

A Shrine for Education: Government College of Engineering, Pune, a Case Study

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ABSTRACT: The elegant stone façade stands a mute testimony to many a decades of Indian urbanization. The highway divides its campus but fails to diminish the charm and ambience of these beautifully designed refined stone environments. On the banks of river Mula one comes across a outstanding stone masonry structure straight from the colonial era with an artistic aura and never aging splendor. The amazingly beautiful stolid stone structures have been echoing the engineering formulas and calculations for about century now. Many a senior and renowned engineers of the day make this alma-mater proud. Many a aspirant engineers dream of walking its portals. The paper attempts to study the constructional aspects of the different materials constructed together with minutely worked out details, making the structure stand today with the same grace and command over its environs. The building was a marvel when constructed and still manages to impress every passerby.

1 INTRODUCTION

Vitruvius, the roman architectural theorist, offered an adequate framework for classifying the essential aspects of structure into 1) usefulness (presently more discussed as function) 2) strength and 3) beauty (contemporarily better known as aesthetics). Out of the three, strength is the most preciously measurable aspect while usefulness is loosely quantifiable and beauty an elusive notion. Not in this case however.

The dominating yet graceful building of Government College of Engineering, Pune perfectly exemplifies usefulness, strength and beauty. The Government College Of Engineering, Pune stands well spread with various departmental buildings and workshops on the river banks of Mula, allowing the Mumbai Pune National Highway no 4 to pass through, just outside the Shivajinagar station, about 5 kms down the Pune Railway Station. The dire need to establish an engineering college by the British saw the setting up of one of the oldest of an engineering institute in a beautiful building built as a church.

2 HISTORY OF THE COLLEGE AND ITS ESTABLISHMENT.

In the early 1850's only three decades after the last Peshwas surrendered to British and ceded Pune with the rest of the Maratha territory to the conquerors. Mount Stuart Elphinston had taken over the administration and was in the process of changing / renovating the whole social structure of the society. The new government wanted to consolidate their conquest by strengthening their communication and winning their subjects. Politically also there was a dire need for a civic architecture to impart grandeur and dignity to the various aspiring regimes.

Mr. Howard, Director of Public Instruction, pin pointed that the Government needed to educate the people to assist government in building various civil amenities like dams, bridges ca-

nals, railways and roads. Thus to train subordinate Officers to carry out public works “The Poona Engineering Class and Mechanical School” was established in 1854 in four modest houses in Bhavani Peth , offered on lease by Padamji family. But this was protested by Mr. Howard. He thought that this was very small institute. It needed expansion. Philanthropist Sir Cowasji Jehangir with a donation of 50,000 aided him in his mission. The college needed expansion and the modest houses in Bhawani Peth were insufficient. The College shifted to its present precincts in 1868. The now Main Administrative building was formerly constructed as a Church building.

2.1 The Location:

The siting of the first government college was indeed given a thought before it’s shifting and establishment. The college premises had a wide scope of expansion with ample grounds, which later were later unfortunately bifurcated by the National Highway no. 4. Shivajinagar railway station is barely 0.5 kms away and so are the main administrative (central building) and civic (courts, civil hospital) governmental buildings. It is indeed to be noted that no church building is found in the immediate surroundings of the structure even today, indicating the impact of its influence and existence even then. Sitting it at the junction of rivers and at the mouth of the bridge joining the two banks also increased its strategic importance with respect to accessibility and approachability.

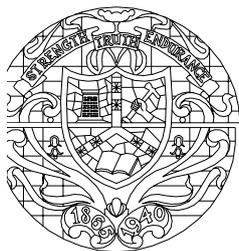


Figure 1 : College Emblem In Rose Window.

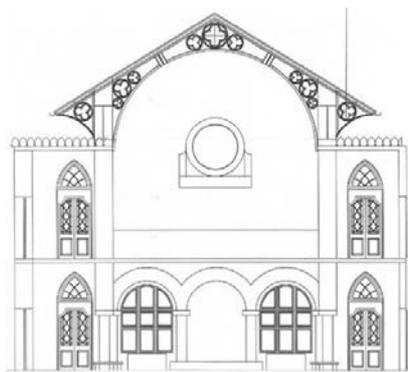


Figure 2 : Section Of Hall Showing the trusses and rose window.

2.2 The Main Building

Of all the stone buildings and workshops and foundries, the administrative building stands tall housing today the Students Section and the Principal’s office along with the Administrative Section and Accounts. It provides everything needed – classrooms, laboratory, a library, a museum and an office. Besides, the top floor was used to serve as the principal’s quarters. And most importantly a huge double height hall, lighted with clear storey windows spanned by beautifully designed ornamental steel trusses constructed too ahead of their times, aptly suiting its initial purpose (church hall) and elegantly gracing its modern usage (of seminar cum conference hall) and look. It is a graceful and commodious structure in stone topped in steel.

2.3 The Spatial Analysis:

The building was built to be a church, however its adaptation to being the main administrative building of an eminent engineering college is almost perfect. The section of the building almost is comparable to the typical church with all its features. The main hall @ 18.0 x 9.0 mts is lined by @ 2.8 mts of aisles leading to the other end with a balcony backed by a 3 mts dia of rose window. The main hall is entirely lined by 0.8 x 0.8 mts Corinthian capital columns a mere 2.1 mts high with a semi-circular arch forming an arcade of height 3.9 mts. The corners are graced with responds (a pier or a pilaster projecting from the wall as a support for an arch at the termi-

nation of an arcade.) this lends a good visual strength to the entire arcade. The first floor arcade imitates the ground floor aptly jointed by very graceful grill work. This first floor surrounding arcade forms a gallery overlooking the proceedings of the hall.

2.3.1 Truss

The main hall on the ground floor with its almost triple story height is 18.0 x 9.0 mts. This huge volume is spanned by 9.5 mt. Wide steel trusses made in England and transported here. During 1860's there were no local foundries to refine the raw material, so the steel trusses used were imported from England and Scotland by the then administrators. This constructional aspect makes this structure a very unique building in its contemporary times. With superstructure in masonry and roofing with steel trusses, a very "industrialist" concept is designed and implemented to its fullest sense and essence, more than 150 years back.

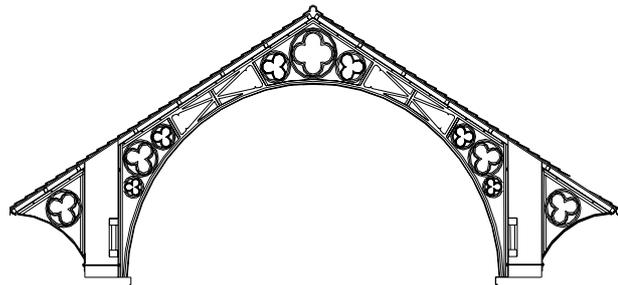


Figure 3 : The Ornamental Truss In Detail.

The truss was manufactured in two parts and assembled on site. The trusses were assembled, then lifted up to the required height with chain pulley arrangement which is even used today. They were placed from one end to another serially starting from entrance to the other end. The fixing and joining are all done by bolting. Bolting was easier and quicker. There also may have been problem of electricity on site. The buildings built during that period-University of Pune, Deccan College etc barely display the use of steel as widely and structurally used in this. The cost factor might have been one of the main aspects as also the type and importance of the building.

The grand hall in the main building that was earlier the church hall, thus have roof resting on beautifully designed steel trusses. These trusses are highly ornamental as well amazingly camouflaging their strength. The ornamentally designed trusses add that additional aesthetic edge which aptly suits the religious background of the building. The truss shape is an exact half hexagon with semicircular intrados. It is carved out gracefully where steel is not needed for load transfer, thus making it act like a castellated beam. The loading is similar to simple truss but the arch action due to semicircular base gives it more stability and beauty. The load transfer in this truss seems to have been worked out as the load transfer in an arch. The trusses project outside the span adequately to support the roof and also for the constructional aspect where the truss effectively sits and transfers the load on the projecting masonry corbelled out to receive the truss.

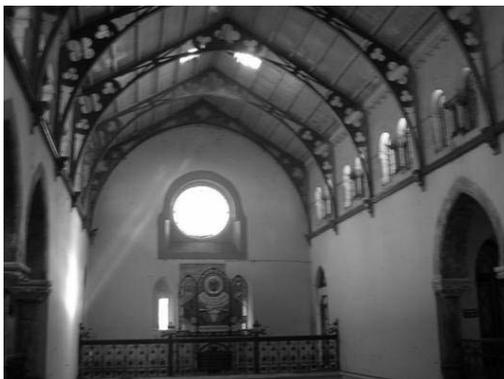


Figure 4 : View of the wall



Figure 5 : View of the wall

2.3.2 The Rose Window

Another significant feature of this hall is the rose window. The rose window was an important feature of the gothic church. Sir Cowasji Jehangir on the institute's diamond jubilee donated this rose window which bears the college emblem. The light entering through the rose window effectively modifies the quality and quantity of light in the hall. The huge volume of space is colorfully lighted. The use of stained glass fixed into the iron framework to beautify the rose window is indeed an example of use of technology well ahead of its time. It was a very unique feature, unlike any seen in the contemporary vernacular buildings.

2.3.3 Clear-Storey Windows:

The hall is also lighted by the clear-storey windows provided at a height of 8mts from the ground. The windows with a huge roof overhang on the second floor avoids all the glare and adds on to the quality of light in the hall. The roof overhang over the clear-storey windows creates a very interesting humane space at the terrace level, also allowing a peep in to the main hall from a very different point of view.



Figure 6 : The Balcony Railing Detail.

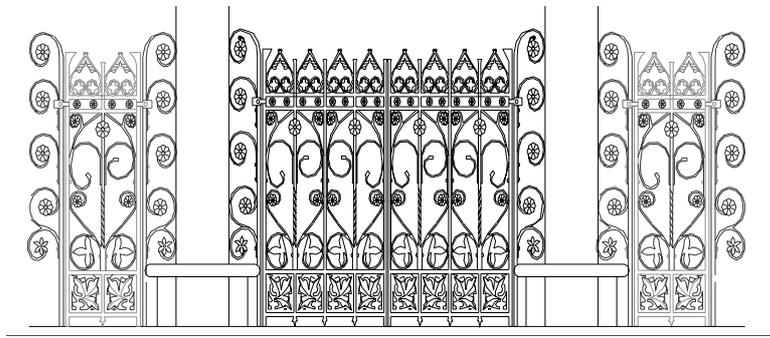


Figure 7 : The Gateway DeTail At Porch.

2.3.4 The Iron Gates and Grills:

A beautiful gate of very artistic and floral design pattern is fixed at the entrance just inside the porch. An equally elegant and graceful railing incorporating the emblem is fixed to the balcony overlooking the hall and also on all side of the overlooking arcade. What is more significant is the use of iron plates in the making of the balustrade topped by a wooden handrail. The usage and the grace of the design in iron plates speaks a lot more about the advancement in using the technique to achieve those design patterns at that time as it equally speaks of the aesthetic taste of the designer. The grills today lend a very ethic yet designer look to the ambience.



Figures 8, 9, 10 : Front Side Elevations Of The Building.

2.4 The Front Façade – The First Impression

The north elevation of the building, which faces the road, has an amazing mix of differently designed window openings. The asymmetrical face of the building is beautifully balanced by a five storey tower on the right and the horizontal stretch of the windows on the left. The building is entered through a very elegant, human scale porch, leading directly to the main assembly hall, all full of bright natural light. The delicate but not so decorative, minimalist projecting balconies at the second and third floors add interest to the otherwise flat but overpowering look.



Figure 11 : The North Side Elevation of The Building

Volumetrically the building rises its maximum at the tower terracing down the other corner. Small masonry kiosks placed at such horizontally flattened areas progressively bring down the profile elegantly. The trussed sloping roof over the hall is all hidden in the front elevation behind the second floor built areas. A sudden transition from the stolid masonry to the colored light filled hall takes the person by surprise, and impresses him. The right proportions of dimensions along with the right quantum of usage of stone masonry, steel trusses and colored glass makes the building an example to reckon with. The aesthetic charm that emanates from such buildings with their heavy, solid outer walls and, internal ambience may not have been obvious to contemporaries.



Figure 12, 13, 14 : Details At Porch.

2.4.1 Porch

The porch @6.0 x 4.5 mts is beautifully accessorized by the iron railings between the central Corinthian and corner square columns. Flaunting the emblems at its top corners, the roof of the porch double as terrace for the first floor. The stone railings to this projecting level have quatrefoil designs, typical to its style of architecture.

2.4.2 Windows

An in-depth study of all the elevations reveals a subtle play of masses creating positive and negative surfaces and accommodating a wide variety of window openings. An amazing range of arches like flat arch, segmental arch, pointed arch, semicircular arch, horse-shoe shaped arch span the opening exhibiting the richness and versatility of the masonry construction. The tym-

panum of a small window at the base of the tower reveals the date of construction of this building. Slit windows, French windows, arched windows and a variety of them grace the elevation. The rise of the stairs can be read on its façade through the strip windows which adequately lights the steps without getting in the unwanted glare.



Figure 15, 16, 17 : Some of the Windows On the Façade from A Variety.

2.4.3 Climate Responsive

The building planning has given a lot of thought to the local climate. With the sun movement from east to west via south, the front façade with its variety of openings face north, allowing maximum light to enter and not the glare. The rose window with its colorful glass on the south gets a very good quality but a limited quantity of light into the hall. The entire southern side has about 2.4mts of deep verandahs fronting the rooms to avoid the southern heat and light. Clear-storey windows at @ 8 mts of height help the escape of hot air. Staircases on the western side give that required buffer to the inner areas against the hot and intense western sun. The thickness of the stone masonry on the western side help keep the interiors cool and the clear-storey windows on the west get the west winds in the hall as well.

2.4.4 Materials

A right amount and a right combination of stone, timber, iron and glass as constructional and structural materials have gone into the making of this structure. Stone, the material of that period was an obvious choice of construction. The load bearing construction with timber floors was no hindrance to experiment various window designs on the facades and use of various design elements like the brackets for the projecting balconies, the kiosks on the terraces and the gargoyles at the rear for water discharge. Use of iron trusses so perfectly fitting the entire ambience was indeed a very futuristic decision standing the test of times. Use of ample iron grills designed with floral and free flowing forms lends that certain amount of transparency yet preeminence. Use of glass at the most appropriate positions lights up the huge volume effortlessly.



Figure 18 : Example of a window

2.5 Contemporary Constructional influences

“The ‘church’ building built shows a distinct influence of the revival wave of the building development in Mumbai then known as Bombay. A range of neo-gothic influences can be discerned in Bombays buildings. The ‘muscular; gothic style expressed the building functions boldly on the exteriors. Venetian gothic popularized the use of arcaded facades. Pugin’s structurally honest Early English design, John Ruskin’s gothic principles of polychromy and W. Burges medieval muscular style derived from Gothic styles of Italy, France were the ingredients utilized by the architects active in Bombay in the 19th century.” Pune, 150 kms away could not remain unaffected from these architectural developments.

Afgan Memorial Church, an excellent example in Gothic Revival architecture opened to public in 1858 and may have greatly influenced the construction of the church building in a cultural city of Pune, now under the British Raj. Three more churches in Mumbai show very similar architectural elements. St. Pauls Church, at Kamathipura designed in 1866 and built in 1872, The Emmanuel Mission Church at Girgaum 1867-69 and The Ambroli Mission Church at Khetwadi which opened in October 1869 show parallel use of design elements aptly reflecting the current trends in planning and designing a church.

3 CONCLUSIONS

College of engineering, Pune was and shall always be a landmark building in the urban scenario of the Pune city. The graceful majestic stone masonry building graced the skyline in the glorious yesteryears of the Pune city and is a nostalgic mute memory in the ever changing townscapes of today and to the peaks of engineering excellence achieved and aimed in its portals. The building was a marvel when it was built to the contemporary people, who looked at it with awe. Now after @ 150 years of its convincing existence, it still manages to catch the attention of every passerby and a great source of delight to a patient observer.

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