

Analysis of Roof Waterproofing Technology in University Building Construction

Hui ze

Construction Bureau, University of Shanghai for Science and Technology, Shanghai, China

Corresponding Author: Hui ze

Abstract

The quality of buildings is closely related to the quality of life of teachers and students in university, especially waterproof quality of buildings which directly affects residence and use. Unqualified waterproof measures may even threaten lives, health and property safety of teachers and students. Roof waterproofing is a very important part of building waterproofing, therefore, the requirements for roof waterproofing technology in the construction process of college buildings are constantly improving. This paper mainly analyzes the causes of roof leakage in university buildings, and puts forward corresponding prevention and optimization measures, in order to provide reference for roof waterproof project in university building construction.

Keywords: *University building construction, Roof waterproofing technology, Construction technique.*

Date of Submission: 13-06-2023

Date of acceptance: 28-06-2023

I. INTRODUCTION

With the continuous development of society, people's requirements for the quality of life are also constantly improving. Relevant research shown that most teachers and students in university spend most of their time in buildings, and the overall quality of buildings is closely related to their quality of life [1]. The quality of roof waterproof construction directly affects the overall quality of construction project, and has a great degree of correlation with the safety of the future building use process. At the same time, roof waterproof construction also determines the service life of the building in the future. Good roof waterproof construction can directly extend the life of the building, and can enhance the feelings of the building users[2]. However, in the actual process of college construction, the emphasis on roof waterproof technology is not enough which may lead to water seepage and leakage during the later use of the building. Meanwhile, the maintenance work of roof is relatively complicated, which will cost a lot of manpower and financial resources, waste resources, affect the normal use of the building [3] and also cause problems to teachers and students of the school to a certain extent. Therefore, it is necessary to analyze the existing problems of roof waterproofing construction in college buildings, so as to better promote the development of college buildings and promote the high quality development of schools. Based on the importance of roof waterproofing technology in building construction, relevant technicians should conscientiously apply waterproof technology based on the actual situation, so as to effectively enhance the waterproof ability of the roof of the building and the effectiveness of the construction project [4], create a good living and learning environment for teachers and students in university. This paper mainly analyzes the causes of roof leakage in university buildings, and puts forward corresponding prevention and optimization measures, in order to provide reference for roof waterproof project in university building construction.

II. INFLUENCING FACTORS OF BUILDING ROOF WATERPROOFING PERFORMANCE

In the actual process of college construction, the emphasis on roof waterproof technology is not enough which may lead to water seepage and leakage during the later use of the building. Therefore, it is necessary to conduct a comprehensive analysis of the problems existing in the building roof waterproof construction.

2.1 DESIGN FACTORS

Unreasonable roof waterproof design is one of the factors that lead to water leakage in the later use of building. There is a close connection between use function of building roof and design, if use function of roof is ignored in the roof waterproof design process, it is easy to cause unreasonable roof design, which leads to the roof waterproof design and the related uses of the building are not coordinated and unified. In design stage, some designers design and plan roof waterproof according to their own experience, and do not go to site to investigate, which will lead to the design is not consistent with the actual, affecting actual use effect.

2.2 MATERIAL FACTORS

Improper use of materials is a problem in building roof waterproof construction, the quality of construction depends to some extent on the quality of materials. In specific construction process, construction unit may neglect procurement and proportion of materials, which resulting in the quality of materials does not meet the construction standards. Improper use of roofing waterproof materials can not only waste costs but also make it difficult to truly waterproof the roof, which affects the use of the building and increases the maintenance cost. Therefore, roof waterproof materials should be comprehensively considered according to the characteristics of building and construction materials.

2.3 CONSTRUCTION FACTORS

Non-standard construction of roof waterproofing is one of the main reasons for building water seepage and leakage. Roof waterproof design and subsequent construction links are relatively detailed construction process, any small detail problems will easily cause water seepage, water leakage and other problems in the use of building. At the same time, the subjectivity of roof waterproof construction is strong, some construction units in order to reduce construction costs and shorten the construction period, often let the construction personnel without professional training on the job, resulting in the construction can not be carried out in strict accordance with the construction requirements, and the construction quality does not meet the standards. In some projects, there is a lack of detailed technical exchanges between designers and construction personnel, and construction personnel have insufficient understanding of the design scheme and can not master the technical points of waterproof construction. In addition, the management of construction unit is not perfect, and there is no strict quality inspection, which will also affect the quality of waterproof construction. Therefore, in the building construction link, it is necessary to carry out detailed professional treatment of waterproof construction of roof to ensure good waterproof effect of roof.

2.4 MANAGEMENT FACTORS

While doing a good job in the construction work, the construction personnel should also carry out late maintenance of the project, and carry out regular inspection and maintenance after the project is put into use to avoid its penetration problems. University may add various facilities in buildings in the future, such as solar water heaters, air conditioners and laying various pipelines and lines, etc., which will cause local damage to waterproof structure. If construction unit can not be timely maintenance, there may be penetration problems. At the same time, there are many green plants in university, and fallen leaves are easy to block drainage outlet, so it is necessary to clean it regularly and timely to prevent the accumulation of rainwater on the roof and cause leakage.



Figure1: Roof leakage

III. ROOF WATERPROOFING MEASURES AND OPTIMIZATION STRATEGIES

In view of the problems existing in roof waterproof measures of buildings, reasonable measures should be taken to prevent and cure them, constantly improve construction quality, and effectively extend the service life of buildings.

3.1 REASONABLE DESIGN

In the design of waterproof construction project, designers should carry out reasonable design combined with the structure, characteristics and use of the building, develop a reasonable construction scheme to ensure the smooth progress of waterproof construction. Designers should collect the waterproof data of the building, and need to survey the construction site, so that the waterproof structure can be scientifically designed. Designers should carefully observe the water flow characteristics in the waterproof process, carry out reasonable design of slopes and pipelines to improve the drainage effect, and use professional waterproof technology to create professional waterproof design, so as to ensure the quality of roof waterproof project. In the design, it is necessary to understand the performance of various materials and the conditions of use in detail, and make a reasonable choice of construction materials combined with realistic environment.

3.2 QUALIFIED MATERIALS

Roof waterproof effect is closely related to the quality of materials, and attention should be paid to the control of material quality in the procurement and construction links to ensure that the quality of materials entering construction site meets the requirements of construction. First of all, when purchasing materials, purchaser should pay attention to whether the material is melted into water to avoid adverse effects on roof waterproof in use. Secondly, material purchasing personnel should also pay attention to testing whether the material is cold resistant. Some construction materials will have structural damage in low temperature environment, resulting in the fracture of waterproof dense layer, which will seriously affect the waterproof performance[5]. Before the entrance of construction materials, construction personnel need to conduct a detailed inspection of the materials, and if conditions permit, professional equipment should be used to conduct quality inspection of the relevant materials to ensure that the quality of the materials meets requirements. During the inspection, the staff should also check the quantity and specifications of the materials in combination with the construction data, and do the relevant registration. At this stage, building materials and roof waterproof materials are constantly developing and progressing, and new materials are constantly being developed and put into use. In the actual roof waterproof construction process, waterproof materials with advanced technical advantages and in line with national standards can also be selected for application.

3.3 STRICT CONSTRUCTION

Roof waterproof construction is highly professional, design, construction and maintenance need highly professional personnel to carry out. Roof waterproof construction of each item of building structure should be strengthened, and construction personnel should carry out construction according to design scheme and process. Construction unit should strengthen the training of personnel before construction, so that they can master the advanced construction technology, find problems in construction and deal with them in time to ensure the quality of project. At the same time, it is necessary to strengthen supervision of construction process, establish a project supervision system, arrange special supervisors to manage and supervise all aspects of construction, and correct defects in construction plan according to actual construction situation. Supervisors should not only supervise and inspect the quality of construction materials and construction equipment, but also supervise the actual use of construction technology by construction personnel to ensure that each department and each link are run in an orderly manner.

3.4 COMPLETE MAINTENANCE

Construction of roof waterproof can not only be limited to construction process, but also include later maintenance of building. Relevant personnel should grasp the aging of waterproof layer of building roof in time, avoid water seepage, water leakage and other phenomena as much as possible, effectively reduce maintenance costs and the probability of large-scale maintenance, extend the use time of building. For the accumulated leaves and garbage on roof, it is necessary to clean up in time to prevent blockage of drainage outlet and leakage caused by the accumulation of rainwater on roof.



Figure2: Roof waterproof construction

IV. CONCLUSION

In view of the problems existing in roof waterproof construction of college buildings, this paper draws the following conclusions through analysis:

- (1) In the design of roof waterproof structure, designers should carry out scientific design schemes.
- (2) In the construction phase, construction units should pay attention to the factors affecting waterproof effect during construction, pay attention to control the quality of waterproof materials, improve the technical level of personnel, strengthen construction supervision, and ensure that the construction personnel carry out construction according to the design scheme.
- (3) After the completion of construction, it is necessary to constantly improve the maintenance system, maintain the normal use function of building, and increase its service life.

REFERENCES

- [1]. M.Y. Analysis of technical countermeasures for roof waterproofing of building engineering [J]. China Architectural Decoration,2023(09):170-172.
- [2]. D Y G. Research on Construction Technology of roof Waterproofing Project of Building Engineering [J]. Home Industry,2022(06):1-3.
- [3]. Z J P. Analysis of roof waterproofing construction Technology in Building engineering [J]. China Architectural Decoration,2021(06):164-165.
- [4]. Y W C. Application analysis of anti-leakage construction technology in building construction [J]. Public Standardization,2023(08):41-43.
- [5]. W Q. Strategic analysis of housing construction management and quality control [J]. Home Industry,2020(12):157-158.