

Paper: Materials and Methods
of Construction

Submitted By Muqhis Ullah Khan

Registration no : 16745

Department B.Tech Civil

Iqra National University

Peshawar

Q5(B)

Ans- My invention relates to the fastening of cables to fittings, and it relates more particularly to the fastening of relatively stiff cables such as those made of steel having a high carbon content, to fittings so small that said cable must be bent sharply to form a knot. Thereon this application is a continuation in application of United States Patent for Rope Fitting, which matured into United States Patent No 2,192,236 granted March 12, 1940 in the art of fastening rope and cables to various objects, there have heretofore been developed ~~to~~ two general methods.

First, stiff cables have commonly been fastened by some kind of clamp that held said cable by gripping it. In some cases, molten metal such as zinc has been poured around the cable to hold it in a socket.

Q 4 (B)

Ans:- many structures are built with foundations that are inadequate for the soil conditions existing on the site. Sometime due to the lack structures are often built on marginal land that has insufficient bearing capacity to support the substantial weight of a structure. A foundation usually rests in the top-most

layer of soil and if the soil conditions change it may no longer be able to support the full weight of the foundation.

Identification of foundation failures and providing needful treatment is very important is very important since, the failure modes of foundations such as

- ① Drag down and heave.
- ② Lateral movements.
- ③ Load transfer failures
- ④ Vibrating effects.
- ⑤ floating and water level changes.
- ⑥ Design and construction errors. etc.

Q2 (A)

Metal types:->

① Lead :->

The low melting point of lead permitted its use on a wide scale throughout human history. Lead was one of the first to be made into sheet metal for architectural purposes. Lead, ~~antit~~ is not subject to rust and has been a popular roofing material.

② Tin :->

is too soft to be used by itself for architectural purposes so generally falls into two categories: the alloying of tin with other

metals such as copper to form bronze, and the coating of tin on harder metals, such as tinplate iron or steel. Architectural bronzes usually contain about 90% copper and 10% tin, although the content may vary widely. The term tin ceiling is a misnomer and early manufacturers did not use the name. ~~Manufacturers did not use~~ However, persons who worked with steel metal tinplate was a type of architectural metal.

③ Zinc:⇒

Pure zinc was used for roofing in Belgium, France and Germany. Where it replaced more expensive copper and lead in roofing.

Starting in the 1820s Belgian Sheet Zinc was imported in America used by ~~the~~ builders in New York City and elsewhere. Pure Zinc is subject to creep at ordinary temperatures.

④ Copper :->

is a very durable metal, withstanding corrosion when forming a bluish-green patina that variably consists of copper carbonates, sulfates, sulfides and chlorides. Sheet copper used as roofing is lighter than slate, tile, or lead.

Roofing copper can be folded over curved frameworks for cupolas and domes.

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Aluminium: =>

much like Copper

Aluminium is highly resistant to corrosion. It also has the added benefit of being a third lighter than steel with comparable strength. Aluminium can also be estimated that of the estimated 900 million tonnes of aluminium produced since 1880, three quarters is still in productive use 35% of a building

Q1A Give The Characteristic of Earth used for manufacturing of Bricks

Ans This paper presents an innovation method for the production of masonry bricks which combines earth compaction and quick firing at low temperatures earth bricks were manufactured according to three different methods i.e. extrusion, Standard Proctor Compaction and hypercompaction to 100 MPa. All bricks were fired inside an electrical furnace by rising the minute to 230, 455, 825 and 1000 °C after which the furnace was turned off and left to cool to the temperature atmosphere with the brick inside. These firing temperatures and times are significantly lower than those employed for the manufacture of commercial brick which are typically exposed to maximum of 1100 °C for at least 10h. Brick Industry Association 2006. A testing campaign was performed to investigate the effect

of quick firing on the porosity strength water durability and moisture buffering capacity of the different brick. Quick firing of hypercompacted brick at moderate temperatures between 455 and 640°C is enough to attain very high levels of compressive strength between 29 and 34 MPa with a good to excellent moisture buffering capacity.

Manufacturing of bricks:

The environmental impact due to cement and burnt clay industries are increasing continuously also cement concrete block and burnt clay bricks are increasingly becoming costly due to excessive cost of fuel required to manufacture the cement or burning the clay while the soil suitable for construction is available everywhere in the world. The paper presents the results of an experimental investigation undertaken at Mosul Technical Institute to assess the potential for unfired compressed

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earth bricks using locally soil as construction material stabilized with crushed limestone obtained from the waste of c. masonry factories the wet soil molded into bricks by manual press known globally as (ANVA RAN) exert high pressure the press was manufactured locally for the research purposes conducted in the institute different percentages of crushed limestone by weight passing sieve No 8) were added namely (4, 12, 17, 18 and 20%) to the soil obtained from 20 km west of Mosul to reduce its expansiveness if any and in a trial to improve its characteristics (1) The results showed increase in compressive strength at 4% and sharp decrease with higher percentages.

Q 3B

Ans Plastering and pointing are two common terms in building construction. However, both are not the same. The differences between plastering and pointing are as following:-

- (1) The main object of plastering is to protect the exposed surface of the masonry. That's why mortar is applied to the total surface of the masonry. But in pointing, only joints are properly filled with mortar.
- (2) Cement sand lime com. mortar is used in plastering. But only cement mortar is used in pointing.
- (3) Plastering is done both the inside and outside surface. Pointing is done only on the outside.
- (4) Larger amount of materials is required in plastering work. On the other hand, less amount of materials is required in pointing.

Q3A

Ans Comparison of Brick masonry, and Stone masonry, brick masonry, Stone masonry,

masonry is the art of the construction in brick or stone except in dry masonry. Some mortar is used to bind to the bricks or block of some stones with each other. There are in general two types of masonry viz bricks masonry and stones masonry. Bricks masonry is that in which bricks are used while in stones masonry stone blocks are used.

Comparison of brick masonry Stone masonry.

- (1) Generally brick masonry is cheaper than stone masonry and can be easily constructed.
- (2) The minimum thickness of wall in stone masonry can be 35 cm whereas in brick masonry wall of 10 cm thickness can be constructed.

(3) The brick masonry constructed proceeds very quickly whereas the Stone masonry construction proceeds very slowly as the bricks are handy whereas stones are not.

(4) Skilled masons are required for Stone masonry construction whereas unskilled laymen can do the brick masonry work.

(5) brick masonry requires less mortar whereas Stone masonry requires more mortar which cannot easily be estimated.

(6) Stone masonry is stronger and more durable than brick masonry.

(7) It is not essential to plaster the Stone masonry walls whereas brick walls have to be plastered and painted when exposed to the open atmosphere.

(8) bricks are of an absorbent nature and by absorbing moisture make the building damp but stones are less absorbent and hence Stone masonry walls or buildings are more damp proof.

Q5A

Ans Dampness in Building may occur due to bad design faulty construction and use of poor quality of materials dampness not only affects the life of the building but also creates unhygienic conditions of the important items of works in the construction of a building. The various defects caused by dampness to building may be summarized as under:-

- 1 It cause efflorescence which may ultimately result in disintegration of brick stones tiles etc.
- 2 It may result in softening and crumbling of plaster.
- 3 It may cause bleaching and flaking of paint with the formation of coloured and rotting of timber patches.
- (4) It may result in the warping buckling and rotting of timber.

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5 It may lead to corrosion of metals.

6 It may cause deterioration to electrical fittings.

7 It promotes growth of termites

8 It creates unhealthy living conditions for the occupants.