

# On Site With Mel-Rol Foundation Waterproofing Membrane

BY IAN SCHWANDT

**Water is the main enemy** of any structure, especially here in the Midwest, where spring floods and summer storms can damage or even wash away buildings. Most residential carpenters are well-versed in flashing and other techniques that protect buildings from the force of nature that water can be. Some of the materials we use can even be considered sacrificial; roofs, siding, and windows, for instance, can all be repaired or replaced when they become damaged and no longer provide bulk-water protection. Because all of these components exist above ground, it's easy to see failures and execute repairs. However, water is a completely different enemy below ground.

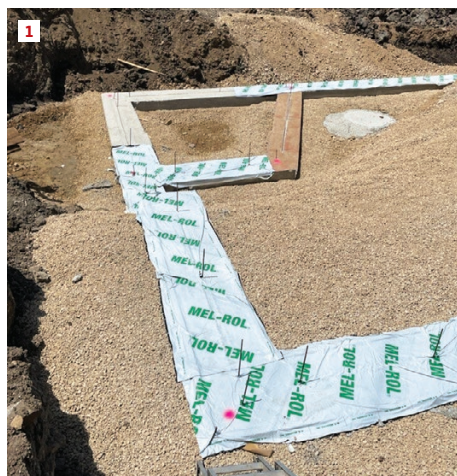
My personal home and a new home that my company, TDS Custom Construction, is currently building are on sloping lots, and a significant portion of the living space is in the basement. In both cases, cost and design goals were major drivers in this decision. Two bedrooms with en suite baths occupy 75% of the basement space of my home, while one bedroom with an en suite bath and a large multipurpose room occupy 60% of the basement of the new TDS home project. Both homes are located on clay-soil sites near wetland areas and built using super-insulated assemblies—R40+ for walls and R70+ for the roofs—to a sub-1.0 ACH50 air-tightness standard. These performance standards and the low heating and cooling loads they require coupled with the below-grade living space put extra emphasis on waterproofing, as the HVAC equipment wouldn't run frequently enough to help control humidity and aid in the drying out of the foundation.

## WATERPROOFING MEMBRANE

In my area, most foundations receive the old-school asphalt-based spray method of “waterproofing,” but I needed a more robust solution for my home and went searching for other options. I settled on a belt-and-suspenders approach: using a foundation wall coating along with a drainage mat that would separate the coating from the stone used to backfill the foundation wall. I decided to also use the wall coating on the faces of the foundation footing to act as a capillary break at the wall/footing joint to keep moisture from wicking up through the footing into the poured concrete wall. After researching various coatings available from major and niche manufacturers, I decided on the Mel-Rol system from W.R. Meadows because of its local availability through a concrete specialty supplier, its price, and its carpenter-friendly installation methods that did not require the purchase of any specialty tools.

Mel-Rol is a flexible, bituminous, 60-mil roll-type waterproofing membrane composed of two components laminated together: a 56-mil layer of polymeric waterproofing membrane on a 4-mil-thick, cross-laminated polyethylene carrier film. It comes in 38½-inch-wide by 62½-foot-long rolls marked for 2½-inch overlaps, and is available in versions for air and surface temperatures from 20°F to 60°F and for air and surface temperatures down to 0°F.

The membrane is adhered to concrete using Mel-Prime adhesive, which comes in solvent- and water-based versions. I typically use the solvent-based adhesive, as it is commonly available locally. The Mel-Rol system also includes accessory tapes, mastics, and sealants



After rolling Mel-Prime adhesive on the footings, the author's crew wrapped them with Mel-Rol waterproofing membrane (1). Applied prior to forming and pouring the foundation walls, the membrane provides a capillary break that blocks moisture in damp soil from migrating up through the footings and into the concrete foundation. Once the walls were poured, the crew prepped the corners and wall-to-footing joints with more primer, then applied 9-inch-wide Mel-Rol detail tape to seal these tricky intersections (2).



After taping corners and footing-to-wall joints (3), the crew applied sections of membrane vertically to the primed foundation walls (4). The membrane terminates 12 inches below finish grade (5).

that are available when called for in the specification. After the Mel-Rol membrane is applied to a foundation wall, it is covered with a drainage mat to allow water to drain down to the footings without obstruction. In one application, I used CertainTeed Platon drainage mat, and in another, we used W.R. Meadows Mel-Drain, a drainage mat covered in geotextile filter fabric.

### INSTALLATION

My crew and I found the installation of the system to be straightforward and within our capabilities. One unexpected challenge did arise: Alex Bartlett, the lead carpenter on our new build at TDS, pointed out that the products—with their boxes, backings, and other packaging materials—produced a large volume of jobsite trash before we had fully mobilized and set up dumpsters.

**Footings.** The Mel-Prime specifications call for the concrete foundation to cure for 72 hours and all large voids to be filled prior to the install. From a scheduling perspective, this can be challenging when you are also using the Mel-Rol membrane as a capillary break between the footings and walls, as we were. The install sequence that we followed started with the Mel-Rol wrapping all three faces of the footing to create the capillary break.

The manufacturer's instructions call for filling any voids in the surface of the concrete, but we had no issue with the Mel-Rol adhering to the mag trowel finish on the footings. We wore 3M respirators with magenta cartridges while we applied the Mel-Primer using a foam paint roller and pan. To simplify the Mel-Rol install, we cut the membrane into shorter strips that fit between the rebar uprights installed by the concrete crew. By the time we finished cutting the strips, the Mel-Prime was tack-free and ready for the membrane. Provided that it is tack-free and clean of dirt and dust, Mel-Prime has a strong initial grip to Mel-Rol, making it almost impossible to remove the membrane once they come in contact. Working with such a strong adhesive around the rebar and at dirt level made the footing install more difficult than the wall install that followed.

**Walls.** After the concrete walls were stripped, we snapped lines for the planned grade heights less 12 inches to denote where we would terminate the waterproofing to keep it below grade and eliminate the need for a protection board. It's worth noting that for both houses, we installed all the foundation insulation—2 inches of XPS rigid foam on my house build and 3 inches of spray foam on the TDS build—on the interior side of the wall to allow the waterproofing system to interact directly with the ground. Next, we pre-cut sections of Mel-Rol to length so we could roll them out onto the primed walls once the rubber-cement-like adhesive was no longer tacky to the touch.

Mel-Rol membrane can be installed vertically or horizontally and either overlapped onto the footing face or connected to the footing with detail strip tape. This 9-inch-wide tape is similar to Vycor and other flashing tape and can be used for inside and outside corners if you find it easier than installing the Mel-Rol through the corners. At the intersection of the house and garage foundations, we chose to lap the waterproofing 3 feet onto the garage foundation walls but otherwise treated the garage as if it were outside the waterproofed envelope, as a means of saving labor and material costs.

With careful layout and installation of the detail strip tape, you can easily install the Mel-Rol from the top down or bottom up, though with the tenacious initial bond of the Mel-Prime, you have only one shot to get it right once you pull the backing from the Mel-Rol and commit to the install. This makes the ability to execute the install top down, bottom up, horizontal, or vertical an important personal preference that needs to be thought through prior to starting.

We then rolled the membrane using Zip System rollers, as they were the tools



Above, a worker fastens one of the aluminum termination bars that hold the Mel-Drain drainage mat in place until the foundation is backfilled (6, 7). Installed over Mel-Rol membrane, the drainage mat provides an escape route down to the footings for water that pools against the foundation wall (8). On his own project, the author used CertainTeed Platon drainage mat over Mel-Rol membrane (9). To ensure good drainage, he laid down geotextile fabric and a layer of clean stone (10) before installing a perforated PVC perimeter drain, which will be covered in more stone and wrapped with fabric.



at hand. The Mel-Rol did have some air bubbles that became stuck but, with the thickness of the membrane and the subsequent Mel-Drain creating a belt-and-suspenders system, we felt comfortable not over-focusing time and effort into pushing all the bubbles out.

## DRAINAGE MAT

After completing the Mel-Rol membrane installation, we installed Mel-Drain drainage mat in a similar fashion. Mastic or Mel-Prime can be used to adhere the solid top strip of Mel-Drain to a Mel-Rol-covered wall. We used a bead of mastic to eliminate the wait time for the Mel-Prime to become tack-free. We typically select the roll width of the drainage mat to match the foundation height, which makes Mel-Drain and other drainage mats simple to install horizontally. At any fabric overlaps on the Mel-Drain or wall penetrations, we use Detail Strip tape or off-the-shelf spray adhesive to seal the geotextile and protect it during backfill.

Along the top edge of the drainage mat, we installed aluminum termination bars using concrete screws to hold the bars in place. In practice, placing the fasteners no more than 6 to 8 inches on-center

is required to keep the drainage mat in place during backfill.

After the drainage mat is installed, you can install your drain tile of choice. On my house, I used perforated PVC drain tile, which I buried in 24 inches of clear stone that I covered with geotextile fabric before completing backfill. On the TDS new build, Alex sourced a drain tile that was wrapped in a geotextile sock.

After two years living in my house and sleeping in my basement bedroom, I have experienced none of the moisture or dampness problems that plague most basements in my area, and my sump pump crock has remained dry. In areas of the country where basements are common, they are frequently turned into habitable spaces and, in many new builds, they are designed to be habitable space as a way of maximizing value. By taking a few extra steps using a waterproofing system that is already compatible with your crew's skill set, you can ensure that habitable spaces you create below grade are just as comfortable as the ones above grade.

*Ian Schwandt is production manager for TDS Custom Construction in Madison, Wis.*