



Dear Friends

The pandemic is yet to be over; rather it came back with a second wave across the nation. We shall all be required to keep up the good health and hygiene habits to keep ourselves, our families and our all associates or colleagues safe. It is not yet fully controlled, newer strains are also being reported from few parts of the world. We all need to be highly attentive and careful.

We would like to extend our sincere thanks and gratitude to the readers who have already enriched and encouraged us with their valuable suggestions, advice and requests.

As we are receiving lot of queries on saltpeter action in walls and its treatment and repair. In this issue, we shall have a discussion on this, predominantly.

Hope you shall enjoy reading. Keep giving us your valuable feedbacks and suggestions for further improvement.

Happy reading. Keep well, keep safe.

SALTPETER EFFECTS ON WALLS:

Most of us active in the construction field, noticed whitish marks on brick walls of basement or ground level or even at higher levels. These are, in most of the cases, saltpeter deposits made of soluble salts that come into contact with oxygen and excess moisture.

Soluble salts can penetrate into buildings easily with moisture which can further transport them. Therefore, understanding of moisture percolation and movement processes is essential to prevent salt-induced damage. This promotes the deterioration of both new and old buildings, which usually do not have horizontal waterproofing. It is accepted and observed worldwide.

MAIN CAUSES OF SALTPETER IN BUILDINGS

- Presence of water soluble salts (sulphates and chlorides etc.) in building materials.
- Use of porous /under burnt bricks
- Building components exposed to contaminated soil and water.
- Porosity in structural members.
- Inadequate water proofing.

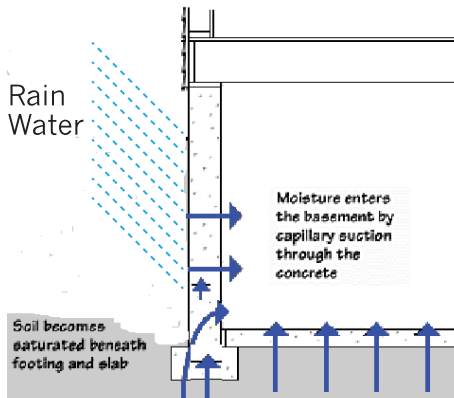


MOISTURE MOVEMENT MECHANISMS

Capillary suction moves moisture through porous materials. The water can be drawn upward through small pores in the concrete footing and slab and laterally through walls. This effect creates the ring of dampness seen at the base of many walls. This is very common at cold joints. Water can rise by capillary draw significantly as shown below: Soil type and amount of capillary rise:



- Gravel - Less than a few inches.
- Sand - 1 to 8 feet.
- Silt - 12 to 16 feet.
- Clay - 12 to 20 feet.



To check the moisture movement in building, we should firstly know the main reasons for ingress of water in the buildings, so that remedial measures could be taken. Most significant causes of Water Ingress in buildings are:

- Ground water/moisture in and around foundations – higher water table.
- Improper roof drainage or faulty/improper water proofing.
- Flaws in parapet walls, coping etc.
- Poor workmanship of water supply and sanitary works – soil pipe sealing and jointing.
- Leaky sunken floors of toilet and kitchens; water makes its way inside sunken floors from joints of tiles.
- Improper construction of chujjas and lintels or slab and walls.
- Improper filling of scaffolding holes.
- Usage of faulty/contaminated materials – porous or under burnt bricks or bricks with high water absorption.



- Faulty drainage system, blockage of drains and pipes, deterioration of pipes due to weathering effect.
- Non approachable ducts – cleaning of these ducts is difficult.
- Damaged/defective construction of septic tank near building structures.
- Construction of soak-pit near building foundations.
- Cracks in the structural elements due to inappropriate design, shrinkage, poor specifications or workmanship.



SALTPETER ON WALLS: WHY IT REQUIRES ATTENTION AND CARE

- The appearance of whitish spots on masonry walls is not only a simple cosmetic problem but this can also be a problem for the health and well-being of the residents of the home.
- There are numerous risks associated with this deposit's presence. There could be manifestation of mould or fungi. An increased proliferation of dust mites that can lead to allergies and other respiratory problems for residents.
- In addition to health risks, saltpeter can cause paints and plasters on your walls to crumble, many a times bricks also get eroded.

Repair and care methods shall be discussed in the next issue

Continued from the previous issue:-

6. POOR CONSTRUCTION PRACTICES

There is a broad variety of construction practices that lead to concrete cracking. Normally, improper construction practices are due to ignorance, carelessness, greed or negligence. Main causes for poor construction practices:

- Improper selection of materials.
- Selection of poor quality cheap materials.
- Inadequate and improper proportioning of mix constituents of concrete, mortar etc.
- Inadequate control during various steps of concrete production such as batching, mixing, transporting, placing, finishing and curing.
- Construction overloads induced during construction can frequently be more serious than those imposed during service.
- Inadequate quality control and supervision causing large voids (honey combs) and cracks resulting in leakages and ultimately causing faster deterioration of concrete.
- Improper construction joints between subsequent concrete pours or between concrete framework and masonry.

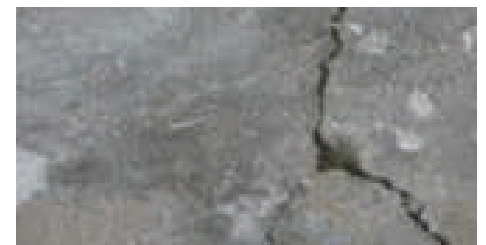


Fig.9: Concrete building cracking due to poor construction practice; water added to fresh concrete.

- Addition of excess water in concrete and mortar mixes.
- Lastly, poor quality of plumbing and sanitation materials and practices.

Remedial Measures

- Monitoring construction process properly.
- Utilizing good quality materials at the time of construction.

7. IMPROPER STRUCTURAL DESIGN AND SPECIFICATIONS

Several problems can occur due to incorrect structural design, detailing, and specifications.

Errors that may occur at this stage include inadequate thickness, insufficient reinforcement, incorrect geometry, improper utilization of materials and incorrect detailing.

Problems encountered due to those errors include cracking due to insufficient reinforcement, excessive differential movement due to improper foundation design, increased concentration of stresses as a result of poorly designed re-entrant etc.

Additionally, it is of crucial importance that the designer considers the environmental conditions existing around the building site.



Fig.10: Major structural crack in beam due to poor detailing practice.

Remedial Measures

Architects, Structural Consultants and Specifiers shall consider the following measures to avoid cracking and subsequent deterioration of structures:

- Proper specification for concrete materials and concrete.
- Proper specifications to take care of environmental as well as sub-soil conditions.
- Constructible and adequate structural design.
- Proper quality and thickness of concrete cover around the reinforcement steel.
- Planning proper reinforcement layout and detailing the same in slender structures to facilitate proper placing of concrete without segregation.
- Selection of proper agency to construct their designs.

To be concluded in the next issue

Quality products of Nuvoco Vistas Corp. Ltd.



Corporate & Registered Office:
Nuvoco Vistas Corp. Ltd.

Equinox Business Park, Tower-3, East Wing, 4th Floor, LBS Road, Kurla-West, Mumbai - 400070.

Disclaimer: The information in this newsletter is only indicative. No liability is assumed for any inconsistency and/or deviation.
Write-up contributed by panel of experts from our Construction Development & Innovation Centre, Mumbai.

For information on home building & placing orders, visit www.nuvocohomeassist.com or scan this QR code



For technical assistance, do call our Toll Free No.: 1800 345 6666
WhatsApp 'NUVOCO' to 98300 17272