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SIPLAST LIGHTWEIGHT INSULATING CONCRETE BULLETIN:

Water Infiltration into Lightweight Insulating Concrete Applications

Bulletin #20 **May 28, 2024**

SIPLAST*FLASH*

Issue:

Water infiltration or rainwater penetration into lightweight insulating concrete (LWIC) roof insulation systems can lead to various moisture-related issues when attempting to bond roof membranes directly to the substrate without any venting mechanisms.. This technical bulletin provides guidance on identifying and addressing water infiltration in LWIC, as well as recommendations for removing moisture and the appropriate timing for installing the roof membrane.

Excess moisture in LWIC is typically related to environmental occurrences and not water used to mix and install LWIC initially.

Causes of Water Infiltration During Construction

Rain Events on Exposed LWIC Decks:
Rain events over LWIC during construction, in most cases, are not an issue, but heavy repeated rains can lead to excess moisture intrusion into the LWIC system.

Roof Drain Testing on Uncovered LWIC:
Testing of roof drains in some cases involves plugging them and flooding the roof. This testing should not be completed before the LWIC is properly roofed.

Identification and Inspection:
To identify water infiltration into lightweight insulating concrete, conducting regular inspections is essential. The following signs may indicate the presence of moisture:

- Damp or wet spots on the LWIC surface.
- Visibly darker areas of LWIC that appear to have a higher moisture level than surrounding areas.
- Moisture emanating from cracks in the surface of the LWIC.

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Identification and Removal of Excess Moisture:

Generally there is a migration of moisture that occurs when LWIC is exposed to rain events or drain testing. The moisture will migrate to low spots on the underlying substrate and concentrate in those areas. It is important to know where these locations are to successfully remove moisture if necessary.

Establish Drainage:

Ensure that the substrate has proper slope and a functioning drainage system to facilitate the removal of water from the surface.

Establish Ports for Viewing the Substrate and Removing Moisture:

Ports will need to be cored or cut into the LWIC system to see if moisture is present in an area and if so, remove it by way of vacuum. Generally, these ports will need to be approx. 4" in diameter and cut through the LWIC down to the substrate. If a vapor retarder or sub-roof is in place, ensure it is not damaged in the process. These ports are cut-in similarly to how one-way vents are installed but are meant to be a temporary means for removing excess moisture. Once the excess moisture is removed these areas may be patched and roofed over as normal.

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Roof Membrane Installation:

The timing for installing the roof membrane depends on the extent of moisture infiltration and the drying capabilities of the lightweight insulating concrete. In many cases, the roof may be installed while moisture is being removed from the system. It is recommended that a Siplast Field Technical Representative be contacted to assist with developing a moisture removal plan and a plan for when the LWIC is ready to receive the roof membrane. Siplast provides this type of technical assistance at no charge on projects using Siplast LWIC.

Conclusion:

Water infiltration into lightweight insulating concrete roof decks can happen when exposed during the construction process. This exposure will not affect the performance of the LWIC and Roof Membrane system as long as the excess moisture is properly addressed and Siplast guidelines and recommendations are followed.

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