



---

## ABOVE-GRADE VS. BELOW-GRADE SURFACES

When specifying or applying coatings on masonry and concrete structures, it is important to distinguish between above-grade and below-grade conditions. These terms refer to whether the surface being coated is located above or below ground level. While this distinction may appear simple, it has significant implications for coating performance and durability.

Surfaces above grade are typically exposed to environmental conditions such as sunlight, temperature fluctuations, and rain. Below-grade surfaces, in contrast, are often exposed to soil moisture, hydrostatic pressure, and continuous damp conditions. Because of these differences, coatings designed for above-grade applications are not always suitable for below-grade environments.

Understanding how exposure conditions change above and below grade helps ensure that the correct coating system is selected and that long-term performance expectations are met.

### Characteristics of Above-Grade Surfaces

Above-grade surfaces include any portion of a structure that is exposed above the surrounding ground level. Typical examples include building walls, exposed concrete foundations, parapets, retaining walls above grade, and exterior masonry surfaces. These surfaces are commonly exposed to weathering conditions such as rain and wind-driven moisture, ultraviolet (UV) radiation from sunlight, temperature fluctuations and thermal movement, and airborne contaminants and pollutants.

Because these surfaces are exposed to the atmosphere, coatings applied above grade must typically provide a balance of weather resistance, breathability, and UV durability.

Many above-grade masonry coatings are designed to allow water vapor to pass through the coating film while preventing liquid water from penetrating the surface. This vapor permeability helps prevent moisture that enters the wall assembly from becoming trapped behind the coating.

### Common Above-Grade Coating Types

Several types of coatings are commonly used on above-grade masonry and concrete surfaces.

- **Acrylic Masonry Coatings:** Water-based acrylic coatings are widely used on exterior masonry surfaces due to their good adhesion, flexibility, UV resistance, and vapor permeability. These coatings allow the substrate to “breathe” while providing protection against rain and environmental exposure.
- **Elastomeric Coatings:** Elastomeric coatings are high-build acrylic coatings designed to bridge hairline cracks and provide enhanced water resistance. They are commonly used on stucco, concrete, and masonry surfaces where minor cracking may occur due to thermal movement or building settlement.

- **Silicone and Silane/Siloxane Treatments:** Penetrating water repellents such as silanes and siloxanes can be used on masonry surfaces to reduce water absorption without significantly altering vapor permeability. These treatments are often used when maintaining the natural appearance of the substrate is important.

Above-grade coatings must be able to withstand the elements while maintaining flexibility and adhesion over time.

## Characteristics of Below-Grade Surfaces

Below-grade surfaces are located beneath the surrounding soil level and are typically in contact with earth or backfill. Examples include basement walls, foundation walls, underground parking structures, and retaining walls below grade.

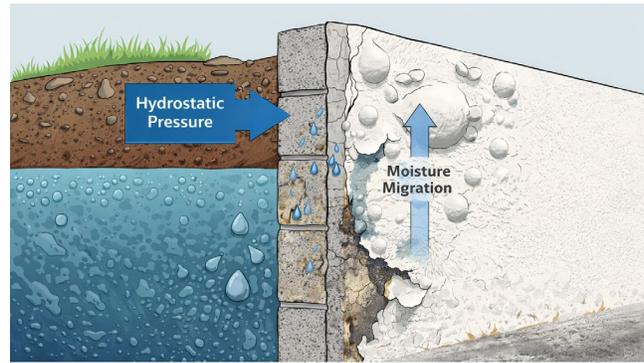
Unlike above-grade surfaces, below-grade environments are characterized by persistent moisture exposure. These surfaces may be subject to soil moisture, groundwater infiltration, hydrostatic pressure, limited drying potential, and minimal airflow or sunlight exposure.

Because of these conditions, coatings applied below grade often function more as waterproofing or damp-proofing systems rather than conventional decorative coatings.

## Moisture and Hydrostatic Pressure

One of the most significant challenges in below-grade environments is hydrostatic pressure. When groundwater accumulates in soil around a structure, it can exert pressure against foundation walls. This pressure can force water through pores, cracks, or joints in the concrete or masonry (Figure 1).

Conventional architectural coatings are typically not designed to withstand this type of pressure. If a coating designed for above-grade exposure is applied below grade, it may blister, peel, or delaminate due to moisture pushing against the coating film. Coatings used below grade must be specifically designed to resist continuous moisture exposure and hydrostatic forces.



Hydrostatic Pressure against Painted Wall  
Water is forced through wall by hydrostatic pressure causing paint blisters

**Figure 1**

## Special Consideration: Planter Boxes and Retaining Walls

Planter boxes and retaining walls present conditions that are frequently misunderstood in coating specifications. Although portions of these structures may appear above grade, the surfaces that are in contact with soil or planting media behave much more like below-grade environments.

Soil and planting media retain moisture and are often continuously exposed to irrigation water, rainfall, and drainage. As water accumulates in the soil, it can exert pressure against the structure in the same way groundwater affects foundation walls. These conditions can force moisture through concrete or masonry substrates and place significant stress on the coating system.

Because of this, the soil-contact side of planter boxes and retaining walls should generally be treated as below-grade conditions. Conventional architectural coatings designed for exterior walls are usually not suitable for these surfaces because they are not intended to withstand constant moisture exposure or hydrostatic pressure.

Instead, these surfaces typically require waterproofing or damp-proofing systems similar to those used for below-grade foundations. Cementitious waterproofing coatings, membrane systems, or other waterproofing materials are often specified to protect the structure and prevent moisture migration through the wall assembly.

Proper drainage is also critical in these applications. Drainage layers, weep holes, and gravel backfill can help relieve hydrostatic pressure and improve the long-term performance of the coating or waterproofing system.

## Common Below-Grade Coating Types

Below-grade systems are typically formulated differently from conventional paints and may fall into categories such as waterproofing membranes or moisture barriers.

- **Bituminous Coatings:** Bituminous or asphalt-based coatings are commonly used as damp-proofing systems for foundation walls. These coatings form a water-resistant barrier that helps reduce moisture penetration from surrounding soil.
- **Cementitious Waterproofing Coatings:** Cement-based coatings can be applied to concrete and masonry surfaces to form a waterproof barrier that becomes integrated with the substrate. These materials are often used in basements, tunnels, and water-retaining structures.
- **Epoxy and Polyurethane Waterproofing Systems:** In more demanding environments, epoxy or polyurethane coatings may be used to create durable waterproof membranes. These systems offer strong adhesion and resistance to water penetration but must be applied to properly prepared surfaces.
- **Sheet and Membrane Waterproofing Systems:** In some cases, coatings are used in combination with sheet membranes or elastomeric waterproofing systems that provide continuous protection against groundwater infiltration.

These systems are designed specifically for environments where surfaces remain in contact with moisture or soil.

## Vapor Permeability Considerations

One key difference between above-grade and below-grade coatings is vapor permeability.

Above-grade coatings often need to be breathable, allowing water vapor to escape from the substrate. This helps prevent blistering and moisture buildup within the wall assembly.

Below-grade coatings, however, often function as moisture barriers that prevent water from penetrating the structure. These coatings may be less permeable because their primary purpose is to stop water intrusion rather than allow vapor transmission.

Selecting the appropriate permeability characteristics is essential to ensure compatibility with the exposure environment.

## Surface Preparation Requirements

Surface preparation is critical for both above-grade and below-grade coating applications, but the requirements may differ depending on the exposure conditions.

Concrete and masonry surfaces should generally be:

- Clean and free of dust, oil, and contaminants
- Structurally sound and free of loose material
- Properly cured if newly installed

For below-grade waterproofing systems, additional preparation steps such as crack repair, joint sealing, and surface profiling may be necessary to ensure proper adhesion and continuity of the waterproof barrier.

## Key Takeaways

Architects and specifiers should carefully evaluate whether masonry or concrete surfaces will be exposed above-grade or below-grade when selecting coating systems. These environments present very different service conditions, and using coatings intended for one exposure in the other can lead to premature failure.

Above-grade coatings are typically designed to withstand weathering, UV exposure, and temperature fluctuations while still allowing the substrate to breathe. In contrast, below-grade environments are frequently subjected to continuous moisture exposure and hydrostatic pressure from surrounding soil, requiring waterproofing systems specifically engineered to resist water intrusion.

Applying an above-grade architectural coating in a below-grade environment can result in blistering, loss of adhesion, or coating failure due to moisture pressure. Conversely, using heavy waterproofing systems on exposed exterior walls may trap vapor within the substrate, which can also lead to blistering or substrate damage.

Special attention should also be given to soil-contact structures such as planter boxes, retaining walls, and foundation walls. Even when portions of these structures are visible above grade, the surfaces in contact with soil behave like below-grade conditions and typically require waterproofing systems rather than conventional architectural coatings.

Proper coordination between designers, contractors, and coating manufacturers, along with appropriate surface preparation and drainage design, helps ensure that coating systems are matched to the actual exposure conditions, improving long-term durability and performance.

### ***Where Color, Creativity & Chemistry Meet!***

2020 E. Orangethorpe Avenue • Fullerton, CA 92831

(714) 680-3800 | [www.vistapaint.com](http://www.vistapaint.com)

©2026 Vista Paint Corporation. All rights reserved.

Follow us

