Research on Waterproof Technology of Construction Engineering

Mohammed Moiz Salah[1], Mirza Soman Beig[2]
[1, 2] Dept of MBA(Project And Construction Management)
[1, 2] MIT ADT University, Pune-412201, Maharashtra (INDIA)

Abstract- *Waterproof construction may be a comprehensive, practical, strong engineering, it relates to a water-proof material, waterproof engineering design, construction technology, building materials management and other parties, use function of building engineering plays a vital role. No seepage leakage, to ensure smooth drainage. The building features a good waterproof and therefore the use of the function is that the basic requirement of building waterproof technology. This paper according to the requirements were the elaboration and discussion.*

Keywords- Building Waterproof; Waterproof Material; Waterproof Technology

I. INTRODUCTION

Waterproof construction engineering is one of the most important functions of building products, is related to the structure of the use value, use and health conditions, the influence to people's production activities, the quality of work and life, to ensure the engineering quality has an important role. With the continuous improvement of social living conditions, people pay more and more attention to their quality of life, the requirements of the waterproof conditions continue to increase. In recent years, with the development of social science and technology, the new waterproof material and its application technology are developing rapidly, and it is developing from the multilayer to the single layer, from the hot construction to the cold construction direction.. In the face of scientific and technological progress and updating, it is important to master the construction preparation and quality of waterproof project, which is of great significance to the development of construction engineering..

Waterproof building is a comprehensive and practical engineering technology, which plays a vital role in the function of building engineering.. The poor quality of waterproof construction is the direct cause of the leakage of waterproof project.. In order to improve the quality of waterproof engineering, is more important, in the waterproof engineering design and construction, easy to cause the weak parts of the local damage should set the enhancement layer, to improve the overall ability to fortify waterproof layer, prolong the service life of the waterproof layer. Waterproof project is a systematic project, it relates to waterproof material, waterproof engineering design, construction technology, the management of buildings and other aspects of the building. Building waterproof engineering task is based on the aspects of factors, comprehensive evaluation, is selected to meet the requirements of high performance waterproof material, waterproof engineering design of reliable, durable, economical, rational, seriously organize, careful construction, improve maintenance, maintenance management system, to meet the buildings and structures of waterproof and durable years and achieve high quality of waterproof engineering and good comprehensive benefits. Waterproof engineering quality building waterproof engineering overall quality of the request is: no leakage, ensure the drainage is smooth, so that the building has a good waterproof and use function. The best quality of building waterproof engineering we can get is closely related to waterproof material, waterproof design, waterproof construction and maintenance management, so we must pay high attention to it.

II. WATERPROOF TREATMENT OF BASIC LEVEL

Waterproof layer is attached to the base of the main structure, its quality directly influences quality of waterproof layer, main structure and leveling layer stiffness, smoothness, strength, surface slope accurately, perfect surface, without sand up skin, joints, the basic water content is to ensure the waterproof layer construction quality, waterproof engineering quality of the foundation. The construction conditions of the waterproof layer construction condition of the main points of the weather conditions of the construction conditions or not directly related to the construction quality, waterproof engineering most open operation, the climate factors. Construction period of rain, snow and temperatures lower than 5 DEG C or higher than 35 DEG C will affect the waterproof layer construction quality, also hinder the construction workers to smooth the operation construction. Hot towel roll and solvent based coatings can be in more than 10 DEG C temperature conditions construction; asphalt; modification of asphalt and polymer membrane should not be below 0 DEG C construction; asphalt base coating, polymer emulsion coating and rigid waterproof layer, not 5 degrees below the

temperature in construction; temperature more than 35 DEG C is all the waterproof layer are not construction; hot summer in the middle of the night dew, level 5 following wind sand dust weather effects and primary bonding, pollution base shall be of the waterproofing construction operation. Pay attention to the materials used in the waterproof layer of waterproof layer and the construction of relevant levels cross cutting issues must be for the purpose of ex factory quality certificate and test report sheet, also at the scene before use must to do waterproof test, qualified rear can use. Associated with the waterproof layer level is the leveling layer, vapor barrier layer, insulating layer, isolation layer, protective layer etc.. The construction of waterproof layer often cross operation with related layers, the construction quality of these levels has a great influence on the quality of waterproof layer, and even affect the success or failure of waterproof project.. Pay special attention to the construction of the protection layer, must not touch bad, punctured waterproof layer.

III. SELECTION OF WATERPROOF MATERIAL FOR BUILDING

3.1 Traditional building waterproof materials and new building waterproof materials, the difference between the traditional building waterproof material is refers to the traditional petroleum asphalt felt paper births, asphalt coating waterproof material. This kind of waterproof material exists on the temperature sensitive, tensile strength and elongation rate low, aging resistance performance is poor shortcomings, especially used for waterproof engineering of exposure, high and coldness performance isn't good, easy to cause the aging, cracking, deformation and fracture and rotting phenomenon. This kind of waterproof material although has stipulated the waterproofing for the four felt three oil, to prolong the durability, but increase the thickness of the waterproof layer, but also increase the labor intensity of workers, especially for who roof shape complex, more protruding part of the roof of the roof, the construction is very difficult, it is difficult to guarantee quality of, also increased the problem of maintenance.

New building waterproof materials is compared with the traditional petroleum asphalt felt and auxiliary materials, and other traditional building waterproof material, the word "new" has two meanings, one is "new materials", the second is that the construction method of "new". Improve the performance of traditional building waterproof material and improve the waterproof function, the normal waterproof materials become waterproof "new" material and is an efficient way and therefore the asphalt for catalytic oxidation treatment, the asphalt at low temperature cold brittleness has been fundamental changes, to make high quality oxidized asphalt, fetal asphalt felt paper performance has been greatly improved, on this basis with glass cloth tire and optical fiber tyre to gradually replace paper births, thus further overcomes the low fetal paper strength, elongation, oil on the shortcomings of low, improve the quality of asphalt.

Waterproof material is the important part of waterproof design, which has the decisive significance.. There are many kinds of materials, different forms, different properties and different construction methods.. So that the selected materials must adapt to the engineering of hydrogeology and engineering geology, structural type, construction season, local climate, building functions, and special parts of waterproofing materials for specific requirements.

3.2 Construction site requirements for selection. Different parts of the building, the waterproof material requirements are not the same. Each material has its own strengths and weaknesses, a material can not conquer the world, where all good material is not, various materials can only be complementary, and can not be replaced, each of which has come in handy. Roof waterproofing and basement waterproofing requirements, material, and waterproof and waterproof wall more difference between bath, slope roof, the shape of complex roofing, sheet metal roof base is not the same, material were when fine action.

3.3 Engineering conditions require material selection. Building level is the first condition of material selection, the first and second stage construction must use high quality waterproof materials, such as polyester tire polymer modified asphalt coil, synthetic polymer membranes, composite using synthetic polymer coating; three, four construction material is wide, not in this list.

IV. WATERPROOF MATERIAL CONSTRUCTION REQUIREMENTS

A. Waterproof construction of coiled material

Coiled material waterproof of different types of materials, very commonly used in the construction process have hot sticking method, method of self-adhesive, mechanical fixing method, buried method and so on, construction should inspect contractor, in strict accordance with the requirements of Construction Technology Standard Specification for construction, construction process, construction of paving direction, two pieces of roll material and coiled material layer and layer, base of overlapped width and length to meet the requirements. Coil of cold bonding construction adhesive bonding materials to according to the

properties of the membrane supporting the selection of adhesive deployment to someone, timely sample test shall not misuse, mix, the strict control. Strictly grasp the moisture content of the grassroots can be paste after the requirements. Attention control of the detail nodes such as yin yang angle and so on.

B. *Film waterproof construction*

The film thickness of the film is divided into thin quality coatings and thick coating construction by film thickness. Both the thin hard coating brushing method spraying or thick paint commonly applied pressure between coating construction; in simple smear or carcass reinforcing coating material, such as glass fiber or chemical fiber) made a second cloth coated. Second cloth coated, cloth painted to do: anti waterproof material specifications meet the design requirements; the construction operation method conforms to the provisions; waterproof coating formulations meet process requirements; carcass reinforcing materials and coatings to matching error; construction and operation conditions, the mixture temperature and construction environment temperature (temperature), operating time the amount of ingredients and sequential, stirring intensity and coating variables (time) must be composite process requirements, construction sequence required from high to low, the first far in principle.

C. *Construction of sealing waterproof material*

The main materials used in the seal material are two kinds of modified asphalt and polymer seal waterproof material. The construction method is divided into two kinds: the material is different, the cold block method and the hot irrigation method.. In order to ensure the construction quality in the construction machinery first use, batching and mixing, bonding performance test and inlay backing material control, as well as construction operation and several key links for supervision and control.

Hot filling procedure should pay attention to the sealing site material plasticization and heating temperature generally in 110 to 130 DEG C; the maximum shall not exceed 140 DEG C, pay attention to the use of thermometer to under the liquid center about 100 mm for. Plastic or heated to the temperature (not less than 110 DEG C) should be immediately on-site watering, filling up to 3 ~ 5mm seam.

Cold block construction method used in military exercises operator, from the bottom of the block up, to prevent the leakage of the block falsifying, pay attention to shall not produce the phenomenon of gas mixture; block completed full and dense, according to the order, it is best to use electric or manual caulking gun operation. The waterproof layer of the protective layer material selection and construction should be designed according to design drawings and construction.

D. *Rigid waterproof layer construction*

The rigid waterproof layer includes fine stone concrete waterproof layer, cement mortar waterproof layer, block rigid waterproof layer and waterproof concrete construction. The rigid waterproof layer is sensitive to the uneven ground settlement, temperature variation, and structural vibration, and so on.

E. *The waterproof layer of the protective layer material selection and construction should be according to design drawings for construction*

Waterproof project is a systematic project, it relates to waterproof material, waterproof engineering design, construction technology, the management of buildings and other aspects of the building. On waterproof engineering appear leakage phenomenon analysis showed that, leakage due to material adverse caused by 20% ~ 30%, due to the construction caused by rough accounted for about 45% ~ 48%, due to design problems caused by 18% ~ 26%, building waterproof engineering so-called quality leakage (leakage roofing, toilet bath leakage, outer wall leakage and the basement leakage) has become a common quality defects must cause height to take seriously.

The leakage and waterproof of the project have seriously affected the normal use of the user, but it is not inevitable.. As soon as it is clear that the design is the prerequisite, the material is the foundation, the construction is the key, management is the guarantee of the thoughts, in the treatment of waterproof engineering quality on each link of the process of strict control and take effective prevention and control measures, will be able to achieve the anticipated goal.

REFERENCES

[1] GB 50108-2008 Technical specification for waterproofing of underground engineering [S]
[2] JC/T894-2002.SBS tire modified polyester felt waterproofing membrane[S]
[3] Building materials (third ed.) [M]. Beijing: China Architectural Industry Press, 2003
[4] Ding Shizhaoet, Architectural engineering project management [M]. Chinese Architectural Industry Press.2004

[5] Li Jiye, construction quality problems and prevention measures [M]. China Building Materials Industry Press.2003