

Documentation and Manual Conservation Strategies for the Standing Structure of PACCA Fort Hyderabad Sindh Pakistan

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Abstract: Pacca Qila is a first class monument of 18th century, the wall is disintegrated from various spots and at some huge losses are recorded. There are various factors affecting the structure of fort such as human occupants, natural and environmental effects, can further deteriorate the Pacca Fort. In order to save this monument urgent conservation works such as documentation and conservation of fort's main gate and fortification wall needs to be done. In order to help the authorities an immediate Conservative plan and a project is required.

Keywords: Documentation, Manual conservation, Pacca Fort Hyderabad.

1. INTRODUCTION

The Royal Fort now famous as Pacca Qila or (fort made with backed bricks) was constructed by kalhora kings, Mian Ghulam Shah, in year 1768, on a rock close Shahi Bazaar, Hyderabad. The fortress occupy 36 acres of land and somewhat oblong in shape. The main outer wall of the fort is running along the hillock is grand with burnt bricks and decorated with kangaroos of unusual shape. The main entrance opening towards Shahi Bazaar. In 1789 the ruler of Sindh at that time Mir Fateh Ali khan displacement to the Hyderabad city. Mir Fateh constructed Mir Haram and other buildings to provide his family. In 1843 Britisher occupied the fortress and placed there military installations. Most of the buildings and houses were destroyed in blasts in and several times fire blasted in this fort. in 1857 Britisher erased most of the remaining buildings to place military personnel and equipment etc. In historical period of British official lived inside fortress.

1.1 LOCATION OF PACCA QILA:

The precise location of the Pacca Qila is; 25°3.98"N 68°22'21.67"E in the city of Hyderabad. The fort Pacca Qila is an early modern fortification and was constructed on the hillock, locally known as gujy,

around 1768 when the city of Hyderabad was founded by Mian Ghulam shah Kalhoro.



FIGURE NO: 1 location of Pacca Fort

1. DISCRIPTION ABOUT CONSTRUCTION OF FORT:

The fortification wall of fort is build on a lime stone rock which is the part of ganjo takar. Its diameter is about a mile and its perimeter wall to about two miles.. The total height of fort is about 80ft(including rock height and fort wall) but burnt bricks wall of fortress height is 40 to 50 ft. . Its enclosed area is about 36 acres. The width is varying from from base to top at different places such as wall width is 5ft at base and 2.9ft at the top.

The longer side of fort starts from east to west which is about 2430ft. The fortress wider side starts from north to south which is about 900ft. It is 3100ft from north(including broken part) and 3080ft from south.



FIGURE NO: 2 standing structure of Pacca Fort

2.1 BRICKS USED IN FORT:

According to various writers fort was constructed during kalhora periods but remaining part were completed by Talpur regime.in the fort wall 10"x7"x1.5" size bricks were used which are burnt bricks.

2.2 TOP DECORATED PORTION OF THE FORTRESS:

The top of the wall is decorated with the twin rows of merlons in which the bigger one in the front alternate the smaller ones behind. Further the walls are harnessed with machicolations.

2.3 ENGINEER AND MASON OF FORT:

The chief mason of fortress was Shafi Muhammad Multani and and fort was constructed under the supervision of Mirza Ahmed Khurasani.

2.4 THE MAIN ENTRANCE GATE:

The main gate of fortress was provided on northern side of the fortification where as a small gate was on the north eastern side during the Talpur period. The huge portal of fort consist of a deep pointed arch in which a heavy and strong wooden gate of roughly hewn logs fastened with tough clamps and nails and fixed with long iron spikes was pivoting.

3. PROBLEM STATEMENT OF FORT:

The outer fortification wall from north side towards railway station looks good but from all other sides the fort is badly eroded and near to collapse. The fortress take part to large change due to passage of time

especially human vandalism and unexpected natural conditions. At several places of the fortress the fortification wall is deterioration condition, various repairs efforts have further damaged its real ability. The wall's southern and eastern parts looks most effected and bumped out severely.

4. CAUSES OF DETERIORATION OF FORTIFICATION WALL OF PACCA FORT:

There are two major causes of deterioration of wall which includes;

A.destruction due to major events and incidents

B. environmental causes

A. destruction due to major events and incidents:

In 1843, in the battle of miani, British occupy the Pacca Fort. In 1857 British army accommodate troops and bulldozed most of the buildings inside the fort and used as a military base and arms depots. In 1906, arms depots caught fire causing great explosion and destroying a large portion of fort wall from fort gate to the road. This incident forced the Britishers to abandon the fort and move to Karachi.

1. The next major event to further destroy the fort was the partition of 1947 and rehabilitation of millions of refugees inside it without a proper rehabilitation plan. Thus with the passage of time migrant colonies within the fort grew slowly and steadily.

Pacca Qila is a protected monument under the Antiquity Act of 1975 which replaced Ancient monument's Preservation Act of 1904 . its section 22 says: " No development plan or scheme or new construction on, or within a distance of 200 feet of a protected immovable antiquity shall be undertaken or executed without the approval of the director General". Today the entire historical monument of fort is heavily encroached from all sides.

In 1968, a pipeline was laid in the fort which further weakened the fort's foundation.

Since no repairs of the fort have been carried out and people used its fortification wall as one of the walls of their houses, it has deteriorated badly. Lives of families who are living next to the wall are at great peril. A permanent rehabilitation plan is still in doldrums. The

fort is inhabited by over 20,000 families and 260 families living in proximity to the forts fortification wall that has been declared dangerous by the Building control authority.

Since the wall was not designed to support the residential needs and pressures, it has been by and large left fragile and hence sliding towards collapse.

In the absence of a planned sewerage disposal system, the people have built their own drains on individual level. In many places the drains are leaky, sunken or over flowing.

Resultingly, the water table has raised causing disintegration of its brick and mortar.

B. Atmospheric actions:

The atmospheric actions includes;

I. Impact of rain water:

The rain water penetrate directly into the wall's structure and do not drain out properly because the forts water chutes are also damaged and does not work properly which results heavy rain scorching away from their real place along with deterioration of fort's foundation and water chutes and original material of the wall.

II. Impact of sun radiations:

The fort wall is directly and constantly exposed to the sun radiation and due moisture in atmosphere, sun radiation further damage the wall material.

III. Impact of sewerage water:

During the migration different peoples occupy forts area and built drainage and sewerage lines along the forts wall. These lines are very dangerous to the fortification wall of fort.

4. BASIC ADOPTED METHODS FOR MANUAL CONSERVATION:

4.1 Manufacturing of burnt bricks:

The burnt bricks are manufactured whose properties must be related to the original burnt bricks used in the

construction of Pacca Fort in the ancient time. Therefore different steps should be taken for the manufacturing of bricks which are enlisted as;

A. Collection of mud from river side.

B. Manufacturing of burnt bricks.

4.2 Collection of mud from river side:

In the ancient time, mud was collected from the river side for the manufacturing of bricks, which were more durable than other bricks.

So for that purpose, restoration of originality in the structure of fort and make durable structure, mud should be collected from the river side particularly from the Indus river side.

4.3 Manufacturing of burnt bricks:

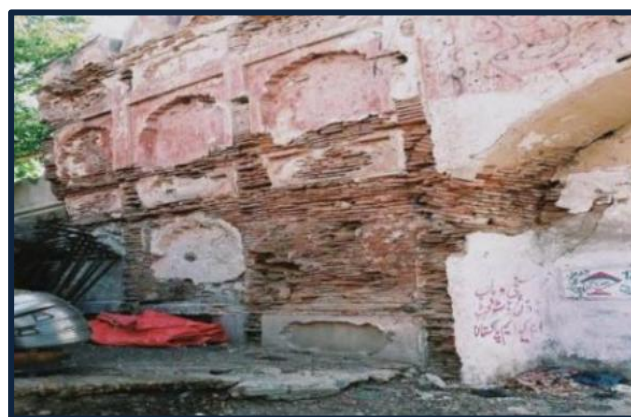
The bricks should be burnt in the kiln at a proper temperature. Presently these type of bricks are made at the Tandohyder area which is situated at Hyderabad Sindh Pakistan.

5. SURVEY OF PACCA FORT:

According to survey Pacca fort wall is divided into following categories:

5.1 main gate of Pacca fort:

The main gate of fortress is on northern side and consist of a deep pointed arch. The main entrance gate of Pacca fort is further divided as;



PHOTOGRAPH NO: 1



PHOTOGRAPH NO: 2

External side of main entrance of fort



PHOTOGRAPH NO: 3



PHOTOGRAPH NO: 4

External side of main entrance of fort

5.2 Fortification wall of Fort:

The fortification wall depends on the various parts such as fort's foundation, middle portion of wall and top ornamental parts of fort. It also includes forts water chutes and drainage chutes.

Fort wall is also divided into internal side and external wall of the fort. The internal wall is visible only near the entrance gate. The wall is semi treated whereas other portion is ruined due to various reasons.



PHOTOGRAPH NO: 5



PHOTOGRAPH NO: 6



PHOTOGRAPH NO:7



PHOTOGRAPH NO: 8



PHOTOGRAPH NO: 9

The bottom wall of fort is used by the encroachers in their new constructed buildings shops, houses etc, just above these buildings fortress wall is visible.

5.3 CLASSIFICATION OF STRUCTURE OF PACCA FORT ACCORDING TO PREVIOUS CONSERVATION WORK:



PHOTOGRAPH NO: 10

Treated portion of wall



PHOTOGRAPH NO: 11

Semi-treated portion of wall



PHOTOGRAPH NO: 12



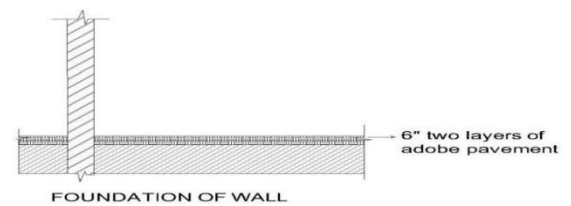
PHOTOGRAPH NO: 13

Wrongly Treated Portion of wall

6. DOCUMENTATION OF PACCA FORT:

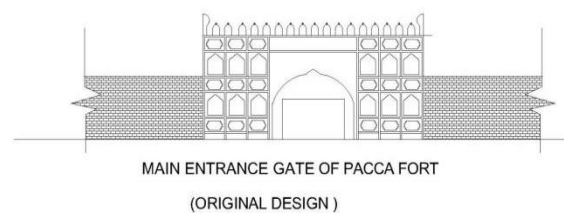
There are similar kind of structural problems are discovered in the fortification wall and main entrance of the Pacca Fort. Therefore an imaginary wall is taken

as example and several deteriorated conditions are added in same drawing.

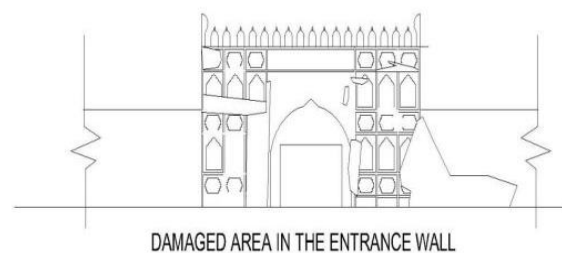


Drawing no:1

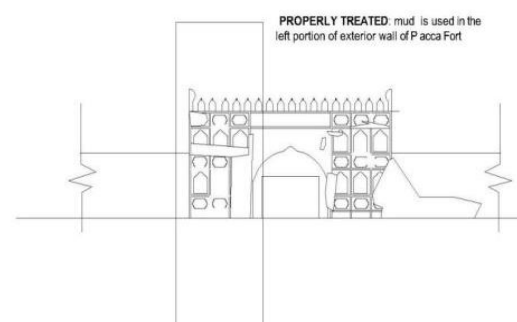
The above drawing show the foundation of fort wall which can be safeguard by different procedures but most specific is that to provide 6" two layers of adobe pavement.



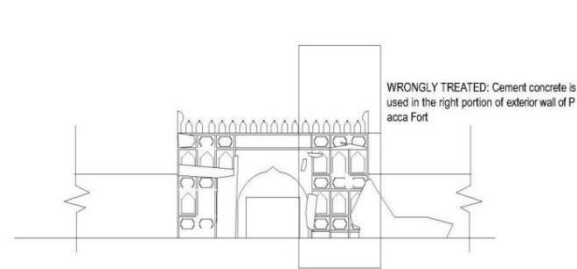
Drawing no:2



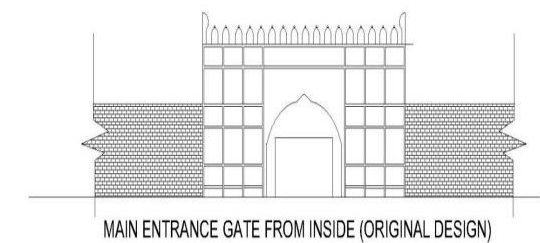
Drawing no:3



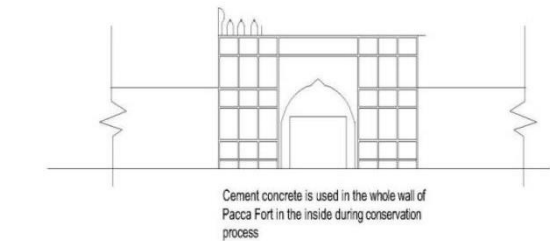
Drawing no:4



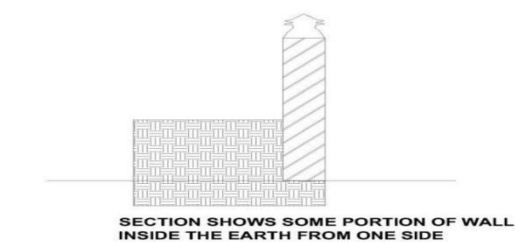
Drawing no:5



Drawing no:6



Drawing no:7

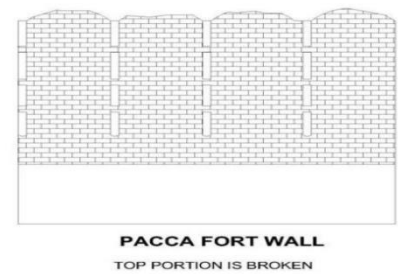


Drawing no:8

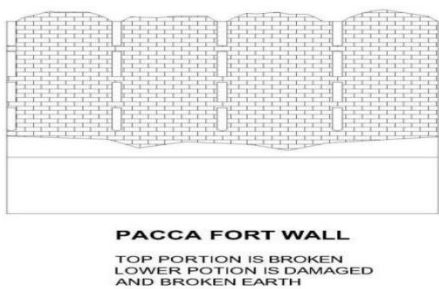


Drawing no:9

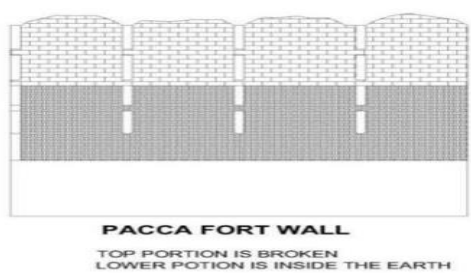
Documentation of wall inside the earth



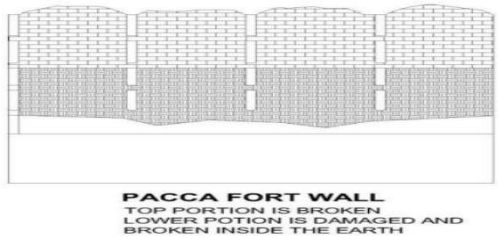
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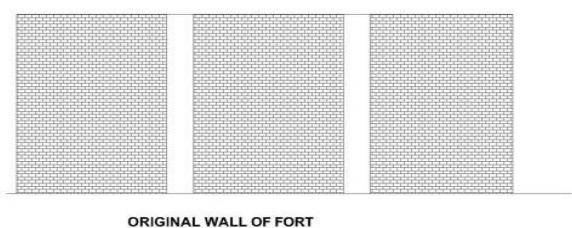
Drawing no:11



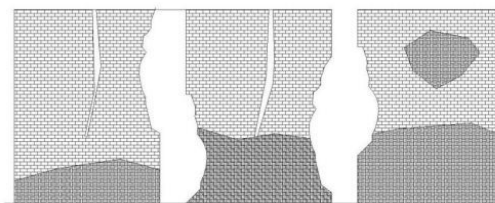
Drawing no:12



Drawing no:13



Drawing no:14



BROKEN AND DAMAGED SIDES OF FORT WALL
SOME AREAS IS BADLY ERODED
CRACKS APPEAR IN THE WALL

Drawing no:15

7. RECOMENDATIONS FOR THE CONSERVATION OF PACCA FORT:

The Pacca fort Hyderabad needs urgent conservation work which safeguard its original beauty because various human actions and climatic conditions can harmfully effect its originality. Following measures should be adopted for the conservation of Pacca Qila Hyderabad.

7.1 Manufacturing of local materials:

The first step for the conservation of Pacca Fort is manufacturing of local material therefore the manual backing of bricking is suggested and if it contains any salt that must be leached out in large tubs for 24-8 hours by means of changing its water after every 8 hours. The storage of material in very limited number may be allowed otherwise every time fresh soil and fresh bricks shall be used.

7.2 Underpinning:

The process of underpinning is adopted where the structure is weak and it need support in the form of any solid material from its foundation which increase its strength. The fort needs underpinning in that portion which is weak and need immediate support to with stand against weather and other human actions.

In the process of underpinning a careful studies and the state of structure can be considered is very essential therefore each wall should be processed attentively and take every step carefully.

7.3 Filling of cracks:

A strong strategy should be adopted for the filling of cracks. In fort's wall various structural cracks are appear they need urgent work.

7.4 Provide buttresses:

The process of buttressing with a brick wall is more well grounded and can be easily manageable. It is appropriate method to provide buttresses to a tilted wall that will also provide help in site preservation if it is handled and implemented wisely.

7.5 Replacement of broken or missing kongras

Every broken part of the wall as well as top decorated part of the fort can be replaced by material which is related to the original material such as burnt bricks and chiroli.

7.6 Repair and maintenance of water and drainage chutes:

The water and drainage chutes of fort are badly damaged and their material is eroded. Therefore this potion of fort need serous consideration related to their conservation and preservation work. The eroded bricks can be removed and placement of new burnt bricks. Conservation work related to replacement and maintenance of bricks of fort should be done in such a way so that these chutes can work in a proper way and do not manage further to the structure.

7.7 Using chemicals on the surface:

Some suggestion of using chemical on the surfaces that are under threat but before using any chemical past on the surfaces it must be confirmed that the chemical will work in open dew, dust, salts and will be able to behave 48-52°C of temperature. As the stresses develop in structure would be very high for any chemical past to survive.

7.8 Results:

The results of conservation techniques using local material seems very much successful without any harm to the site. Moreover, in these conservation techniques life of the monuments can be further enhance by means of reducing threats of natural environment especially infiltration of salt. The conservation techniques adopted for underpinning undermined and eroded walls, covering of mud structures, mud Pushtas and buttresses to leaning walls are suitable and reliable method that will help in better preservation of site if adopted and exercised wisely. Therefore manual conservation will be beneficial any action regarding using machines will be considered as disastrous act.

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