

PWA-104 Water Resistant Barrier (WRB)

As with any cement plaster assembly over framing, the Water-Resistant Barrier (WRB) is the critical component of the “concealed weather barrier protection” assembly. It must be understood that the majority of moisture that may come in contact with the WRB is first deflected by the cement plaster. In the case of PWA 104, it is the cement basecoat membrane that will absorb some moisture and then deflect well over 90% of that moisture to prevent water intrusion. In a properly mixed and applied cement plaster, the water absorbed into the cement base coat will not typically pass through, even with prolonged water exposure but, will evaporated back to the exterior. Small or incidental amounts of moisture should be anticipated to find its way behind the cement membrane and typically occurs at penetrations or excessive cracks in the system. Small hairline cracks rarely allow significant moisture to reach the WRB.

Why Not Over the Foam?

Many designers question the placement of the WRB under the rigid foam and believe it better to place the WRB over the foam panels, while this is not forbidden or a code violation, the plaster bureaus typically do not recommend this practice. There are three distinct reasons for the recommendation of placing the WRB under the foam on PWA104:

1. Flashing and WRB installation is best when done simply, with minimal changes in direction and avoiding horizontal planes or creating pockets. Running the WRB and integrating the flashings in a straight plane over the sheathing is simple, traditional and functional. Installation of WRB and flashings where they must move in and out from behind and out over the rigid foam, makes the installation more complicated, creates horizontal planes and pockets for moisture to find an easier path of entry.
2. The WRB can act as a bond breaker. Many are concerned that cement plaster is cantilevered out from the structure by the thickness of the foam. This is negated by the ability of the cement plaster to bond tenuously to the foam board. Applying the bond breaking WRB will require the fasteners of the lath to fully support the cement.
3. The rigid foam panels are not the same as gypsum or a wood based sheathing. As the fastener for the lath is applied to a traditional sheathing, it is drawn tight to the substrate, creating a compressed and effective seal. While this is possible with a foam sheathing, experience has demonstrated that achieving the exact pressure required is problematic at best. The foam will tend to give and this can create tears in the WRB at the point of connection. These tears in the WRB defeat the intent of the intact and secure secondary moisture barrier.

Alternate: designers who can overcome the three previous caveats, are allowed to place the WRB over the rigid foam and contractors (installers) should express any reservations and then follow the desire of the designers or consultant.

The **Type** of WRB should be clearly stated in the specifications by the designer. Every designer has preferences on the type of WRB to be used. Whether the WRB is a traditional felt, asphalt saturated

kraft paper, house wrap or liquid applied membrane, they will work when applied properly and integrated with flashings under the rigid foam.

It is important to integrate the WRB with flashings, to insure that moisture does not enter the wall cavity and is redirected away from the wall cavity and allowed to weep or exit harmlessly.

The plaster bureaus have minimal experience with liquid or trowel applied secondary moisture protection and/or air barriers. It is recommended that when one of these products substitutes a WRB, the installation be strictly per the manufacturer of the alternate product and verified as installed correctly by that manufacturer.

A **single-layer** WRB under the rigid foam is acceptable. When a single-layer WRB is used, it should be a minimum 60 minute rated Grade D asphalt saturated kraft paper or equal. Double layer of WRB is acceptable as additional protection and the WRB (each layer) should have a minimum 30 minute rating against moisture.

Applying the WRB shall be in a “Shingle-Fashion” and integrated with flashings in the same manner. Meaning upper layers always overlap the lower layers to allow moisture to shed down and out away from the wall cavity. It is required that horizontal laps be a minimum of 2 inches and recommended they be closer to 4 inches or greater. Vertical laps shall be a minimum of 6 inches and it is recommended that they be closer to 12 inches or greater. Application is typically done with a small staple gun or hammer tacker using staples with approximately ¼ long legs. This method of application has been used for several decades and found to be an effective and weather-resistant method for applying the WRB. It is recommended to cover the WRB as soon as possible with the rigid foam and lath to prevent tears or unnecessary holes from wind or inclement weather.

Water Management recommendations for PWA-104

All Regions:

- Weep points must be allowed for at the base of all framed walls.
- Floor lines should be flashed with through wall flashings allowing moisture to exit not exceeding every fourth floor level .

Additional recommendations for regions with annual rainfall greater than 30 inches per year:

- All window and door heads on exposed weather walls shall be “weeped” to the exterior.
- Floor lines should be flashed with through wall flashing allowing moisture to exit at every other floor level.
- Parapet caps of cement plaster are not recommended.
- Metal caps should cover the entire parapet and extend down a minimum of 4 inches over the exterior plaster.
- All terminations and miters of plaster trim accessories should be set in sealant or method equal to prevent moisture intrusion past he cement membrane.

- Pre-fabricated sill pans with continuous back and side upturns should be used for all doors and windows.

For approval of alternate methods, products or variations, contact your local WCWC office.