

Construction Defects in Historic Buildings and Monuments

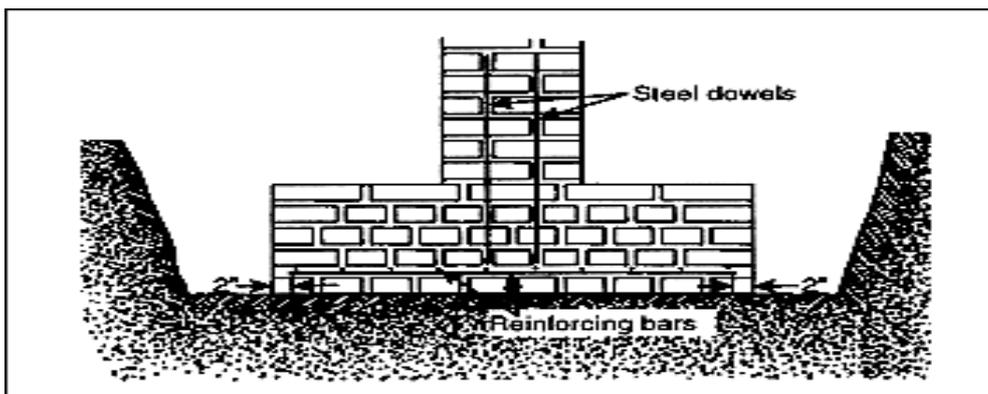
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ISSN (p) 2521-5027Aamir Ahmed Memon ¹, Khair Muhammad ²¹ Culture Tourism and Archaeology Department Govt: of Sindh² Culture Tourism and Archaeology Department Govt: of Sindh

Abstract: The article construction defects are aimed to investigate and diagnosis of the cause(s) responsible defects has to carried-out thoroughly and systematically. The masonry work of brick of old monument which comprises the problems of cracks and palling walls. The proper identification of the causes is essential of appropriate remedial work which is too devised.

Keywords: *Investigate, construction, identification, remedial-work.*

Introduction:

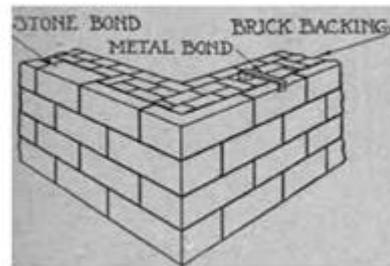
The masonry which comprising the columns, piers, lintels, arches vaults, cupolas, domes, abutments, flying buttresses etc using stone or bricks in lime or mud mortar is week in tension. Where the masonry being porous which absorb the moisture and give birth to organic, physical and chemical attack. The construction of many historic buildings and monuments is defective due to its thick stone or brick walls were generally constructed with rubble fill in the core external and internal brick skins or intersecting walls were not properly bonded more common weakness occur where facing brick headers were deliberately cut in half so called as "snap headers". The headers were provided occasionally to a nominal bond between the facing and core. It was the common for the outer face especially in brick work to be constructed latter, and the headers were poorly bonded into pockets formed in the proceeding work. When front elevations were faced with rubbed and dressed brick laid in thin putty joints, the depth of individual facing courses was less than in the core brick work. With the result was that only occasionally could be bonded by the introduction of uncut headers from the facing skin into the core. Same is the condition in stone masonry. Another common (but poorer) form of construction comprised a facing skin of ashlar and core of brick work or rubble masonry bonded together with iron or wooden dowels. The wooden plates were put in the masonry walls which by shrinking and, in too many cases, by decaying have weakened the walls.



Ashlar facing with brick backing

-Composite masonry
rough tooled,
chamfered stones are
provide in facing while
brick work is provide
in backing.

-Alternate courses of
ashlars may be header
under each projecting
course of
ashlar, header brick
should be used.



Another source of trouble is where materials of different hardness are bedded together, or where large units are bedded adjacent to small ones. Brickwork faced with butt joined marble slab, or the more frequent example of a soft stone pier of many units surrounded by a cluster of long purbeck marble shafts, are typical examples of situations in which unequal materials are yoked together to their mutual disadvantage under load, softer or many jointed materials compresses, and the load falls unfairly on the smaller and hard units, which may then cracks or spall.



The church is accessed centrally, from the now red and green Purbeck marble colonnaded archway

Most of the historic buildings and monuments are not provided with damp proof courses. Many historic buildings have shallow foundations. It has been observed that few historic buildings and monuments stand in the state in which they were originally built. All others have undergone, in most cases, extensive additions and alteration in their structures and fabric. These alterations have altered structural behavior of whole building. Since most of the historic buildings are built on the basis of experience, if any data exist about the actual quality of structural materials and the resistance of their structural elements and/ or system to vertical and horizontal loads, which are needed evaluating their strength and selecting suitable repair procedure.

Conclusion.

It is important at the outset to distinguish clearly between the causes(s) of defects and the agency or factor (source may be more descriptive) that has so to speak activated the causes. The causes of a defect may be identified fairly easily as there are really only these basic causes of defects namely:

Dampness

Movement (Physical Change)

Chemical (Biological Changes).

Therefore, three construction defects particularly in historic buildings and monuments can have many sources and some of them are interactive.

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