

Basement Sealing

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External Basement Waterproofing: Process & Checklist

External basement waterproofing is the gold standard for below-grade water management. By excavating around the foundation and treating the exterior face of the walls, this method stops

water **before** it touches the concrete structure and relieves hydrostatic pressure at the perimeter.

Part 1: Excavation & Waterproofing Process

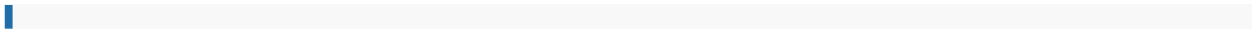
Step 1: Site Preparation & Trench Excavation

- **Excavation Depth:** Heavy machinery or hand tools excavate a trench around the foundation perimeter down to the top (and outer edge) of the concrete footing.
- **Safety & Bench/Shoring:** Depending on soil stability and depth, trenches must be sloped back, benched, or shored with trench shields to prevent soil collapse during installation.
- **Utility Clearance:** All underground lines (gas, power, water, fiber) are located, marked, and carefully hand-dug around near the foundation.

Step 2: Wall Cleaning & Substrate Surface Prep

- **High-Pressure Cleaning:** The exposed foundation wall is pressure washed to remove dirt, loose mortar, clay residue, and old degraded coatings.
- **Structural Crack & Joint Repair:** Cracks, honeycombing in poured concrete, or degraded mortar joints in masonry blocks are excavated and filled with non-shrink hydraulic cement or structural epoxy mortar.
- **Parging (Masonry/Rough Concrete):** A fresh parge coat (smooth cementitious mortar layer) is applied to block or rough walls to ensure a continuous, flat substrate.
- **Footing Cove (Fillet):** A 45-degree concrete fillet or cove is constructed at the right-angle joint where the wall meets the top of the footing. This prevents water from pooling in the sharp corner.

Step 3: Primary Waterproofing Membrane Layer



Note: Asphalt "damp-proofing" coating (black foundation paint) is *not* waterproofing. Waterproofing materials must span hairline cracks and withstand continuous hydrostatic pressure.

- **Membrane Material:** Thick rubberized asphalt, elastomeric liquid membrane, or cold-applied self-adhering modified bitumen sheets are applied to the primed wall.
- **Coverage:** The barrier spans from below the top edge of the footing up to finished ground level grade line.
- **Reinforcement:** Critical stress points, structural cracks, and wall-to-footing transitions are reinforced with embedded synthetic fabric or fiberglass mesh.

Step 4: Protection & Vertical Drainage Board (Dimple Mat)

- **High-Density Polyethylene (HDPE) Mat:** A heavy dimpled drainage board is mechanically fastened over the rubber waterproofing membrane (dimples facing toward the wall).
- **Dual Protection:**
 1. **Mechanical Protection:** Shields the delicate liquid/sheet membrane from sharp rocks during backfilling.
 2. **Drainage Channel:** Creates an uninterrupted vertical air gap so any surface water immediately drops straight down to the footing pipe.
- **Termination Strip:** Heavy plastic or metal flashing is sealed to the top edge above ground level to prevent dirt and surface runoff from slipping behind the dimple mat.

Step 5: Footing Drain Tile & Filtration Matrix

- **Drain Pipe Selection:** Smooth-bore perforated rigid PVC (ASTM D3034 or Schedule 40) is preferred over flexible corrugated black pipe because it resists crushing and maintains pitch.
- **Slope & Layout:** The pipe sits along the outer edge of the footing (sloped at a minimum 1/8 inch per foot) toward a gravity outlet or internal/external sump basin.
- **Washed Aggregate:** 12 to 18 inches of clean, washed aggregate (e.g., #57 crushed stone) completely encapsulates the perforated pipe.
- **Geotextile Filter Fabric:** Heavy needle-punched non-woven filter fabric wraps the gravel envelope to prevent silt and soil fines from clogging the drain line.

Step 6: Backfilling, Compaction & Grading

- **Layered Backfilling:** Backfill soil is replaced in 8- to 12-inch lifts and compacted to minimize future settling.
- **Positive Pitch:** The final topsoil is sloped away from the foundation wall at a minimum grade of 6 inches over the first 10 feet.
- **Surface Water Management:** Roof downspouts and yard runoff are piped completely outside the excavation footprint to avoid re-saturating the backfilled zone.

Part 2: Essential Questions to Ask Your Waterproofing Contractor

Category	Questions to Ask	What to Look For
Materials & Specs	• What exact membrane product will be applied to the wall? • Are you using dimple board over the rubber coat? • What type of pipe are you installing for the footing drain?	• Liquid elastomeric rubber / thick bitumen sheet (not spray asphalt). • High-density dimpled sheet mat (HDPE) with top termination strip. • Rigid, smooth-bore perforated PVC pipe with cleanouts.
Site Prep & Safety	• How will landscaping, decks, and hardscapes be protected? • What shoring or benching measures will be used for trench safety? • How do you handle unexpected rock outcroppings or high groundwater?	• Clear site preservation plan & utility locates. • Compliance with OSHA trench safety standards. • Written contingency protocols for subsurface obstructions.
Drainage System	• Where does the new perimeter pipe discharge? • Are accessible cleanout ports installed at corners? • Is the gravel bed wrapped in geotextile fabric?	• Gravity daylight discharge, dry well, or dedicated sump system. • Vertical PVC cleanouts extended above grade for future jetting. • High-quality non-woven geotextile envelope.
Warranty & Credentials	• Does your warranty cover both labor and materials? • Is the warranty transferable to future homeowners? • Are you licensed, bonded, and carrying General Liability + Workers' Comp?	• Comprehensive multi-year or lifetime transferable warranty. • Written warranty terms (avoid verbal guarantees). • Active contractor license & valid certificates of insurance.