

Analysis of Common Quality Defects and Prevention Measures of Indoor Waterproof Engineering

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Abstract

During the completion and acceptance of indoor waterproof engineering, there are common quality problems such as ground water seepage, water leakage, water retention and damp walls in toilets, balconies and kitchens. According to all kinds of current waterproof construction acceptance specifications, combined with the site construction experience, this paper analyzes the manifestations and causes of common waterproof project quality problems, and puts forward prevention and control measures and countermeasures, to improve the comfort of the living environment, to eliminate the hidden dangers of waterproof to provide useful reference.

Keywords

Waterproof Engineering; Common Quality Problems; Prevention and Control Measures; Rigid Waterproofing; Flexible Waterproof.

1. Preface

Building waterproof engineering is related to building safety, building comfort, building life and the production and management of enterprises. It not only has an important impact on the normal life of people, but also causes all kinds of contradictions and disputes. Therefore, the problem of building drainage is the focus of the whole society, only do a good job of building waterproof work can improve the quality of people's living.

2. Waterproof Design

Waterproofing of Chinese buildings has a long history. After thousands of years of experience accumulation, our building waterproof is mainly used in order to prevent auxiliary, multi-channel fortification, and the policy of rigid and flexible waterproof design, can achieve the comprehensive control effect. Modern building indoor waterproof mainly uses the following waterproof practices:

(1) Backfill waterproof design: waterproof the wall and floor first, then set drainage pipes, build tic-tac-toe protection, backfill ceramite concrete, and finally lay reinforced concrete and secondary drainage prevention.

(2) Overhead waterproof design: First, make the caisson waterproof and water pipe layout, and then build the overhead layer and secondary drainage.

(3) New material filling waterproof design: do a good job of primary drainage, direct use of foamed cement and other new filling materials for backfilling, and finally secondary drainage construction.

3. Waterproof Material

3.1. Petroleum Asphalt based Waterproof Coil

In the early period of founding of our country, the indoor waterproof of the construction of our country mainly uses "two felt and three oil" the main practice of paper-tyre petroleum asphalt

felt, the construction technique is composed of two layers of asphalt felt and three layers of hot asphalt. Because the indoor bathroom or kitchen is wet and dark, the basic water content is higher, the pipeline is more, the asphalt waterproof effect is not ideal, and the smell is big, toxic, easy to aging failure, has been gradually withdrawn from the waterproof construction project.

3.2. Modified Asphalt Waterproof Coil

This kind of coil is waterproof coil made of high polymer as dipping material, the main product is polymer modified asphalt waterproof coil. SBS and APP modified asphalt waterproof coil is the most commonly used and dominant in waterproof engineering, followed by self-adhesive polymer modified asphalt waterproof coil.

3.3. Synthesis of Polymer Waterproof Coil

This kind of coil is a waterproof material made by mixing, calendaring or extrusion process with synthetic polymer material as the main body, adding appropriate amount of chemical additives and fillers. The main types are EPDM waterproof roll, chlorinated polyethylene waterproof roll, chlorinated polyethylene waterproof roll, PVC waterproof roll. Root piercing resistant polymer waterproof coil is widely used in basement roof waterproof, which can effectively prevent the penetration of roots.

3.4. Waterproof Coating

Waterproof coating is the most commonly used material in indoor waterproof construction, among which flexible waterproof coating should be used on the ground and rigid waterproof coating should be used on the wall. Common materials are polyurethane waterproof coating, polymer waterproof coating (common in JS), polymer waterproof slurry.

3.5. Rigid Waterproof Material

Rigid waterproof material is mainly used for wall waterproof and moisture-proof, mainly cement based penetration crystalline waterproof coating, waterproof mortar, waterproof concrete. Among them, cement-based penetration crystalline waterproof coating is the most widely used in indoor wall waterproof. Its waterproof life is comparable to concrete, non-toxic, tasteless and pollution-free, and good bonding with ceramic tile. Its disadvantage is not conducive to seismic, damage after difficult to repair.

4. Waterproof Engineering Quality Common Problems

(1) Pipe root leakage: common in the wall, plate pipe gap seepage, such as toilet sewage riser, waste water riser, floor drain, hot and cold water pipe through the wall and other surrounding areas wet or infiltration phenomenon.

(2) Ground leakage: ground waterproof is not in place, water permeates through the ground to downstairs; Waterproof area threshold stone side waterproof leakage, resulting in water under the tile to penetrate to the threshold stone outside or lead to damp and mildew wall; When pouring concrete into the toilet caisson, the concrete at the corner of the Yin Angle vibrates and is not dense, resulting in water leakage.

(3) Wall leakage: due to brushing thickness, uniformity, lap width is not standard, resulting in leakage point facing the water, wall leakage, peeling and moldy; Back water moisture heavy, resulting in the deformation of the wooden cabinet.

(4) Wall tile falling off: too thick coating or flexible waterproof coating, resulting in the cohesion of ceramic tile and wall is seriously weakened, too long time caused by ceramic tile falling off.

(5) Wet and dry partition partition leakage: the partition waterproof construction of the dry and wet separation area of the toilet is not in place, causing water in the wet area to penetrate into the dry area can not be discharged.

(6) Window leakage: the window has not done the water acceptance test or the gap around the window is too large, the caulking material does not have the waterproof function, resulting in water penetration.

(7) Household water pipe leakage: there is leakage at the joint of hot and cold water pipes. When the water pipe goes to the ground, there will be water under the tile, and cause mold on the nearby wall, and it is not easy to find and maintain; When the water pipe goes ceiling, there will be water stains at the leak point of the ceiling.

5. Construction Points and Waterproof Measures

5.1. Waterproof Construction Process

Indoor waterproof routine process: Preliminary treatment (hydropower construction, equipment installation, ceiling, etc.), basic treatment, pipe hole plugging (finished plugging parts, wire mold hanging is strictly prohibited. Section sealing), enveloping treatment, sealing sill production (dry and wet separation area gouge wool, planting reinforcement), Yin Angle waterproof treatment (R Angle, steamed bread package production), local waterproof strengthening, wall waterproof construction, closed water test (not less than 24 hours), protective layer construction, wet paste (kitchen, sanitary Th, balcony waterproof area and door stone must be wet paste).

5.2. Wall Waterproof Construction Technology

(1) basic treatment: use waterproof mortar to fill the slot of the pipeline; Scrape the wall with a wire brush to remove pollutants; Wet the wall with a wet broom, and brush the wall solid after drying.

(2) Material selection and construction scope: choose rigid waterproof coating, such as cement-based penetration crystalline waterproof coating or JS-P; Brushing height against the surface of the water is 1.8m or to the bottom of the ceiling height, wash basin or bathtub range of brushing height is 1m or turn 100mm on the water point; Other areas of the painting height of the building ground turned 300mm.

(3) Construction technology: before large area painting, first do local waterproof strengthening and R arc Angle on the wall pipe and wall Yang and Yang Angle, and take the first time after local painting dry roller painting from top to bottom; After the first coating dry, then do the second brush, the direction of the brush and the first vertical, to ensure uniform brushing. The waterproof coating layer is divided into 2~3 times, and the wall coating is not less than 1.5mm.

(4) Set back: 200-300mm high back wall should be set around the kitchen, balcony and toilet, which can effectively block water penetration to the wall.

5.3. Floor Waterproof Construction Measures

(1) Basic treatment: clean the pollutants at the basic level with a scraper, apply a layer of fine stone concrete to find the structural slope, and then use the plugging king to repair the pipe root, Yin and Yang Angle, floor drain, the root of the sanitary ware and the side of the threshold within 200mm.

(2) Additional treatment of details: Apply waterproof paint locally to the root, Angle of Yin and Yang, floor drain, root of the sanitary ware and side of the threshold, lay glass fiber net, and apply 100-200mm up the root of the pipe.

(3) Waterproof construction: the coating layer is divided into at least two survival, film thickness is not less than 2mm. The first brush direction and the second brush should be perpendicular to each other, there should be no leakage and bubbling defects. The thickness of two times is not less than 2mm.

(4) Dilute sand: after the last coating waterproof layer, immediately dilute dry, clean quartz sand, the formation of a rough surface, enhance the cohesion of the protective layer and waterproof layer.

(5) Safe and civilized construction: during the construction process, waterproof personnel should wear soft rubber soled shoes. After the construction of the waterproof layer is completed, it should be immediately closed, and any operator is prohibited from stepping on it.

(6) Water storage test: after the waterproof layer is dry, water storage test (≥ 24 hours) is carried out. After confirming that there is no water leakage, cement mortar of 1:2 is used as the protective layer, and the thickness should be 20mm.

5.4. Waterproof Construction Measures for Through-plate Pipeline

For the pipeline through the floor, the holes around the pipeline should be first gouged, cleaned, and then filled with fine stone concrete in two processes, the first pouring and ramming 2/3 and closed water maintenance, the second pouring and ramming is completed and then closed water maintenance. The finished surface of fine stone concrete should be 10~20mm higher than the structural floor, and two polymer cement-based waterproof coatings should be painted within 200mm around the pipeline to strengthen the local waterproof. When the ground waterproof coating is constructed, the ground waterproof coating should be painted to the pipe wall, and 10~20mm above the ground finish surface.

5.5. Water Pipe Leakage Prevention Measures

PPR water supply pipeline construction should use hot melt welding, strict control of hot melt time, there should be no virtual welding or welding caused by the pipe diameter smaller, flow is not smooth; The water pipe crosses above and below, and the bridge bend should be used to avoid the deformation of the water pipe when it is pushed; Ordinary PPR water pipe pressure (1Mpa) time is 30 minutes, the pressure value does not drop before other construction.

5.6. Secondary Drainage Measures

Because the toilet is easy to water, can not be discharged from the tile crevice into the paving layer. If there is no water dredging, backfill layer and the second waterproof layer of water accumulated more and more, resulting in back odor or infiltration to the four sides, resulting in horizontal leakage, dark water ran out everywhere, resulting in bathroom door, aisle, next room wall foot mold rot, foaming or coating layer peeling. So it is very important to do a good job of secondary drainage. Process: at the bottom of the main sewer pipe or the second way.

It is advisable to do a secondary drainage outlet in the water layer, and the drainage level should be at the lowest point.

5.7. Waterproof Measures for Balconies

Balcony and living room dislocation should be coated with waterproof paint, The platform sliding door should be set outside the fine stone concrete water stop sill, the threshold stone should be slightly inclined (high inside and low outside), the completion surface should be lower than the outer side of the aluminum alloy door bottom frame, and the intersection with the aluminum alloy door bottom frame should be reserved no less than 5mm interval joint, the gap should be filled with neutral silicone sealant.

6. Summary

(1) Before waterproof construction should do a good job of basic treatment, through the Angle grinder or wire brush to remove not conducive to bonding substances, such as grease, dust, paint, cement slurry and other not conducive to bonding particles; Use a brush or vacuum

cleaner to clean residual dust and impurities on the surface of the base material to ensure that the base surface is clean, dry, and smooth.

(2) Do not directly pass through waterproof flanging, water stop, aluminum alloy door rail and concrete counter sill.

(3) waterproof coating should be the first wall after the ground, the wall should be waterproof Use rigid waterproof coating, the ground should use flexible waterproof coating;

The thickness of the ground waterproof coating is not less than 2mm, and the wall waterproof coating is not less than 1.5mm.

(4) The root of the pipe, the root of the guard, the Angle of Yin and Yang, the side of the threshold stone, the floor drain and other easy water leakage areas should be made additional layer waterproof.

(5) In order to prevent water at the bottom of the tile, secondary drainage should be done; After the closed water test is qualified, the next process can be done.

(6) has been coated with a good waterproof layer, should be timely finished product protection; Before laying the protective layer, do not wear cleats in and out of the room, so as not to damage the waterproof layer.

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