



## A Comparative Study on Waterproofing System

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**Abstract:** A building is a human made structure used for supporting various benefits of human society. Construction quality is the major factor and important task to deal with and avoid before time degradation of a structure. Water related problems are the silent killers and playing a virtual role of a maintenance and durability of the building. Every building can be preferred as it also addresses the problems of maintenance involved apart from the natural factors occupancy load water is the prime source of degrading or harming a structure. Right from basement to the plaster level the structure should protect water related problems. The main objective of this paper is to study the different waterproofing system used on construction sites of DROBLOCK SYSTEM WATERPROOFING & CONSULTANTS, VADODARA and a comparison is made between them to know their feasibility and usage.

**Keywords - Construction Damage, Waterproofing, Brick Bat Coba, Damproof coating, Dr Fixit, Membrane waterproofing, Injection grouting.**

### I. INTRODUCTION

'Waterproofing' is a system that provide resistance against the ingress of water into the core of concrete structure. Higher and stronger resistance against the water ingress will result in stopping the water from percolating into the body of structure and this effect is called Waterproofing.

While designing a suitable treatment of waterproofing, it is essential to know and understand the type of building (industrial / Residential), Study of waterproofing methods, study of identifications of problem in Basement area, toilet area, balcony, terraces, lift ducts & water tanks these are the main part of building structure which most probably get affected due to leakages problems. Leakages through construction joints due to inappropriate use of vibrator during compaction process is the main reason which leads to seepage problem in future. Less curing, poor supervision, old structure, bad quality of material uses this are the causes of leakages through the construction.

### II. OBJECTIVE OF THE STUDY

- 1) Analysis of different types of present waterproofing system.
- 2) Possible revised method to be used in the construction industry.
- 3) To study the executions of waterproofing treatments on construction sites.
- 4) To introduce a prescribed waterproofing system by understanding the cases study work.
- 5) Study of waterproofing chemicals and materials which used on the case study site.

### III. WATERPROOFING METHODS USED ON SITE

#### 3.1 Brick Bat Coba

Brick Bat Coba is mostly used method in waterproofing. The surface is cleaned by hard wire brush and washed with water. The surface should be free from any oil, dust and so forth. Laying of Soaked Brick bats (pieces) over new mortar, this goes about as a protection for warm solace. Surface brick Layer has thickness in the middle as 70 mm to 150 mm (Average thickness of 110 mm). It is fundamentally giving inclination or slope to the RCC roof. So water won't continue gathering there, in any case there is leakage, splits, organisms, coming up short of structures. This method is normally done at Toilets, Terrace, and Basements, Balcony.



Fig 3.1. Brick Bat Coba

### 3.2 Membrane Type Waterproofing

Membrane Type Waterproofing is a film is a slight layer of watertight material that is laid over a surface. This layer is persistent and doesn't permit water to go through it. For instance, a waterproofing film could be laid over the basic section and underneath the completion tiles. These films are made out of slim layers of waterproof material. Most are around 45gms thick. There are basically 2 sorts of films, sheet-based layers and chemical coating are applied. In a perfect world, a waterproofing layer should be solid, adaptable, tear-safe and versatile so it can stretch to cover breaks and furthermore move with the structure. We can also do brick bat coba, ips waterproofing on it.



Fig 3.2. Membrane Type Waterproofing

### 3.3 Injection grouting

Injection grouting is a procedure of filling the breaks, voids or honeycombs under tension in cement or stone work basic individuals for fixing of splits, fortifying of harmed cement or brick work basic individuals. Grout is a stream capable plastic material and should have immaterial shrinkage to fill the hole or voids totally and should stay stable without splitting. It is mainly used in lift basement. There are various sorts of grouts utilized for fix and reinforcing of cement and brick work basic individuals. It is a great technique of waterproofing to stop seepage in walls. sbr, acrylic polymer is also used in slurry for good results.



Fig 3.3. Injection grouting

### 3.4 Damproof Coating:

Damproof coating is a fiber reinforced elastomeric liquid applied waterproofing membrane. This method is suitable for exterior wall, balcony, and terrace like components. This method is very thin, fast and durable coating.

Advantage of this method is to protect from dampness, leakages. And make room temperature decrease and make it cool.

Cost of this product: Asian paint smart care damp proof 20 liters bucket-5500 Rs/-.

Berger paint damp shield elasto 20 liters bucket-4600 Rs/-



Fig 3.4. Damproof Coating

#### IV. COST COMPARISON

Table 4.1: Comparison of Rates in Waterproofing

| Parameter | Brick Bat Coba          | Membrane Coating        | Injection Grouting | Damproof Coating      |
|-----------|-------------------------|-------------------------|--------------------|-----------------------|
| Rate      | 70 to 100Rs/- per sq.ft | 170to 200Rs/- per sq.ft | Rs/- 900 per grout | 50to 55Rs/- per sq.ft |

Cost may differ on various locations

Table 4.2: Comparison between Waterproofing Chemicals

| Parameter               | Dr. Fixit                     | Sika                         |
|-------------------------|-------------------------------|------------------------------|
| Cost                    | Rs/- 160 to Rs/-550 per Litre | Rs/- 40 to Rs/-340 per Litre |
| Guarantee               | 5 to 12 years                 | 3 to 10 years                |
| Maintenance Period      | After 12 years                | After 10 years               |
| Availability in Market  | Easily Available              | Easily Available             |
| Type of Labour Required | Skilled and Unskilled         | Skilled and Unskilled        |
| Product Quality         | Best                          | Good                         |
| Product Durability      | 8 years                       | 7 years                      |

#### V. CONCLUSION

- 1) We have studied about on various type of waterproofing methods..
- 2) From the observation, we came to known that Brick bat coba waterproofing system is better than other methods.
- 3) Most of waterproofing issues occur during the application of waterproofing material. These problem occur due to lesser quality of material
- 4) The selection of waterproofing type is depend upon the particular site, location and cost of the material.
- 5) Most of the waterproofing issues occur during the Application of waterproofing material. These problem occur due to lesser quality of waterproofing materials and poor workmanships
- 6) We can say that on most of locations the most appropriate synthetic is Dr. Fixit and the most feasible method of waterproofing is Brick Bat Coba.

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