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British Colonial Railway Bungalow Architecture in Multan: Historical and Structural Analysis (1857-1947)

Abstract

British colonial administration is considered to have contributed two major systems in the culture and economy of South Asia: Railway and irrigation. Colonial Indian Railway system build the largest structure of transportation and communication in the World that played a fundamental role not only in the strength of the British colonial ascendancy rather changed the lives of the indigenous population, socially, culturally and economically. Railway system was consist of a set of infrastructure and skilled man-power, including railway lines, railway residential colonies, Railway Stations, Junctions, as well as administrative offices, for they established multi-dimensional and multi-purpose religious, secular and administrative architectural structures reflecting imperial grandeur. British Colonial Bungalows served not only the administrative need of the Railway and colonial administration rather developed a new culture of living and social relations in the region. It proved to be a major contribution to the built environment of Multan already representing Indo-Islamic and central Asian tradition.

After the establishment of railway station in Multan, so many buildings were constructed around the city during the last quarter of 19th & 1st half of 20th century. the purpose of this paper is to analyze historically and structurally the British colonial bungalow architecture in Multan from 1857 to 1947. Constructed on the colonial records, structural maps and empirical observations, the paper analyses how Indo-Saracenic style was amalgamated with British Victorian Architectural style in the colonial railway Bungalows of Multan. It concludes that hot climate of Multan formed the central idea of the architecture and design. Jack arched roofs, verandahs, curve pediments, vertically constructed rectangular windows/dormers, skylights, chimneys, buttresses and comparatively high roofed central hall of buildings particularly in bungalows formed the prominent features of railway built structures of Multan. The study can be useful for those professionals who would work to conserve the railway buildings particularly colonial railway-built structures. Hence, the study evaluates the individual significance of railway buildings of colonial period of Multan. In this context, the paper highlights the

architectural and historical significance of railway built structures of Multan. This architectural study gives a preface about a new colonial architectural methods and concepts which were used in the British era of Subcontinent. This study determines the beneficial role, origin, history of railway and British mentality with different architectural features of British style of masonry. As a case study, the Railway stations of Multan are significant architectural samples of a nearly colonial period of Subcontinent.

Key Terms: British Architecture, Historical Multan, Administrative and Residential Buildings, Railway Bungalows, Colonial History, Railway Structure and system. Subcontinent. South Asia

Introduction: Railway System in Multan

British colonial administration is considered to have contributed two major systems in the culture and economy of South Asia: Railway and irrigation. Colonial Indian Railway system build the largest structure of transportation and communication in the World that played a fundamental role not only in the strength of the British colonial ascendancy rather changed the lives of the indigenous population, socially, culturally and economically. Railway system was consist of a set of infrastructure and skilled man-power, including railway lines, railway residential colonies, Railway Stations, Junctions, as well as administrative offices, for they established multi-dimensional and multi-purpose religious, secular and administrative architectural structures reflecting imperial grandeur. British Colonial Bungalows served not only the administrative need of the Railway and colonial administration rather developed a new culture of living and social relations in the region. It proved to be a major contribution to the built environment of Multan already representing Indo-Islamic and central Asian tradition..

After the establishment of railway station in Multan, so many buildings were constructed around the city during the last quarter of 19th & 1st half of 20th century. the purpose of this paper is to analyze historically and structurally the British colonial bungalow architecture in Multan from 1857 to 1947. Constructed on the colonial records, structural maps and empirical observations, the paper analyses how Indo-Saracenic style was amalgamated with British Victorian Architectural style in the colonial railway Bungalows of Multan. It concludes that hot climate of Multan formed the central idea of the architecture and design. Jack arched roofs, verandahs, curve pediments, vertically constructed rectangular windows/dormers, skylights, chimneys, buttresses and comparatively high roofed central hall of buildings particularly in bungalows formed the prominent features of railway built structures of Multan.

The historical process for the establishment of North Indian Railway begins with the conquest of Sind. Henry Edward Frere was appointed Commissioner of Sindh in 1847 who got permission from Lord Dalhousie to begin survey of seaport for railways. Lord Dalhousie who was Governor General of India (1848-1856) approved the scheme for a railway line from Karachi to Kotri in December 1853. Sir Frere, the Commissioner for Sindh, suggested Karachi as a major seaport and a railway line from Kotri to Karachi, steam navigation up the Indus, the Jhelum and the Sutlej rivers to Multan and from there another railway line to Lahore and beyond, the Jhelum rivers to Multan and from there another railway line to Lahore and beyond in 1855¹ which later on, came under the control of Pakistan. The Sindh Railway Company was established in London to lay 169 KM of railway track from Karachi city to Kotri. The Sindh Railway Company entered into an agreement with the East India Company in 1856 to lay the Karachi to Kotri railway track. In 1861, the first railway track, 169 KM long between Karachi and Kotri, was opened for public traffic.²

History of railway in Multan started in 1863 when a small section of railway of 11 kilometer was erected from Sher Shah to Multan city. Railway line from Multan to Kotri via Lodhran was completed in 1870. After the construction of Sukkhar Bridge, the railway line from Karachi to Multan started running in 1889.³ Multan Cantonment Railway Station was completed in 1899. Later on, more administrative buildings and bungalows were erected in the 1st & 2nd quarter of 20th century.

The introduction of Railway administrative as well as residential buildings in Multan during British Railway Period (1858-1947) has been considered a great contribution in the architectural structures of Multan by the British power, as no such residential & administrative facilities existed before in the city of saints. The buildings which were planned to meet the climatic requirements of the colonizers in Multan are more important than the buildings of present time. This created a large corridor, a verandah with a comparatively low roof which became a prominent feature of the colonial buildings of India as well as Multan. Built structure (jack-arched roofs) was also one of the key feature of some of the railway buildings that provided stability to the built structures. By repeating elements and standard

¹ Owais Mughal. *The Chronology of Pakistan Railway*. 2007. {See also, Khalil Ahmed. Multan: Daem Abad. Fiction House Lahore. 2014. P.169}

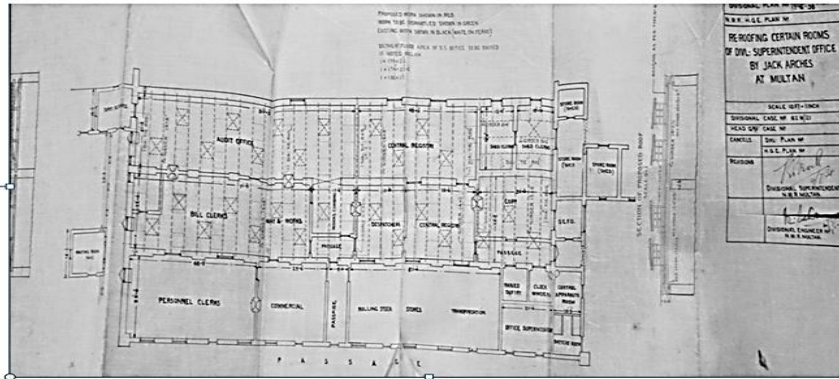
² Kaneiz Fatime. *An Analytical Architectural Memo on British Colonial Railway Station of Chaklala Cantt Rawalpindi*. Ancient Punjab – Volume 7, 2019. P. 83. {Khalil Ahmed. Multan: Daim Abad. Fiction House Lahore. 2014. P. 169}

³ Ibid. Khalil Ahmed. pp. 169-170.

details, the overall narrative of the railway architecture is linked to other British administrative built structures in England and India that defined ownership.⁴

British built two kinds of bungalows in India, the winter and summer bungalows.⁵ In Multan, bungalows were built for summer season. The summer bungalow had high roof, verandah all around, and plenty of doors, windows and ventilators. The winter bungalows had low roof, no verandahs, little cross-ventilation, and fire-places. All bungalows were single storied, or sometimes one and half story tall. As a rule they were well below the tree height and remained hidden.⁶ The bungalow architectural style was a hybrid architecture developed by the British Raj. This was called “Indo-Saracenic” where Buddhist, Hindu and Islamic elements were used along with Neo-classic and Gothic revival architecture.⁷ Some examples of the borrowed elements in Indo-saracenic are “jaali” (pierced stone lattice screens that kept the sun out but allowed the breeze in), chhajja” (sunshade in all type of buildings), cupolas, (administrative buildings) “Chhatris” (station building) chimneys (residential buildings) and parapet.⁸ And most of the Bungalows has uniformity of structure and design.

Drawing Plans of Railway bungalows & Offices



Divisional Superintendent Office at Multan (1936). Structure has been erected to escape from extreme summer condition of sub-continent.
Source: Railway archives at railway headquarters Multan

Figur P1: Divisional superintendant office at Multan 1936

⁴ Observation of the author.

⁵ (See, Irving, R. *Indian summer: Lutyens, Baker, and Imperial Delhi*. Yale University Press, New Haven and London, 1981.

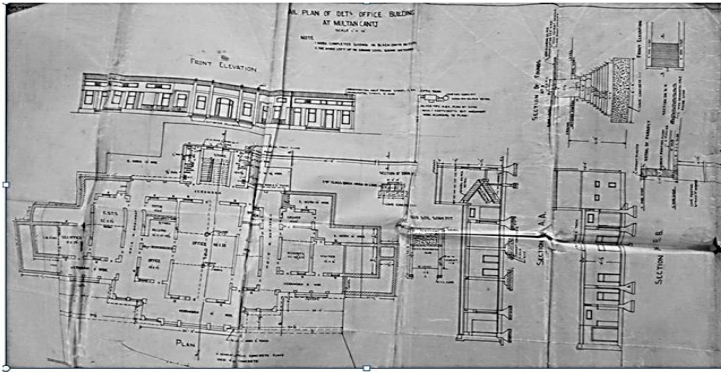
⁶ *Ibid.* 1981.

⁷ (Davies discussed about the bungalows of New Delhi, those bungalows has typology like bungalows in colonial Multan except a few alterations. So see, Davies, P. H. Chapter 5. *Bungalows and Hill Stations. Splendours of the Raj: British architecture in India, 1660 to 1947*. J. Murray London. 1985. Pp. 103-132)

⁸ (*Ibid.* Davies and Irving discussed on the typology of colonial bungalows in different areas of India which has similarities with colonial bungalows of Multan)

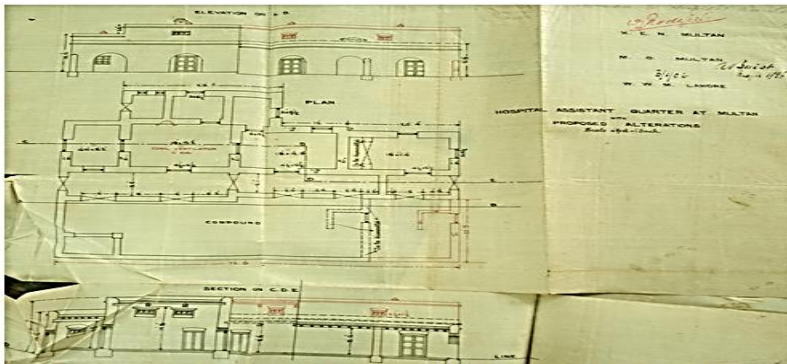
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Figure P1: After the observation of drawing, we find that the rooms have been attached to each other for security purpose and to protect extreme weather condition of summer season. All the rooms are vast with thick walls. Inside the roof, there are skylights for light and air to escape from hot condition. The whole building has as many openings as possible to facilitate movement to get from one room to other. The whole structure holds jack arched roof with square skylights.⁹ (See Fig P1)



All plans of DETs office building at Multan cantonment
Source: Railway archives at railway headquarters Multan

Figure P2: Cluster of rooms of the DETs building shows the security plan, protection from extreme weather and easy to approach one record room to other. The plan holds galleries and parts of rooms to make management better. Whole the plan has been designed to keep aesthetic sense and functionality in mind. Different sections and opening (windows & doors) are visible in the drawing plan.¹⁰ (See Fig P2)



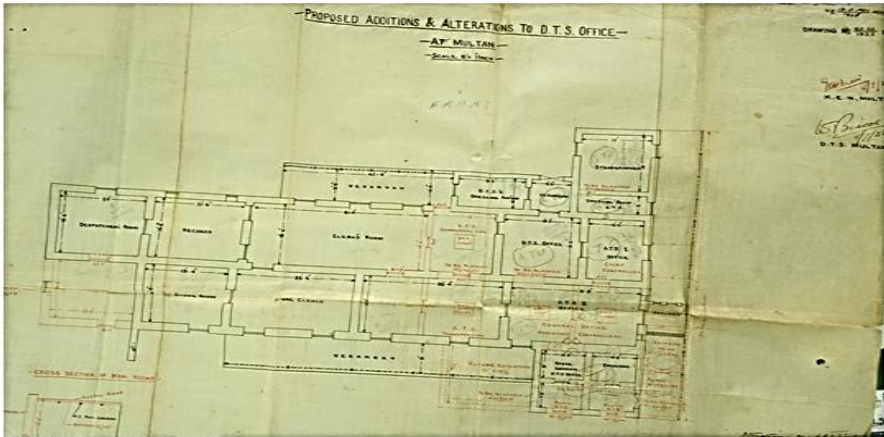
Hospital Assistant Quarter at Multan (1906), Plan of the Hospital as well as different sections have been shown
Source: Railway archives at railway headquarters Multan

Figure P3: It shows the plan of Hospital Assistant quarters at Multan

⁹ This information is based on the observation of the author.

¹⁰ This information is based on the observation of drawing plan and present building by the author

Figure P3: Plan shows different sections of the building, more than one opening of each room, compound and gallery of the building. All the mentioned parts enable the building to live in it easily and can be secure oneself and escape from hot weather. Such type of plans makes the building more functional and beautiful. Elevation plan of section A, B shows central high roofed rooms with dormers and close porch with openings. The elevation of section C, D, E shows low roofed verandah, all the doors of the rooms are facing to the verandah.¹¹ (See Fig P3)



D.T.S. Office Multan (1922),
Source: Railway archives at railway headquarters Multan

Figure P4. D T S Office Multan (1922)

The plan shows that the construction of building was started during the last years of 1st quarter. Plan shows that the façade and backside holds a verandah and the middle rooms are comparatively vaster than side rooms. Each room opens into adjoining room and into the porch to facilitate transportation throughout the building.¹² (See Fig P4)

¹¹ This information is based on the observation of the author.

¹² This information is based on the observation of drawing plan and present building by the author.

Railway colonial bungalows at Multan

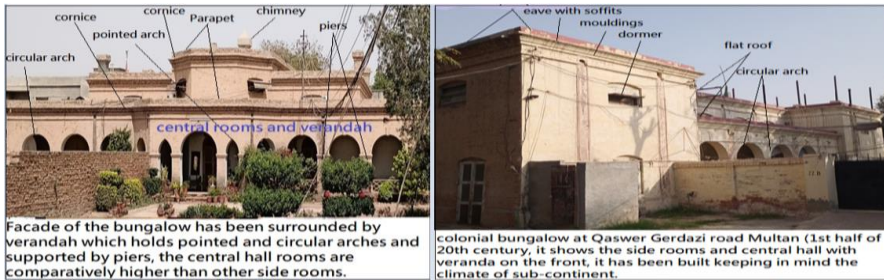


Figure R1: Colonial Railway bungalow at Qaswer Gerdazi (old city and cant road) road Multan.

It has a symmetrical shape and is largely a specific sequence. It had a hall in the middle and rooms on each side of the hall and a veranda at the front which is facing the garden or on the both sides. Kitchens and rooms for servants were in most cases separate.¹³ (See, Left portion of Figure R1). The bungalow shows that the whole structure has been built according to the environmental condition of region & safety purpose. The verandah holds circular arch openings, the central main rooms and side rooms have dormers which enables all the rooms airy and bright. The flat roof building, the roof of verandah is comparatively lower than other structure, whole the structure has raised ceiling comparatively with the region's houses, so the raised ceiling make the rooms feel open. (See, Right portion of figure R1)

To build a veranda is the main method to control the thermal environment in such a country like India, the heat is very high however, it was necessary to change the behavior rather than the building: when it became too hot inside, the inhabitants moved to the veranda. This technology was taken from the local inhabitants of India. As for other means of environmental control, bungalows of India depended on labor-intensive technology. In hot season, the servants used to sprinkle water on the floor of the verandah and nearby compound to cool down the hot air blowing from the residences. Suspended from the ceiling, the *Pankha* (fan) was a heavy fabric attached to a wooden rafters or trusses and pulled back & forth by a rope to stir the air. *Pankha* had been using in Mughal India and it was first adopted by Europeans in Bengal in a modified version, *Pankha*, the inhabitants depended on local labor for their comfort. Indeed, the overall atmosphere of the

¹³ (See about the colonial bungalows, Miki Desai. Madhavi Desai. *The colonial bungalow in India. The Focus: Cultural Heritage*. The Newsletter | No.57 | summer 2011.

bungalow and complex, of course, as well as its construction, depended on the colonial ability to employ economical native labor.¹⁴

The colonial bungalows has been erecting at the separate places from native population in India. The location of the bungalow in its compound, far from the original settlement sites, expresses the political and social relations between the native inhabitants. Specific distance between the both reflects social distance. The clustered houses of the local village or town were functional not only in terms of environment or existing levels of technology and transportation; they also expressed the basic economic and social relationship of their inhabitants. The inhabitants of the courtyard residence were fellows of a large joint family. The inner courtyard provides a place of exercise and relaxation for the women of the family whose religious practices prohibit them from free movement outside the residences. Blank exterior walls without windows leading to a narrow street ensure privacy for the residents inside.¹⁵ However, Bungalow's European inhabitants had neither religious nor social association with the native people of India. Hence their relationship was that of "the ruler and the ruled": there was spatial separation of the district officers or army officers from the hometown inhabitants expressed political and social divisions. It can also be explained on cultural grounds, with European belief which lead them to regard the "hometown" as a source of disease & illness.¹⁶

The isolation of the colonial bungalow, its specific construction style and its uniqueness affects the local population. "one of the judges said that an Indian of the humbler class is really always under constraint and fear in a house, particularly if furnished in the European manner, and can neither attend to what is told him nor tell his own story as well as in the open air and amidst those objects from which all his own objects are drawn."¹⁷

¹⁴ S. C. Ghosh. *The Social Condition of the British Community in Bengal 1800. 1970.* pp.105-117.

¹⁵ Anthony Douglas King. *The Bungalow, 1600 - 1980 A study of the cultural, social, political and economic factors in the production of a global.* School of Social Sciences Brunel University Uxbridge. 1982. P. 62.

¹⁶ Ibid. p.63.

¹⁷ H. Yule and A. C. Burinell, Hobson-Jobson. *A Glossary of Colloquial Anglo India words and phrases.* Murray, London, 1903, p. 187.



Figure R2: colonial railway bungalow at Multan (existed at Cant. Railway station Multan)

Source: Image by the author-2021

The railway bungalow holds high and low barrel vault¹⁸ roof as well as ceiling, rectangular and square windows on the high walls beneath the overhanging eave of the roof.

Buchanan discussed about the closed or open gallery around the main or central structure, “Buchanan's proposal that the walkway or gallery round the bungalow was a European addition can be questioned. Some other sources indicate that the residences having a 'gallery or walkway' were already indigenous to Bengal province. In accordance to a later authority, 'houses of native people to this day are divided into ath-chala, chau-chala and Bengali or common huts'.¹⁹ The ath-chala denotes that the roof of house has four sides with four more projections to cover the verandah of house to all four sides which is square. Nilsson talks about this type as the 'double-roofed house and he believes it to be the true example of the European bungalow.²⁰ There is a basic difference here is that the lower (verandah) and upper (middle portion of house) roofs are separate”.

¹⁸ When we talk about the barrel vault, we find that initially the barrel vault was developed by Sumerians and used by the Egyptians. The barrel vault is documented as far back as 4000 BCE, when it was used by Mesopotamians, Egyptians, Assyrians, Nubians and Romans. This has been used during Umayyad's period in Middle East. Later on it was adopted by the colonial power in India with the respect of extreme summer season of the region. (See about the barrel vault ceiling, Naif. A. Critical assessment of the barrel vault geometry and structure of the oldest Macedonian tomb of Eurodice in Vergiina. Institute of Tourism and Heritage, Hashmite University Jordan. 2015), (See also, Antino Maria, Historic barrel vaults undergoing differential settlements. International Journal of architectural heritage. 2019)

¹⁹ Ibid. H. Yule and A. C. 1903, p. 128.

²⁰ Nilsson. *European Architecture in India, 1750-1850*. Faber and Faber London. 1969, pp. 180- 195.

Talking about the tropical area and the bungalow, Mr. Smith said the main factors were weather conditions, heat, intense light, seasonal and torrential rains and dust, wind and storms. Hence the central walls had to be protected from heat and rain, the doors and windows had to admit every breeze, and the walls had to be as thick as possible. "The screen called the verandah is necessary, and actually becomes the main feature of buildings in the tropics." It was usually about ten feet wide, and the roof ran over it in a continuous row. The rooms provided by the porch served as a place of work for the "residents" or were used by the dwellers for "relaxing, walking, smoking, and even sleeping and eating" in Indian life. - Rooms are arranged side by side, with windows and doors facing each other to permit the breeze to pass through these rooms. The overall plan of the bungalow/residence should be simple, as well as spacious and compact. It was also important for middle-class audience that "all the servants lived separately in separate part of house" and that the few stores in the bungalow were located on a verandah which "extended the bulk of the building to an extraordinary extent". Above this simple mass was laid a roof, which, if not a roof, was a smooth slope with overhanging eaves to provide maximum shade and to reflect the heavy tropical rain from the base of the walls. Because stairs were "extremely fatiguing in hot climates", multi-story buildings were not common in this hot weather.

The usual height of the one floor was about eighteen to twenty feet and it took "all the air we could get." In case of single floor, it was completely safe in earthquake. In a continent in which no one know about earthquakes and with a centuries-old, multi-story tradition, the real explanation had eluded him: the political economy of colonization, where the economics of labor land were rarely considered.²¹ "Bungalows are built structures in India, usually built on a brick foundation or base of bricks, one, two, or three feet from usual level of the ground consisting of only one floor. They are generally planned for a dining-room and sitting-room in the center of the whole structure. Large room or hall is existed in the middle of the structure and other rooms at each corner for sleeping and other purposes. The whole built structure is covered with a common window, running low on each side. The spaces between the corner rooms are called verandahs or open

²¹ A. D. King, *The colonial bungalow compound complex: a study in the cultural use of space'. Colonial Urban Development: Culture, Social Power and Environment.* Routledge and Kegan Paul London, 1976. (British architecture in tropical areas, T. R. Smith. *On buildings for European occupation in tropical climates especially in India.* Proceedings of the RIBA, 1868-1869, 1st series. pp. 197-208.)

porticoes for sitting in the evening time; there are windows and large doors in the middle. Sometimes the central porch at each end is converted into rooms.²²



Figure R3: Colonial railway bungalow at Multan (existed at Cant. Railway station Multan)

Source: Image by the author-2021

Interior structure and their windows have been fronted by veranda which is suitable for Multan's extreme summer environment. The mentioned bungalow are large built on sprawling compounds, initially with a Kaccha (impermanent) canvas, each bungalow in Multan holds large central room/hall leading off to several others, those could be used as study rooms, bedrooms or dens. In 90% designs of bungalows in Multan, internal structure is surrounded by veranda on two, three or all four sides. These bungalows encourages the workers to approach each room easily through porch/veranda and central room. (See Figure R3)²³ For the elite and professional Indians, the bungalow life was a symbol of each and everything that became possible during British Raj: a luxurious life style with lush personal gardens for fruits, vegetables and greenery. It was porch for afternoon tea and evening *Cigars*. As a symbol of leisure, the bungalow was translated into the summer cottages near London.

²² A. D. King. *The colonial bungalow compound complex: a study in the cultural use of space*. Colonial Urban Development: Culture, Social Power and Environment. Routledge and Kegan Paul, London, 1976.

²³ Information is based on observation of the author

Architectural Analysis of British Colonial Railway Residential Buildings in Multan

New concepts of housing plans were introduced by the British like one layer rooms with verandas of all sides. While planning the residential buildings and administrative buildings, there were challenges of safety, security, local climatic conditions and socio cultural needs. Considering the safety and security, the Europeans constructed the buildings near the work areas. They planned markets; vegetable gardens close to the residential areas. On the other side they built housing settlements near the main roads as well as railway stations. Small rooms were constructed along with the Bungalows for the servants for security purposes. Main streets were connected to the main roads as well as railway stations. Thick and high walls were constructed around the Bungalows, Barracks and Quarters at suitable distances. These railway settlements were made with the respect of climate, sanitation, public health and security. Local climatic condition remained challenge for the Europeans, they wanted to construct the buildings in such a way to create conducive environment to support the Europeans. Eurasians and Indians could bear harsh weather of Multan but Europeans faced sufferings of hot climatic conditions and local environmental problems therefore there was innovative and creative need of solutions. Environmental conditions were improved and healthier site locations were selected for settlements. Method of plantation was introduced to reduce temperature. Public work department and railway department was encouraged to plant greenery along the roads and around the government buildings. They planned that various techniques and strategies of construction should be used to minimize indoor temperature. According to the author, while constructing residences, indoor and outdoor facilities were provided to the employees which were according to their social life demands. With the respect of area requirements different accommodations and residences were provided to the Indian and Anglo-Indian inhabitants.

Another issue was to differentiate the housing and accommodations of European officers from local and subordinate officers. Separate settlements were constructed for both the classes. Barracks were mainly devoted for the subordinate staff and three to seven rooms Bungalows were devoted for the high officials. Offices buildings and residences can be analyzed through typological point of view. European settlements were made keeping higher class and ethnic segregation in mind and different and separate housing West directions. Windows for cross ventilation and light were placed near the opposite doors of the rooms. Fire places were provided with the main rooms and their flue-pipes terminated at the top of the building while creating the chimneys on the roofs. Facade of the buildings was enriched with round arches. All the walls of the building equally thick lay in mud or lime mortar. All the walls externally and internally covered with lime plaster. With the passage of time, railway administration started to construct double layer

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Barracks. The roof of the main room is like cubic forms. In double layer, there was one sitting, one bedroom, one store and common space of verandah. These were vast and large settlements consisted of large rooms in the center and separate adjoining kitchens. It was single storied structure with verandah of all sides, large green compound, bath/dress and store on the corner of the verandah.

Hence three to seven room bungalows were planned for European officers. All the houses had commonly main rooms, side rooms and verandahs. Buildings related to socio-cultural and sports related were constructed and thus sports related infrastructure was introduced. Civil lines were planned for Europeans and elite local population lived in their dense and populated settlements. The source looks into the residential at the macro and micro levels. At micro level, individual residences and at macro level barracks with a large number of rooms were constructed for the local and low European official staff. Location, size, orientation, suitability and function of residential buildings and heights have also been investigated in this source. Various dimensions of residential architecture such as culture, environment, construction and function did not receive adequate coverage. Socio-cultural ethnic based issues and local contextual problems are important to understand in such housing settlements whose residents are heterogeneous but such issues have not been discussed in this source in detail. Railway system was made developed due to the trade of cotton and other things capable of trade. Station building and residences were constructed strategic, defensible and cantonment position. Roads were connected to the railway station and residential areas. Most of the buildings were housed on the both sides of the lines.

Garden residential concepts were adopted by the European in Multan & Lahore. Quarters of the subordinates were constructed separately in the dense housing area as compared to the officers. Straight roads were prepared for the security and safety of the residences as well as wide roads contributed better performance of the residential settlements in terms of light and ventilation conditions. Heights of the buildings, street pattern as well as overall sanitary system planned and managed by the Europeans. Geography and geographical locations of the area was considered while constructing the civil lines. While analyzing environmental condition and health, Indian environment condition was not fully cooperative for European because during the thirty years from 1808 to 1837, mortality rate of the European in India was 102 per thousand.

Railway offices and administrative buildings in Multan: Cantonment railway station buildings

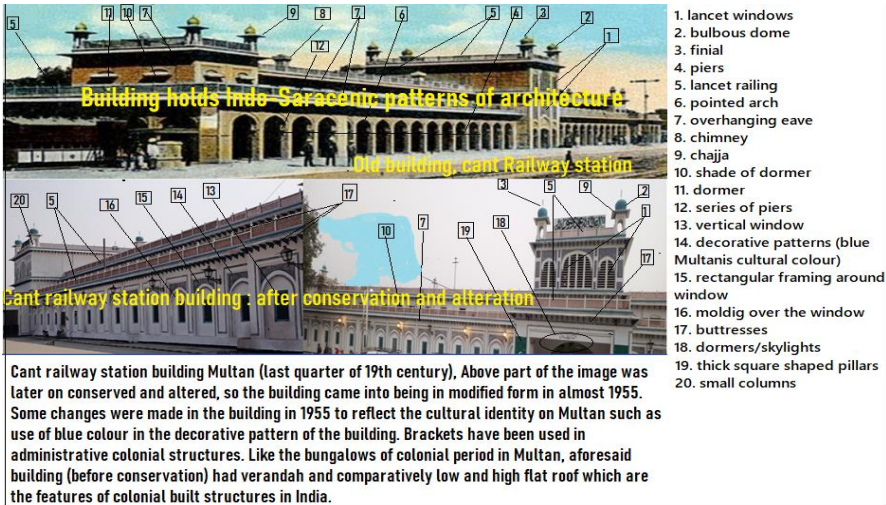


Figure R4: Main building of Cant railway station Multan (constructed in last quarter of 19th century)

Source: Image by the author- 2020.

Later on conserved during the initial years after partition): Façade of the building exhibits the colonial and Mughal features. Verandah, flat overhanging eave, dormers, palladian featured high windows and buttresses reflects the colonial mind in the region such as Multan.

In this colonial building, the focus is on the facade composition. Entrance has been usually designed with simple type columns, semi-circular arches and various other decorative patterns. In this building the doorway is regular and simple. The windows have been designed with semi-circular arches enclosed in a rectangular frame. The semicircular arched opening have been supported on piers or pilasters are common features of verandah and open corridor design for this building. Closed window and blind arches create a noticeable tendency to illusionist representations used in building. For the exterior and interior decoration of these buildings, regional floral pattern have been used to express a local identity. The small rectangular columns of bulbous domes and pilasters have been designed with well-defined base. This building is amalgamation of Indo-Saracenic architecture as well as identical patterns of Multan after conservation.²⁴ (See Figure R4)

²⁴ This information is based on author's observation of the colonial buildings and study of colonial architecture in India.

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Figure R5: Railway built structure with colonial feature near Cantonment railway station Multan.

Source: Image by the author-2020

Each main office building holds interior or external galleries which is supported by piers and circular arches to the outer side in external case. Concrete and iron has been used in each colonial building as construction material. Each structure has been constructed with the respect of regional climate because the colonializers are conscious about it.²⁵ (See Figure R5)

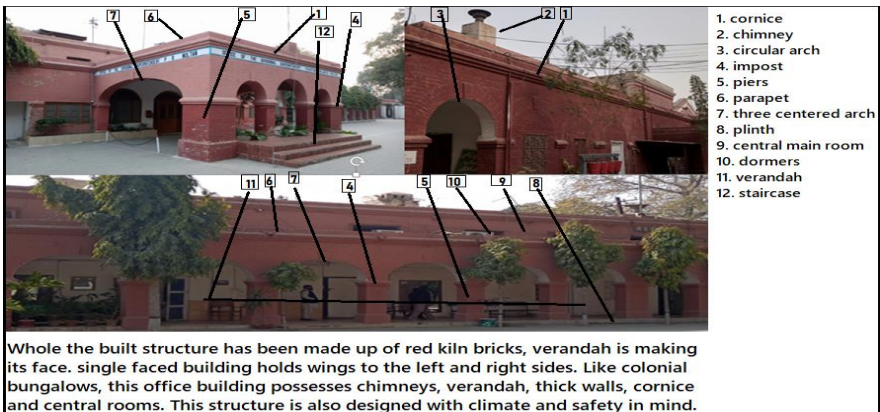


Figure R6: Office of the Divisional Superintendent Pakistan railway Multan.

Source: Image by the author-2020

²⁵ This information is based on author's observation of the colonial buildings and study of colonial architecture in India.

Red Kiln bricks have been used in the construction of this railway building which has been surrounded by porch on the face. It is single faced structure possesses right and left wings. Like colonial bungalows, this office building has chimneys, thick walls, cornice and central room. This structure is also designed with climate and safety in mind.²⁶

Old city railway station building (Now abandoned)

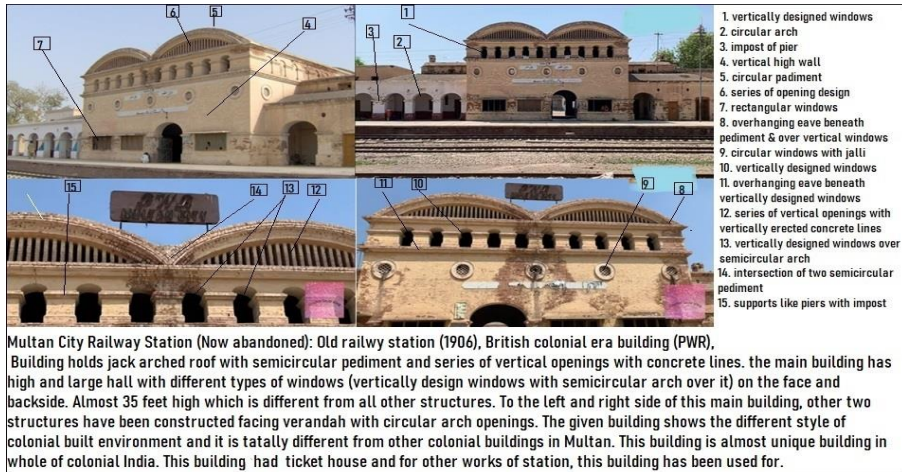


Figure R7: Multan city railway station building (1906).

Source: Image by the author-2020

Multan City Station (Now abandoned): Old railway station, British Colonial era building. This railway station was erected in 1906, which was to facilitate the people of city area. Its construction style reminds the colonial construction style because the building holds colonial features like curve or segmental pediment,²⁷ circular and vertically rectangular windows in place of dormers and use of cemented agent. The building holds jack arched roof with curve or segmental pediment and series of vertical openings with concrete lines. The main building has high and large hall with different types of windows (vertically design windows with curve or segmental arch over it) on the face and backside. Almost 35 feet high which is different from all other structures. To the left and right side of this

²⁶ This information is based on author's observation of the colonial buildings and study of colonial architecture in India.

²⁷ Curve or triangular pediment is an architectural feature placed on top of a structure. Pediment whose upper bounding surface has the shape of and arch of a circle having a large radius of curvature. Pediments have been used in Greek, Roman, Baroque and Renaissance style. In India such as Multan, curve pediment have been used at the external face of jack arched roof of old city railway station Multan. (Encyclopedia of Britannica), some of the sources called it round pediment (<https://buffaloah.com/a/DCTNRY/r/roundped.html>)

main building, other tow structures have been constructed facing veranda with circular arch openings. The given building shows the different style of colonial built environment and it is totally different from other colonial buildings in Multan. This building is almost unique building in whole of colonial India. This building had ticket house and for other works of station, this building has been used for. Later on, this railway station was abandoned and all activities shifted to cant railway station Multan. The plinth of the building has been raised from the surrounding place and building has been decorated with single, double and triple moldings respectively depending on height of the built structure.²⁸



Interior of the main building/hall of the old city station Multan which now has been abandoned, jack arched roof is covering the interior of the hall, concrete and iron bars and rafters has been used in the jack arched roof. Curve pediment is supporting the roof and beneath the pediment on the wall, there are vertically constructed rectangular windows/dormers supporting the pediment. In the high walls, there are circular dormers with jalli. Facing and backside wall possesses the rectangular windows with circular blind moldings. Wall of whole the structure has been made up of red kiln bricks. The whole structure has been erected in accordance to extreme environment condition of Multan. A large number of dormers/windows makes this structure airy and bright

Figure R8: Interior of old city railway station Multan (1906)
Source: Image by the author-2020

Old city railway station Multan building shows the built features of colonial style. This station have been using to facilitate the people of Multan city. But now this station as well as its building is non-functional with all respect. It is almost 4 km away from cant railway station. This station building is now in a state of disrepair and is turning into ruins, so government must take steps to preserve this historical heritage.

²⁸ This information has been given after the observation of the building by the author.

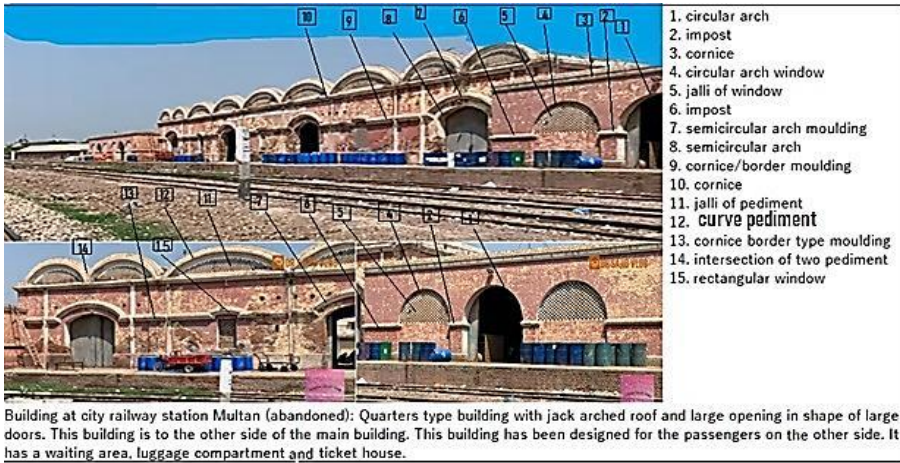


Figure R9: North side, old city railway station building Multan (1906).

Source: Image by the author-2020

Railway station building of old city Multan holds quarters type building with jack arched roof and curve or segmental pediment on its face. Lattice window (concrete lattice window)²⁹ and circular arched opening with flat roof is existed on right side of jack arched roof building. Vertically erected window and doors with semicircular arch over it. This building has also been used for the management and administration of the railway station, some rooms has also served as railway warehouse.³⁰

Buildings of old city station Multan are combination of different types of architectural patterns. Plinth of the built structure is higher than the surroundings. The building holds thick cornice, parapet and ceiling etc. which strengthened it more than other local buildings. The buildings have been decorated with single, double and triple patches depending on the height of the built structure. With the passage

²⁹ Stone lattice window has been a part of Mughal buildings in India, so this pattern of Mughal buildings has been used in the colonial built structure. Stone lattice window or Jaali Screen is for creating light effects & partitions and for the thermal comfort in a structure. The screens also offer protection from the dust and providing fresh air through the fine carved patterns. They can be used to adorn windows, openings, as railings, grills, furniture elements too. One of the large Jaali screens adorning of the Tomb of Muhammad Ghaus at Gwalior, built in 1565, by the great emperor Akbar. The way lattice screens have been conceived across the Tomb. The mughals have mostly used geometric jaalis with curved and straight lines both. (See, Garima Bhargava. Ashish Sharma. Lattice Jaali: *Study of Decorative Aesthetic Architecture*. International Journal of Engineering Science and Computing, October 2017)(<http://ijesc.org>)

³⁰ Information collected by the author and built structure has been described after observation by the author.

of time, Cant railway station became more functional and old city railway station (now abandoned) lost its status and now in a state of disrepair.

Railway buildings and climate of Multan

Colonizers in the plains of India, including Lahore and Multan suffered high mortality due to their inadaptability to the extreme hot climate.³¹ So they were aware of the climate condition of these areas and their efforts were made to improve the internal thermal conditions while planning the civil as well as residential buildings. Better orientation of buildings was one of the techniques to reduce the environmental issues.³² Providing a veranda on the Southern side of the structure was a specific method to protect the building from direct rays of hot sun. Although various studies have linked the 'porch' to the climate of plain areas of India, its placement on more than two sides of railway buildings in Multan clearly reveals its role in improving the overall appearance (aesthetic) of the built structure.³³(See the structures with veranda)

The veranda has been extended above them with round arches and piers whereas the relation of the porch to the building was so important with the respect of aesthetic reasons that removing the veranda from the rest of the buildings meant demolishing the entire structure and leaving the building no more than a box. The twin central corridors were another planning feature at the Multan Railway offices. The practice of providing a central corridor for built structures of official usage was deeply rooted in British architecture. The Consulting Architects of the Government of India have described it as "where the climate is dry, the central corridor offers such benefits for economy and convenience that its successful use is worth considering."³⁴ Apart from the climatic advantages, the central corridor was more useful in terms of security and safety. They were kept neat and clean and the seats of the peons were also recessed in the wall. All this arrangement was useful to monitor the movement of any person in the corridor. The British were more cautious

³¹ See King's discussion about the colonial buildings in India. (King, A. *Colonial Urban Development*. Routledge and Kegan Paul, London, 1976. Pp. 15-18.

³² See Ling's information about the geometric shapes of colonial buildings in India adopted by the colonizers to protect themselves from extreme summer season. (Ling, C.S. *The effect of Geometric Shapes and Building Orientation*. Journal of Construction in Developing Countries. 2007. Pp. 12, 33-34)

³³ Smith in his work "tropical architecture" wrote about the architectural amendments in tropical areas by the colonizers. (Smith, R.T., *Tropical Architecture*. Royal Institute of British Architects London. 1868. Pp. 197-208.

³⁴ (See, Begg, J. *Annual Report on Architectural Work in India for the year 1907-1908*. Government Printing Calcutta. 1908. Pp. 17-18)

about safety issues in buildings, especially after the 1857 War of Independence.³⁵ (See the structures with veranda)

However, passageways or corridors with high ceiling elevations were dominating on human scale rather establishing with that. High wall fans and high ceiling tackle the hot seasons because 20 feet was a beneficial method to decrease the surface/volume ratio, which different research studies have shown to be an easy method to control indoor high temperature during summer season in a climate like the city of Lahore. So it was an acknowledged principle for colonial buildings in the Indian plains to be constructed with high ceilings and roofs.³⁶ The porch was generally mandatory in all residential buildings in British India. Construction of porch was planned for the dual purpose to serve as a point of arrival as well as departure for the British or Anglo-Indian officers and as the main axis of the whole built structure to break the monopoly of the tall facades. The more important was scale of porch which was associated with the position and status of officer.

A comparative analysis of the colonial buildings especially buildings shows that the built structures were roofed using the jack arch which a common technique of roofing was colonial built structures. Indeed, this jack arched roof has been widely used all over India due to its number of advantages related to climate, cost efficiency and quick construction. This jack-arched roof was more useful and versatile because it permit the designers to create various spaces for different type of functions. Through the physical survey and building plans it can be seen that the span under the jack arch was 4-6 feet. This module can be repeated to any length without disturbing the placement of various type of functions. On the other hand, the room's width depends on the length of the cylindrical steel beams, which have length of 22 to 25 feet.³⁷ The overall statement of the built structure was dominated by the round arches, exposed brick work, massive walls, piers and it all placed the building in Renaissance Architecture. The built structures in later period were constructed following the ideas of modern architecture.³⁸

Conclusion

Multan became one of the major cities connected with railway line in Sub-continent in the 3rd quarter of 19th century. British railway architecture was introduced in the city with the advent of railway system in Multan. Administrative as well as

³⁵ Davies R. H. *The Report on the Administration of the Punjab Territories for the year 1860-61*. Government Press Lahore. 1860. Pp. 73- 74.

³⁶ Krishen. *Climate Responsive Architecture*. Tata McG-Hill Delhi. 2001. Pp. 69-70.

³⁷ Begg J. *Annual Report on Architectural Work in India for the year 1911-1912*. Calcutta Government Printing Press India. 1912. Pp. 2-3.

³⁸ (About the analysis of colonial buildings in Lahore, See, Arif M. K. *Architectural Analysis of British Colonial Railway Residential Buildings in Lahore*. (PhD Thesis) University of Engineering and Technology Lahore-Pakistan, 2013.

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residential architectural structures were erected by the colonial power with the respect of climatic condition, security and local architectural traditions. Jack arched roofs, Skylights/dormers, circular pediments, central comparatively high main halls of bungalows, Iron trusses of Jack arched roofs, verandahs, chimneys, buttresses, circular arches, jalli of windows, semicircular arches, cornices, jalli of pediments, rectangular windows, vertical windows, series of vertical openings are the common features of administrative and residential buildings of railway architecture of Multan. On the other side, jack arched roofs, vertical chimneys, skylights/dormers, buttresses, curve pediments and verandahs are the unique and different features of colonial architecture of Multan.

Large verandahs, long corridors and high ceiling roof (jack arched) continued for a long period and hence became prominent feature of the colonial built environment. Jack Arched Roofs) became one of the important architectural element which provided stability and made the built structures stronger. British erected the buildings using Indian, Mughal, English and Indo-Saracenic styles of construction. Hence Railway architecture of Multan called Indo-Saracenic and Anglo Indian architectural style. Anglo Indian style was in fact amalgamation of English, Indian and Mughals. Unlike Mughal architecture, iron was used in British architecture. Due to the extreme climatic condition of the area thick walls, overhanging eaves and verandah around the structures were constructed. So with the respect of historical and architectural prominence, it is recommended that the representative buildings of British period in Multan such as main buildings of railway station ought to be conserved.