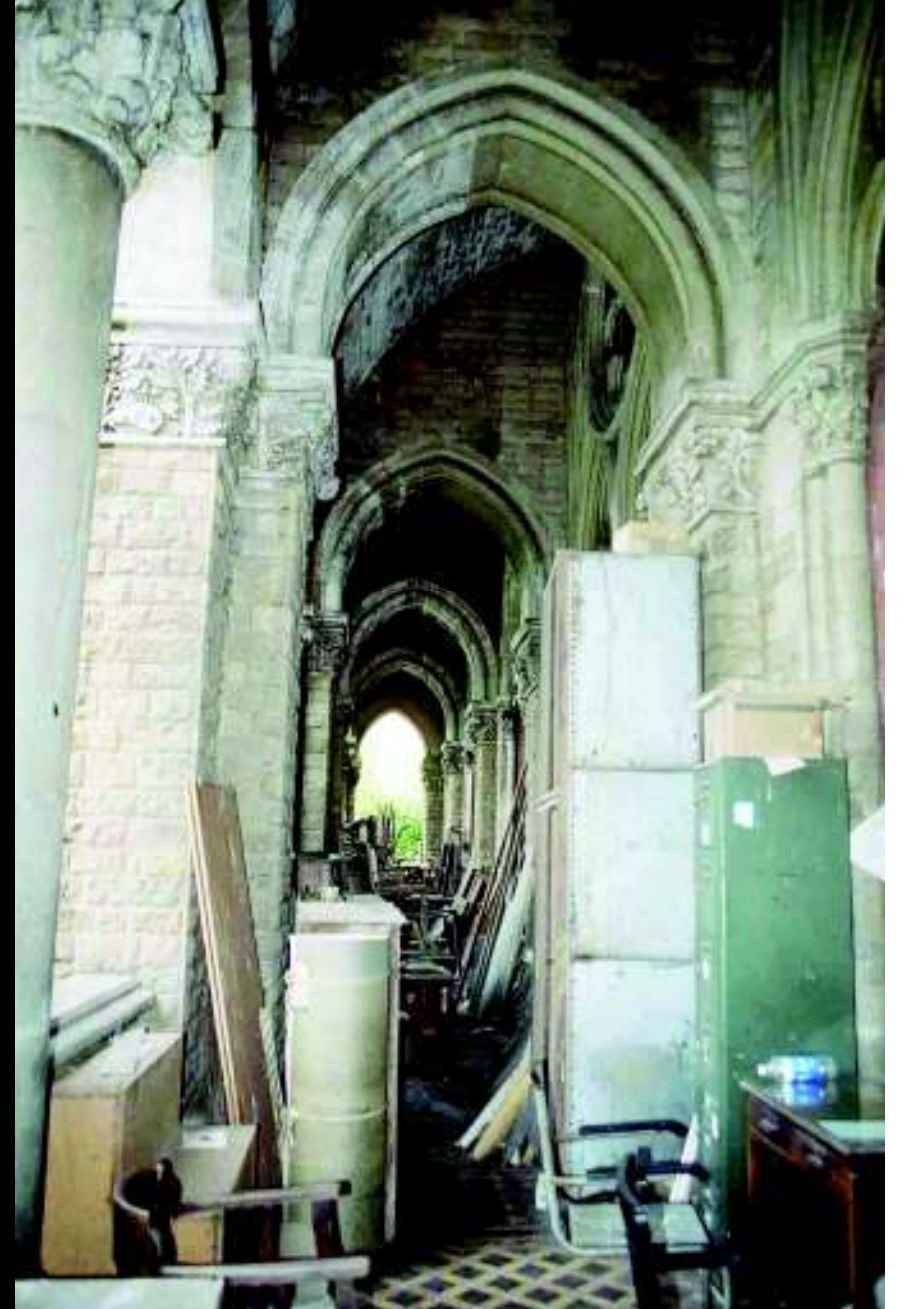
ARCHITECTURAL ISSUES: MINTON TILE RESTORATION



ARCHITECTURAL ISSUES: RESTORATION OF METALWORK & GILDING



ARCHITECTURAL ISSUES: REMOVAL OF CLUTTER



ARCHITECTURAL ISSUES: RESTORATION OF INTERIOR STATUARY



ARCHITECTURAL ISSUES: RESTORATION OF ORIGINAL FURNITURE



ARCHITECTURAL RESTORATION: RESTORATION ITEMS

STONE REPLACEMENT / DUTCHMAN REPAIR ITEMS

- Replacement of sandstone cylindrical sections (balusters and upper turrets) in like material with non corrosive SS or phosphor bronze dowels and epoxy plugs
- Replacement of missing sections of cylindrical dark grey stone column shaft in like material with non corrosive SS or phosphor bronze dowels and epoxy plugs & green stone columns in Porch area
- Replacement of carved Porebunder limestone sections of decorative carved details of column capitals, mouldings, bases etc in like material with non corrosive SS or phosphor bronze dowels and epoxy plugs
- Plastic repair of damaged Porebunder limestone carvings in lime mortar

SPECIALISED STONE CLEANING & POINTING

- Removal of bitumen stains in South face and along all gargoyle ends E&W façade
- Removal of algae, staining etc by water misting and anti algae treatment
- Repointing of rear south stairwell and rear south gable in lime mortar with masking tape
- Removal of old pointing in hard cement on north gable end and repointing in lime
- Removal of red paint along north and west façade base
- Stitching of cracks/Resetting of parapet stones on south east corner and south terrace
- Poulting and specialised cleaning of Stringer courses, mouldings, carvings and underside of vaults to remove residues and sulphate encrustations

ARCHITECTURAL RESTORATION: RESTORATION ITEMS

DOOR & WINDOW RESTORATION

- Refixing of jaali on all stairwell slit windows to prevent pigeons
- Restoration of all louvered shutters of external doors and repolishing/painting
- Restoration of all timber frames, shutters etc of doors and windows
- 2 New doors for doors on north gable end leading out to north terrace
- Removal of old polish/paint and repainting/repolishing of all doors and windows
- Glass replacement and restoration of beading in timber for damaged glass shutters
- Restoration of all Stained Glass windows, ferramenta, leading etc
- Provision of protection for stained glass on apse side
- Restoration of hardware/replacement of missing hardware
- Jaafri carved replacement with new of similar design on north gable slit windows
- Re-opening of closed circular panel at entrance fanlight in porch and replacing the fret work panel as per original detail

ARCHITECTURAL RESTORATION: RESTORATION ITEMS

INTERIOR FURNITURE & FITTINGS

- **Reweaving of rattan/chair backs in benches on balcony level**
- **Polishing of all Burma Teak handrails, banisters, balcony flooring, balcony soffit**
- **Specialised restoration of old paint for all cast iron railings and brackets**
- **Cleaning of cast iron brackets**
- **Re-gilding in goldwork of cast iron railings and brackets**
- **Poultice of stone carved faces, removal of salts and paints**
- **Restoration of all marble busts/plaques/ statues with poulticing and polish of marble**
- **Restoration and polishing of all original loose furniture – tables, podium, stands**
- **Restoration of all original fitted furniture – stage and podium**
- **Restoration of all Minton tile with removal of bulged areas and careful refixing**
- **Infill restoration of missing/damaged Minton with colour matched cut pieces of jaisalmer stone/vitrified tiles/bharat tile cut sections**
- **Polishing with micro crystalline waxes, all Minton floor areas**
- **Restoration of original light fixtures and fittings and cleaning and polishing of brass**

ARCHITECTURAL RESTORATION: RESTORATION ITEMS

SITE IMPROVEMENT & REMOVAL OF INCONGRUOUS ACCRETIONS

- Removal of sheds and incongruous constructions on south side of building
- Removal of water tank on south west of building and possible introduction of underground water storage tank only if needed
- Removal of wire mesh fencing and gateway to south of building
- New construction of relocated sheds with sloping tiled roof and timber/stone walls after rationalising
- Landscaping of peripheral areas
- Removal of planters and fencing on front garden
- Provision of adequate paving surface around periphery and south end
- Rationalization of horticulture and planting around building
- Removal of build up of asphalt road surface along east and west periphery buttress columns and re-levelling surface and re-surfacing
- Landscaping and provision of pebbled French drain/ stone/ cobblestone surfacing
- Removal of ficus tree at south east corner
- New stone/cobblestone surfacing for porch entry area
- Provision of Information Plaque on history of building

ARCHITECTURAL RESTORATION: RESTORATION ITEMS

ROOF & TERRACE ITEMS

- Roof C.I. downtake cover
- Roof removal of old tarfelt and relaying of new waterproofing
- Mangalore files removal and new with timber battens fixing etc
- Removal of old tar felt from apse triangular roof and repair/replacement of timber battens and re-roofing as per original detail
- Cleaning and restoration (poulticing) of all stone gargoyles
- Removal of deposits and choked gutters/gargoyles etc
- Grouting/consolidation of vaulted roof
- Grouting/ consolidation of vaulted ceiling of flying buttress at first floor level
- Provision of water spouts in ci at front porch/ rear apse
- Releveling terrace on south and north sides
- Provision of new CI covers for rain water outlets and creation of new covers

ACOUSTICAL ISSUES: RESTORATION OF INTERIOR ACOUSTICAL LINING



ELECTRIC SERVICES



ELECTRIC SERVICES & ROUTING



ELECTRIC/ FIRE FIGHTING SERVICES & LIGHTING

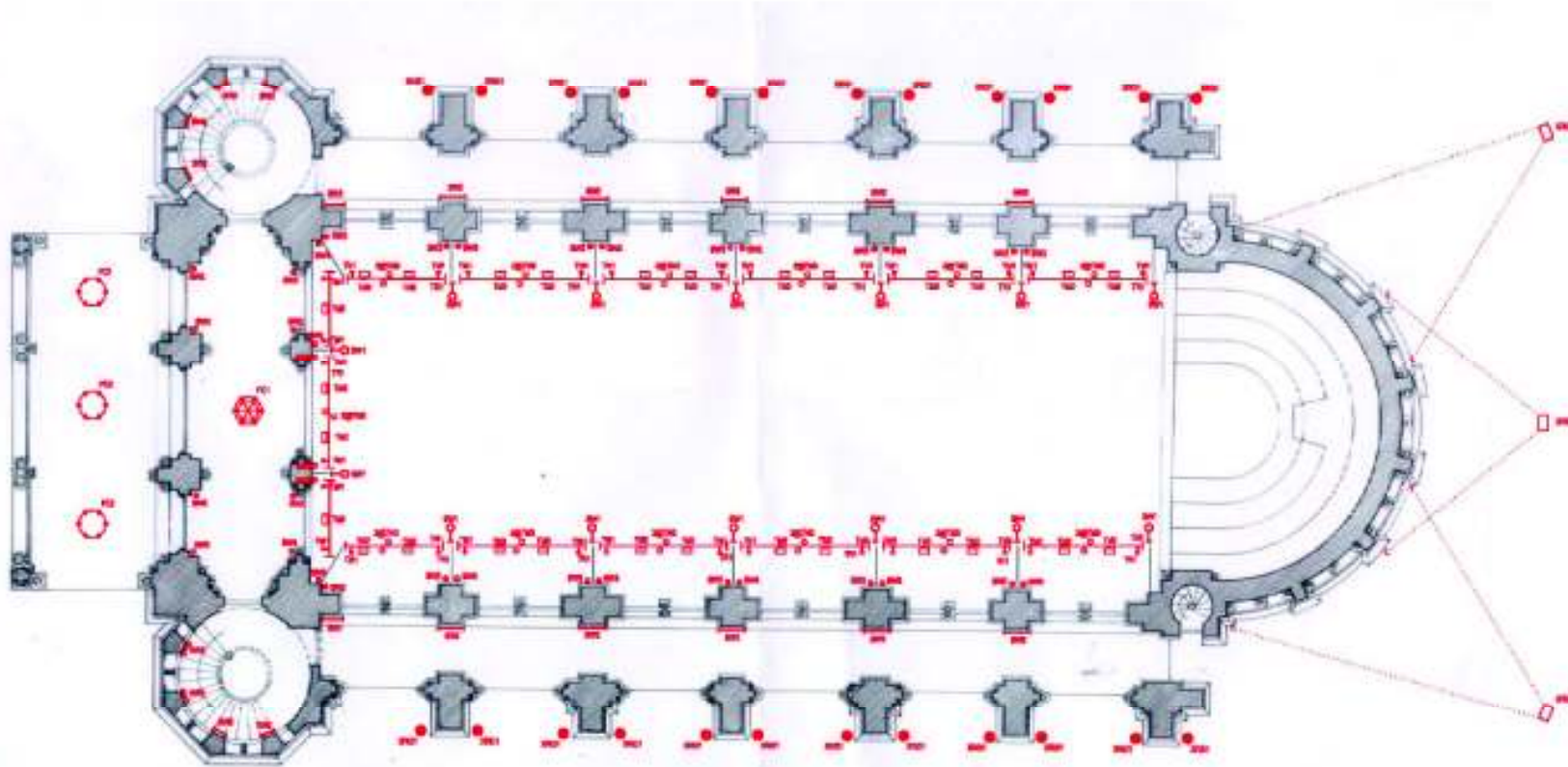


ELECTRIC SERVICES: ROUTING OF WIRES & LIGHTING



LIGHTING DESIGN

Consultants Available Light N.Y.



AVAILABLE LIGHT NY
www.availablelightny.com
1000 10th Ave, 10th Floor, New York, NY 10018
Tel: 212 691 1234

MUMBAI UNIVERSITY CONVOCATION HALL
Plot No. 10

Sl. No.	Description

Project: Preliminary Lighting Layout at Ground Floor

Client:	
Design:	
Scale:	A1:1
Date:	Aug 2008, 2008

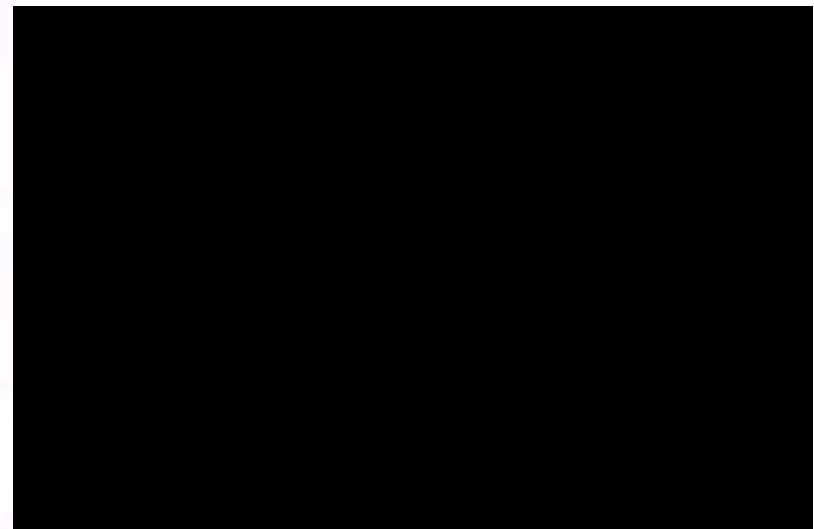
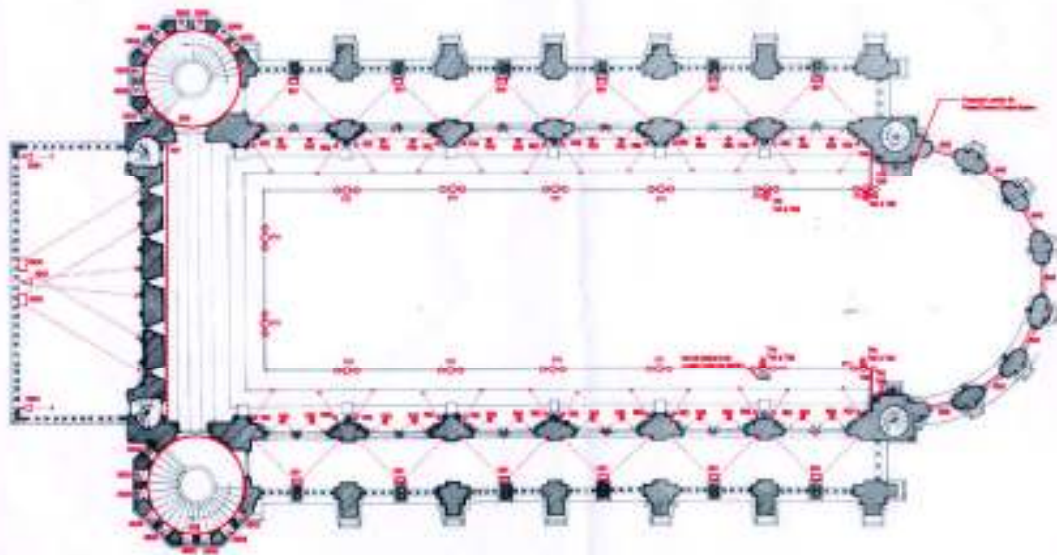
LD-201

LIGHTING DESIGN

Consultants Available Light N.Y.

LIGHTING LEGEND

-  PC1: Pendant Ceiling Mounted Decorative Fixture with 6Nos. of 26W Warm Compact Fluorescent Lamps to Downlight & 6Nos. of 13W Warm Compact Fluorescent Lamps to Uplight
-  PC2: Pendant Ceiling Mounted Decorative Fixture with 6Nos. of 26W Warm Compact Fluorescent Lamps to Downlight
-  PT1: Post Top Mounted Compact Fluorescent Lamps 32W-1ND & 28W-2NOs Fixture on Trellis.
-  RB1: Recessed Built-In T5 HO (54W) Linear Fluorescent Fixture.
-  RB2: Recessed Built-In Wooden Bench 150W PAR38 Incandescent Flood Distribution Uplight Fixture to Lit Up Capital
-  RB3: Recessed Built-In Wooden Bench Low Voltage 50W MR16 Uplight Fixture to Lit Up Window Arch
-  SG1: Surface Ground Mounted 150W Incandescent Flood Distribution Uplight Fixture
-  SW1: Surface Wall Mounted 26W Compact Fluorescent Lamp Downlight Fixture
-  SW2: Surface Wall Mounted T5 HO (54W) Fluorescent Fixture
-  SW3: Surface Wall Mounted T4 Incandescent Uplight Fixtures to Lit Up Brackets
-  TM1: Track-Mounted 4" Dia. 75W Incandescent Adjustable Wall Wash Fixture to Lit Up Brackets
-  TM2: Track-Mounted 42W Compact Fluorescent Lamp Flood Distribution Adjustable Accent Fixture
-  TM3: Track-Mounted 26W Compact Fluorescent Lamp (40") Downlight Fixture
-  TM4: Track-Mounted 150W Metal Halide Flood Distribution Adjustable Accent Light
-  TM5: Track-Mounted 75W Incandescent Narrow Spot Distribution Adjustable Accent Light
-  TM6: Track-Mounted 8" Dia. 150W PAR38 Incandescent Adjustable Accent Fixture
-  TR1: Surface Mounted Line Voltage Linear Three Circuit Track
-  TR2: Vertical Line Voltage Linear Two Circuit Track
-  TR3: Vertical Line Voltage Linear One Circuit Track
-  XRG1: Recessed In-Ground Low Voltage HID or HPSV Uplight Fixture
-  XRG2: Recessed In-Ground Metal Halide Flood Distribution Adjustable Accent Fixture
-  XSG1: Surface Ground Mounted 150W Incandescent Spot Distribution Adjustable Accent Fixture
-  XSG2: Surface Ground Mounted 400W Metal Halide Flood Distribution Adjustable Accent Fixture
-  XSG3: Surface Ground Mounted 75W QR111 Uplight Fixture



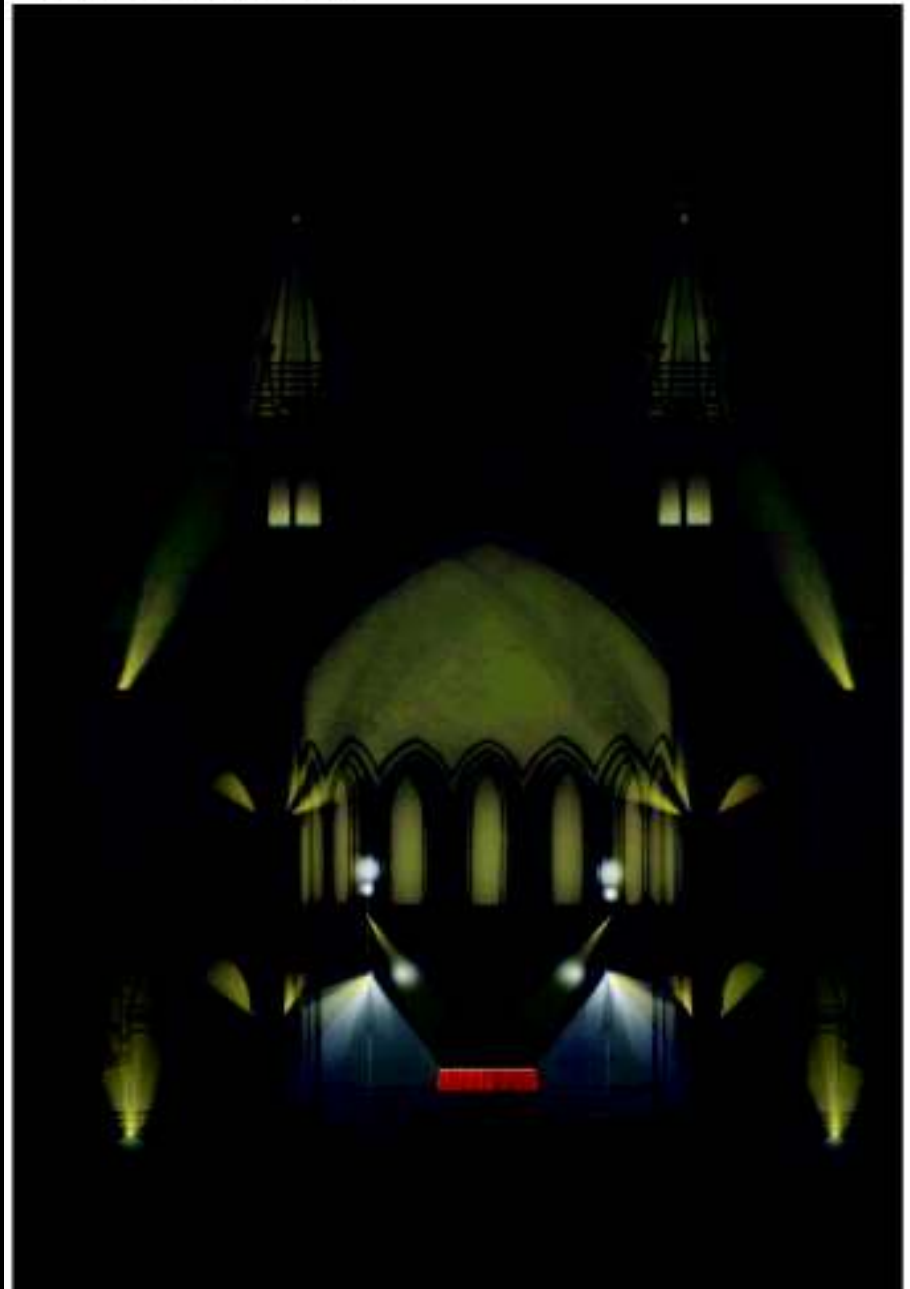
LIGHTING DESIGN

Consultants Available Light N.Y.

Preliminary Conceptual Rendering

AVAILABLE LIGHT.NY

1000 10th Ave, 10th Floor, New York, NY 10018
Tel: 212 279 1234 Fax: 212 279 1234
www.availablelight.com

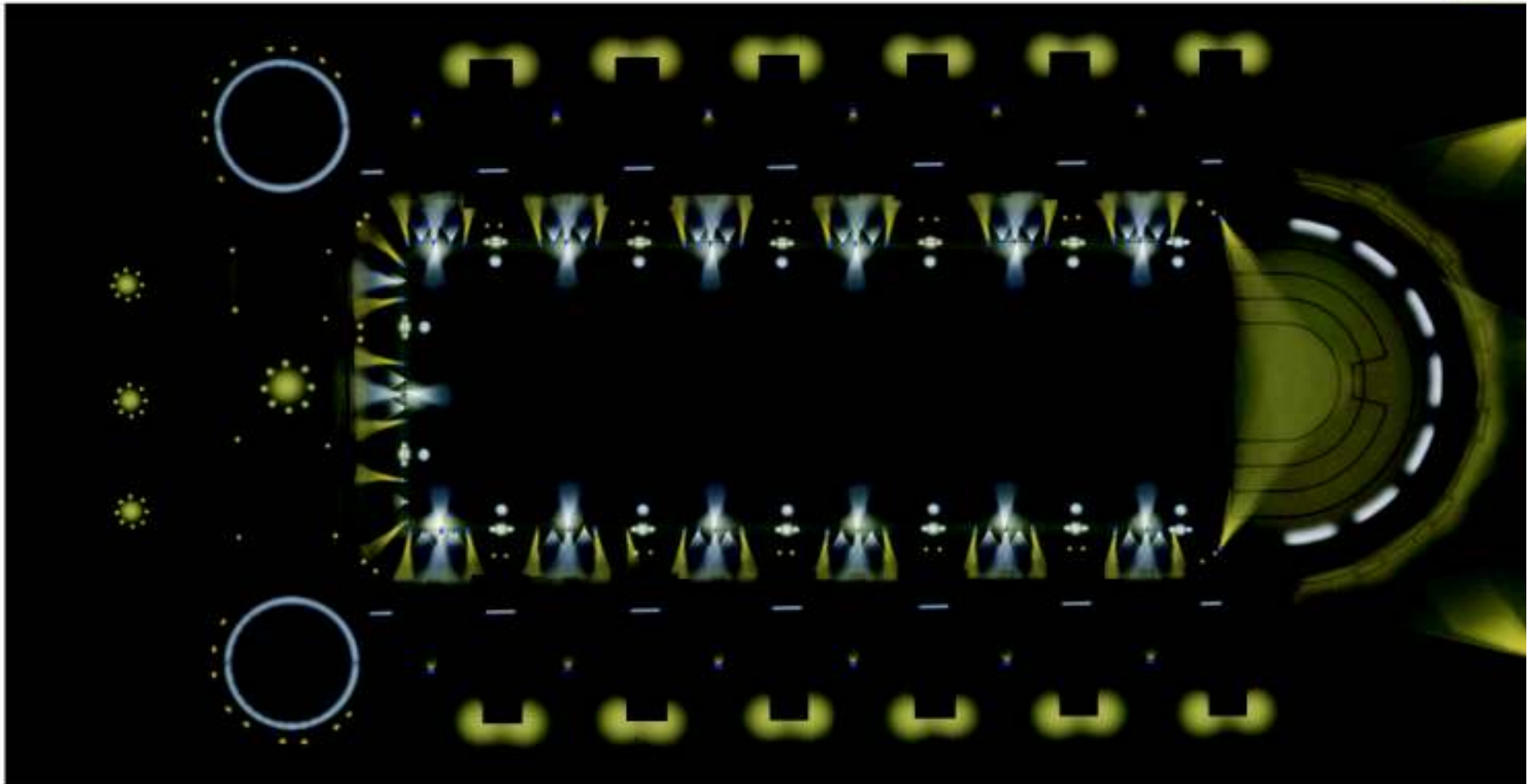


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AVAILABLE LIGHT:NY
PWP (Office 604), Off Water's Courtyard, Malindi, Fla
Pin 400 515, India, Ph: 3447 4191/82/93 Fax: 2447
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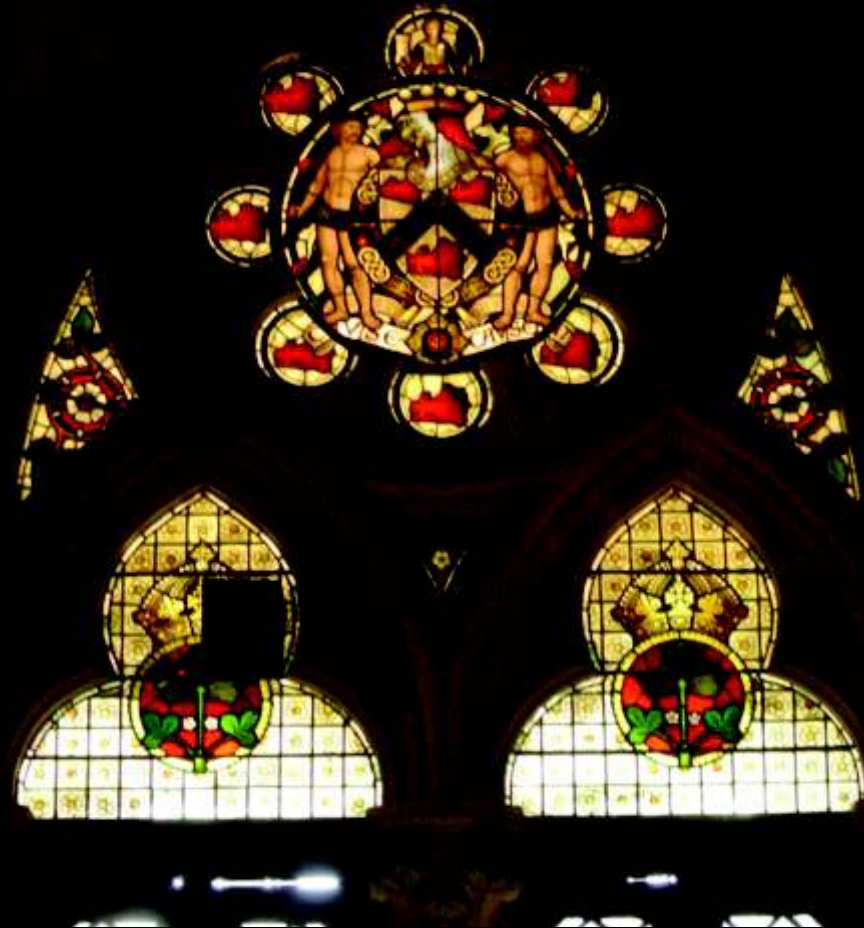
Preliminary Conceptual Rendering



Mumbai University Convocation Hall

ARCHITECTURAL ISSUES: RESTORATION OF STAINED GLASS

The finest collection of Stained Glass in India



From the Studio of Heaton Butler & Bayne

ARCHITECTURAL ISSUES: RESTORATION OF STAINED GLASS

TYPE II: NORTH WALL – THE WHEEL WINDOW.

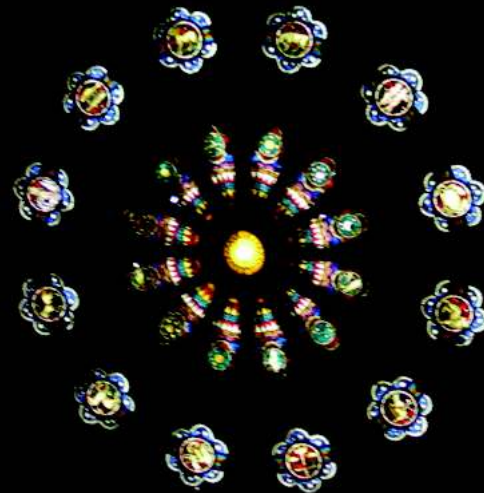
Consisting of a central Panel, an outer Ring and an Inner Ring. All the independent panels of the outer ring are fixed into steel frames from outside.

The condition of all steel frames/rings seems alright. Needs to be inspected after removal of glass.

All the panels inside the spokes are fixed from the outside into masonry. All panels in fairly stable (single cracks in glass) or paint loss.

Buckling is observed in some.

Each Panel is protected with wire-guards on the outside. Condition of guards ranging from average to poor. Missing in some areas.



ARCHITECTURAL ISSUES: RESTORATION OF STAINED GLASS

TYPE III: HEAD-TO-LIGHTS

Each Tracery has an Octafoil, three (“Eyes”) and a pair of Trefoils. Numbering done from Lower to upper & from Left to Right. Hence from East wall moving clockwise to West Wall. Number of Windows – six on each side – is twelve. All panels are fixed from outside and held internally by tie-bars.

Extremely dirty with heavy tar deposits that mars lead and glass. Defects Range from Buckling, to dirt deposits and staining of glass. In some cases foils are entirely missing, badly damaged or boarded up. Heavy inward buckling is seen in a few panels where stone Cusps are damaged.



ARCHITECTURAL ISSUES: RESTORATION OF STAINED GLASS

TYPE IV: HEAD-TO-LIGHTS between bays on Ground Floor.

Each Bay has a pair of Tre-foiled Head-to Lights..

Number of Windows – six on each side – is twelve.

Fixing methodology is common to all panels on the East & West sides. All panels are fixed from outside and held internally by tie-bars.

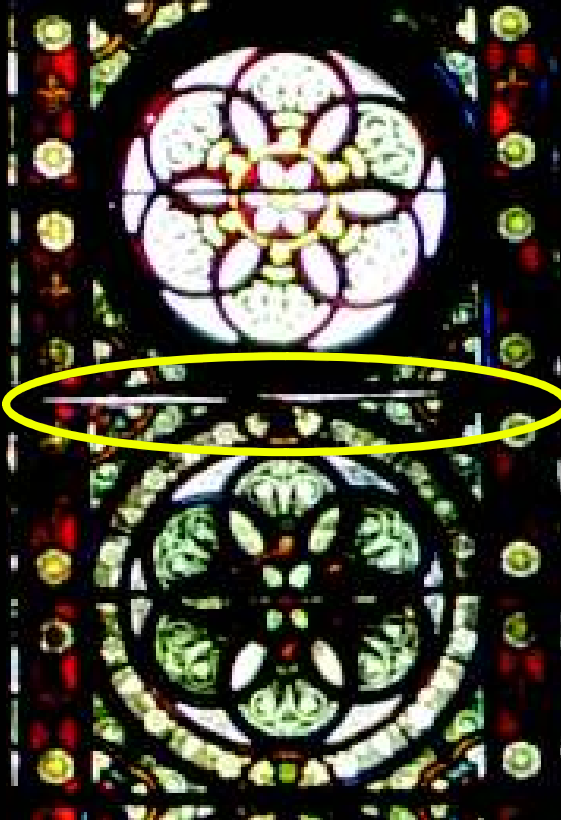
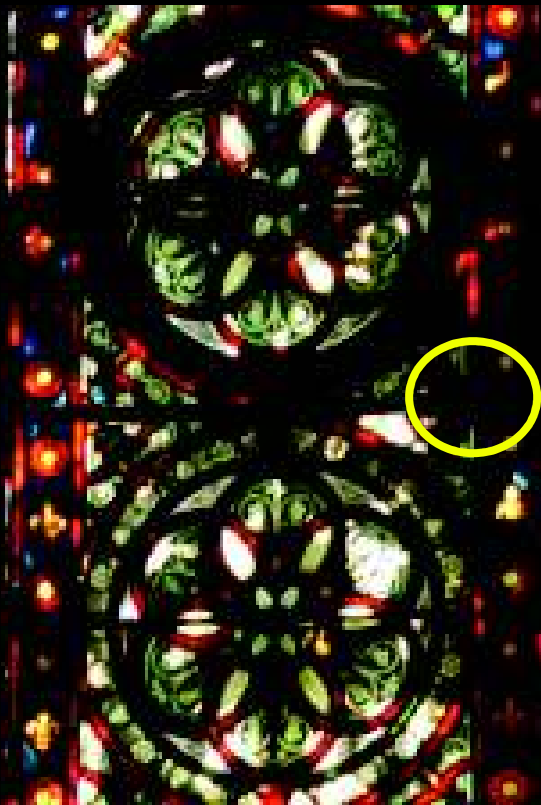
Extremely dirty with heavy tar deposits that mars lead and glass. West side panels are more damaged than the east side ones.



ARCHITECTURAL ISSUES: RESTORATION OF STAINED GLASS

Damage due to weathering and age of glass

Damage due to corrosion of the steel pivotal frame



ARCHITECTURAL ISSUES: RESTORATION OF STAINED GLASS

TYPE I: SOUTH WALL LANCET LIGHTS

Number of Lancets: Seven

General Condition:

- a) Fragile, with the panels come loose of the framework along the second panel = apparent from ground level.
- b) Paint loss in all the Lancets.
- c) Tar residue and foliage trapped between glass and wire-guard.

Condition of surrounding materials: Steel (MS) frames to locate lancets, with pivots in the upper sections. Horizontal steel (MS) Tie-bars to support the panels from inside. Need to be inspected once windows are dismantled. Evidence of rust and warp on the windows.



PRELIMINARY ESTIMATES

Structural Consolidation, Repairs & Waterproofing	Rs. 50 lacs
Stained Glass Restoration	Rs. 32 lacs
Interior Lighting & Electrical Upgradation	Rs. 20 lacs
	Rs. 102 lacs

Architectural Restoration Items **Rs. 58 lacs**

Exterior Restoration	Rs. 26 lacs
Interior Restoration	Rs. 22 lacs
Interior Lime Plaster on Vault	Rs. 6 lacs
Termite Treatment	Rs. 2 lacs
Site Improvement	Rs. 5 lacs

Optional Items

Restoration of Acoustical Lining	Rs. 25 lacs
Exterior Illumination	Rs. 15 lacs

ARCHITECTURAL ESTIMATES

Exterior Restoration — Dutchman Repair, Restoration of Damaged Stone, Removal of paint and bitumen on stone, Stone Cleaning, Poulticing, Exterior Restoration, Lime Pointing of damaged mortar joints, stitching of cracks, Stone Consolidation of Lime stone using Baker and lime method, removal of accretions, Restoration of Porch and fretwork panels on north face

RS. 14 lacs

Restoration of Doors and Windows on exterior side **Rs. 5 lacs**

Specialised Stone Restoration - of Damaged Gargoyles, Statuary, Columns, Replacement of stone carved balusters etc

Rs. 4 lacs

Restoration of Minton Tiles in Arcades **Rs. 1 lac**

Termite Treatment **Rs. 2 lacs**

ARCHITECTURAL ESTIMATES: INTERIOR RESTORATION

Restoration of Minton Tile	Rs. 2 lacs
Restoration of Interior Paint / Plaster Finishes	Rs. 5.25 lacs
Restoration of Internal Carvings –Poulticing & Consolidation	Rs. 1 lac
Restoration of Timber Balconies – polishing, restoration	Rs. 2 lacs
Restoration of Doors and Windows	Rs. 3 lacs
Restoration of Stage Fittings and Curtains	Rs. 2 lacs
Restoration of Decorative Metal/Fixtures & Gilding	Rs. 4 lacs
Restoration of Marble busts and plaques	Rs. .75 lac
Restoration of Benches, Furniture and Fittings	Rs. 2 lacs