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To Restore or not to Restore?

The Debate on Gravel BUR Restoration with Direct bond Roof Coatings

Introduction

Gravel built-up roofs (BUR) have been a staple in the roofing industry for decades, known for their durability and longevity. However, as they age and face the effects of weather, UV radiation, and general wear and tear, they may require maintenance or restoration. In such cases, property owners and roofing professionals often consider the option of applying a direct bond roof coating to rejuvenate the roof's performance. While direct bond roof coatings have their merits, they are not always the best choice for restoring a gravel BUR. In this article, we will delve into the reasons why restoring a gravel BUR with a direct bond roof coating can be a problematic decision.

What is a Direct-Bond Roof Coating?

A Direct-Bond roof coating is a fluid applied roof coating applied directly to the roofing substrate without reinforcement or emulsion layers.

Understanding Gravel Built-Up Roofs

Gravel built-up roofs consist of multiple layers, typically alternating layers of asphalt or bitumen and roofing felt or fabric. These layers are bonded together to create a watertight membrane. The topmost layer of a gravel BUR is covered with a protective layer of gravel or aggregate, which serves several purposes, including UV protection, weight distribution, and fire resistance.

Restoring a Gravel BUR Roof?

Roof Restoration with fluid applied coatings is a continuously growing segment of the roofing industry. Manufacturers are constantly studying and working to improve technologies to be able to restore even more types of roofing substrates. Building owners and property managers are always working to extend dollars and often roof restoration options are utilized to be able to do this. There are millions of square feet of gravel BUR roofing in the United States and it has been a target for restoration for some manufacturers in recent years.

At first thought, the idea of restoring a gravel BUR with a direct bond roof coating may be appealing due to the potential cost savings and ease of application. However, several critical considerations should deter property owners from pursuing this approach. important to define what a "Direct Bond" Roof Coating is. For this paper a Direct Bond coating is

1. Incompatibility with Substrate

One of the primary reasons why direct bond roof coatings are not suitable for gravel BUR restoration is the incompatibility with the substrate. Gravel BURs have a unique construction with multiple layers of asphalt and felt. These layers are typically embedded in hot asphalt during installation, creating a secure, layered system. Direct bond roof coatings, on the other hand, rely on adhesion to the substrate for their effectiveness. Since gravel BURs have a rough and uneven surface due to the gravel aggregate layer, achieving a strong, lasting bond with a direct bond coating becomes challenging. The coating may adhere unevenly, leading to potential weak points and areas where water infiltration can occur.



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2. Lack of Proper Surface Preparation

Successful application of a roof coating requires thorough surface preparation. This includes cleaning the substrate, repairing any damaged areas, and ensuring the surface is smooth and uniform for proper adhesion. Gravel BURs, with their embedded gravel layer, are difficult to prepare adequately for a direct bond roof coating. Removing the gravel layer is a labor-intensive process that can be both time-consuming and costly. Even after gravel removal, achieving a suitable surface for coating application may still be challenging due to the presence of residual asphalt and unevenness. Typically there is dirt/debris caked into the cracks of the BUR which makes it that much harder to even clean properly.

3. Limited Reflectivity and Energy Efficiency

Gravel built-up roofs with their gravel or aggregate surface offer some degree of reflectivity and thermal mass benefits. The gravel layer helps to reflect sunlight and reduce heat absorption, which can contribute to improved energy efficiency within the building. When a direct bond roof coating is applied over the gravel layer, this reflective and thermal mass benefit is lost.

Direct bond coatings may not possess the same reflective properties as the gravel layer, potentially leading to increased heat absorption and higher energy costs. Additionally, the removal of the gravel layer would negate the thermal mass effect it provides.

4. Uncertain Longevity and Performance

Direct bond roof coatings are designed to protect and extend the life of roofing substrates. However, their effectiveness is contingent on a strong and lasting bond with the substrate, which is compromised when applied over a gravel BUR. The irregular surface of a gravel BUR can result in uneven adhesion, leading to potential weaknesses in the coating system.

This inconsistency in adhesion can cause premature coating failure, leading to leaks and the need for costly repairs. Property owners may find themselves facing a shorter lifespan for the coating and the need for more frequent recoating or, worse, a complete roof replacement.

5. Potential for Voided Warranties

Many roofing manufacturers provide warranties for their direct bond roof coatings, contingent on proper installation and adherence to manufacturer guidelines. When applying a direct bond roof coating over a gravel BUR, there is a risk of voiding these warranties due to the non-standard application and potential adhesion issues. This can leave property owners without the protection and support they may have counted on in the event of coating system failure.

6. Potential Liability Concerns

Neither the NRCA or any International code body recognizes gravel BUR restoration with a direct bond roof coating as a viable option. There is no mention of this type of system in the code language or in any NRCA educational literature on roof coatings. By doing this type of system on a roof you are possibly opening yourself up to liability by installing a non-approved system.



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Conclusion

While direct bond roof coatings offer benefits for certain roofing substrates, restoring a gravel built-up roof with this method is generally not advisable. Gravel BURs have a unique construction that includes a gravel or aggregate surface layer, which poses significant challenges for achieving proper adhesion, surface preparation, and maintaining the roofing system's energy-efficient properties.

Instead of opting for a direct bond roof coating, property owners and roofing professionals should consider alternative restoration methods, such as gravel replacement, asphalt patching, or a compatible built-up roofing system overlay. These approaches can address the specific needs and characteristics of gravel BURs while providing a longer-lasting, more effective solution for restoring their functionality and extending their lifespan. Consulting with roofing experts who specialize in gravel BURs can help property owners make informed decisions and avoid the pitfalls associated with inappropriate coating applications.