TL-0017 — Removal of Formwork Placed Against PREPRUFE® Membranes Technical Letter

Introduction

PREPRUFE® waterproofing membranes are engineered for use in blind side applications. Typical blind side applications include using PREPRUFE®160R/160R Plus Membrane on foundation walls cast directly against soil retention systems, or using PREPRUFE®300R/300R Plus Membrane in horizontal applications under a structural concrete slab.

In some underslab applications, PREPRUFE®Membranes are utilized to tie into conventional waterproofing membranes to complete the waterproofing envelope. In these applications, PREPRUFE®Membrane is installed and secured to the inside panel of the vertical formwork prior to placing the reinforcing steel, supplementary formwork and concrete. PREPRUFE®300R/300R Plus can be mechanically fastened to the vertical formwork through an excess flap of material. Best practice would be to leave the top leading edge of the PREPRUFE®Membrane slightly below the top elevation of the concrete pour. Once the concrete is poured against PREPRUFE® Membrane, the formwork must remain in place until the concrete has gained sufficient compressive strength. Initial adhesion of PREPRUFE®Membrane is limited by the compressive strength of the concrete.

A minimum concrete compressive strength of 3000 lbf/ in.^{2} (20 MN/m^2) is recommended prior to stripping the formwork placed adjacent to PREPRUFE®Membranes. Stripping formwork prematurely may result in permanent loss of bond between the membrane and concrete.

As a guideline, a structural concrete mix with an ultimate strength of 6000 lbf/in.^{2} (40 MN/m^2) typically will require a cure time of approximately 14 days at an average ambient temperature of 40 °F (5 °C), or 3 days at an average ambient temperature of 70 °F (21 °C) to achieve a compressive strength of 3000 lbf/in.^{2} (20 MN/m^2). The above guideline does not take into account the use of set accelerating admixtures, such as PolarSet® accelerator supplied by GCP Applied Technologies.

After the concrete is poured and allowed to cure, the formwork is removed following the guidelines above. This procedure will expose the high density polyethylene (HDPE) surface of the membrane. It is important to remove any excess, un-adhered PREPRUFE®Membrane at the time that the formwork is removed. Excess material may exert a force on the membrane and cause the membrane to slowly peel away from the concrete. The practice of leaving the membrane slightly below the top elevation of the concrete pour as previously mentioned, will help mitigate any peel away which can also be enhanced by heat on warm days or if the HDPE surface of the membrane is exposed to sunlight.

Areas of PREPRUFE®Membrane that are damaged or have de-bonded from the concrete should be removed and overlapped a minimum of 6 in. (150 mm) with BITUTHENE®Membranes and terminated on all sides with BITUTHENE® Liquid Membrane..

Any exposed PREPRUFE®Membrane needs to be protected with an approved protection course prior to backfilling.

Conclusion

Adhesion between PREPRUFE®Membranes and concrete is initially limited by the compressive strength of the concrete. A minimum concrete compressive strength of 3000 lbf/in^2 (20 MN/m^2) is the recommended guideline prior to stripping formwork placed adjacent to PREPRUFE®Membranes. Use of PolarSet®accelerator in the concrete mix design may reduce the cure time required at lower temperatures.

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ca.gcpat.com/solutions/products/preprufe-comprehensive-waterproofing-system/tl-0017-removal-formwork-placed