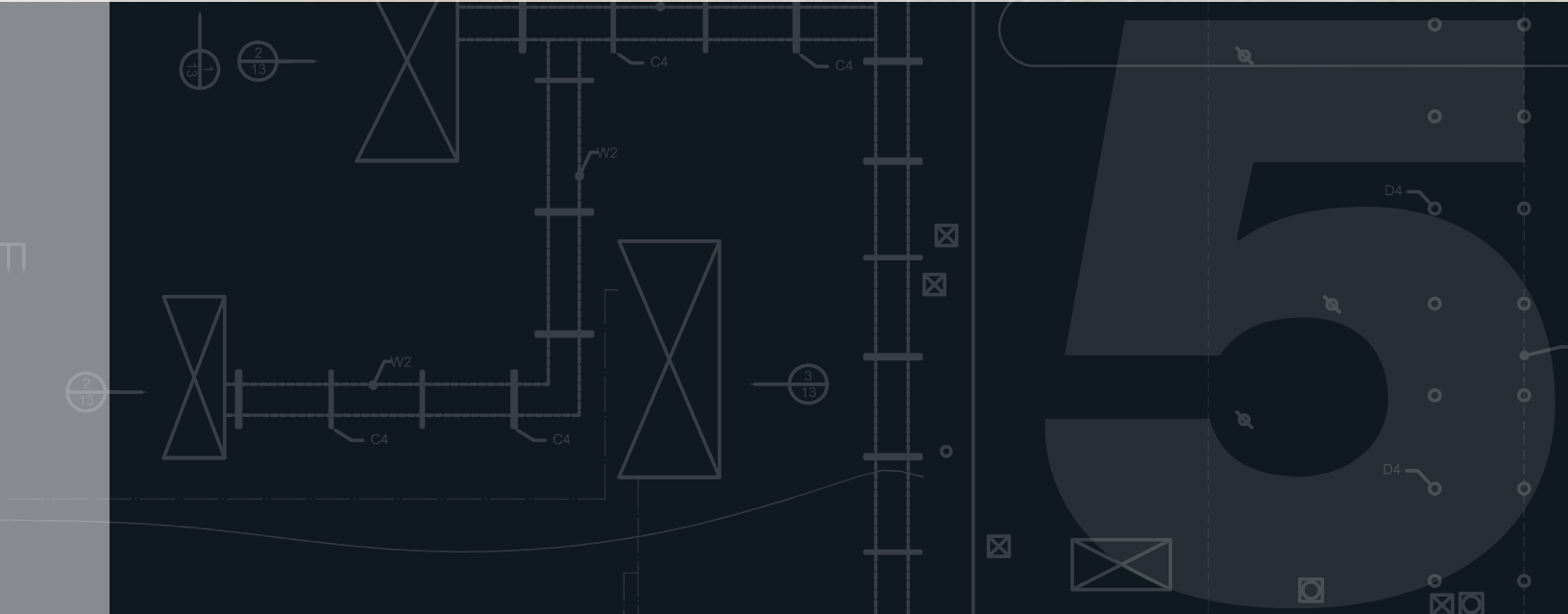


# NVS Reroofing Systems



# Solving problems specific to reroofing.



Reroofing comes with its own specific set of problems. Tear-off is extremely disruptive to building occupants. Ponding water is difficult to remove, due to irregularities in the existing substrate. Some tapered roof insulations lose R-value over time. Construction and maintenance traffic damage the roof. And, while you are paying to have your original investment

hauled off to the city dump, you have to worry about keeping the building watertight. When you think about it, reroofing an occupied facility is a bigger headache than an original roof installation.

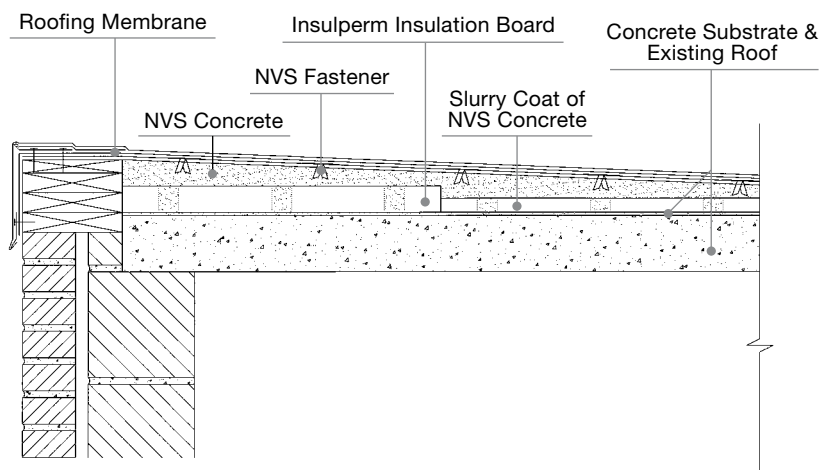
You can take reroofing off your mind for a very long time with Siplast's NVS Lightweight Insulating Concrete Roof Insulation System.

## **The NVS Lightweight Insulating Concrete Roof Insulation System.**

NVS (Non-Vented Substrate) was developed to solve reroofing problems economically. Like Siplast's ZIC, NVS is a composite system that combines the unique properties of aggregate-based lightweight insulating concrete and Insulperm premium expanded polystyrene foam insulation board, creating a monolithic, nailable substrate ideal for use over existing roof membranes.

The NVS System has excellent wind and fire resistance properties. It is approved by Factory Mutual as a non-combustible rated roof substrate. It is listed in the Factory Mutual Approval Guide for new and reroofing applications, and by Underwriters Laboratories for hourly fire rated designs.

The finished top surface of NVS Lightweight Insulating Concrete allows nailed attachment through the use of specially designed NVS base sheet fasteners.



The NVS System provides a solution to the difficulties presented by excessive moisture in structural lightweight concrete. This excessive moisture can affect the integrity and/or proper adhesion of roofing materials. Because the Siplast NVS System is engineered to manage high moisture conditions without affecting the roof membrane or insulation system and can be applied directly to structural lightweight decks, it presents an economical way to address the issue, as well help roofing application and construction sequencing.

NVS is used on all building types, from small offices to large warehouses to high rise hotels in busy downtown urban areas. And NVS is poured successfully in a wide range of climates.

#### **How NVS solves problems specific to reroofing.**

- **Reroofing tear-off is extremely disruptive to building occupants.**
- **Often, with NVS you can eliminate disruptive tear-off.**

Because NVS eliminates, in most cases, the need for tear-off of the existing roof, construction dust, noise, and debris that would occur during tear-off are eliminated. The entire process is less disruptive, and the sensitivities of the building's occupants are typically not affected. The risk of interior building damage is also lessened significantly. (When it is not possible to pour NVS directly over the existing assembly, due to structural considerations or extreme roof failure, tear-off is followed by the application of a temporary roof.)

- **Ponding water is difficult to remove due to irregularities in the existing substrate.**
- **NVS compensates for irregularities in the existing substrate.**

A lack of positive slope to facilitate removal of rainwater is the most common problem found on existing roofs. Inadequate or non-existent slope may be caused by a settling foundation or deflection resulting from years of service or even poor original design.

Over time, chronic ponding water and the resulting accumulation of particulate matter in such areas can degrade roofing materials, leading to leaks.

Creating positive slope-to-drain with the NVS System is much more efficient than working with rigid board insulation. With rigid board, specially tapered pieces are necessary to achieve slope. This puzzle-like application requires a complex system of numbered, color-coded shapes and sizes. Prompt and complete drainage may be difficult to achieve, because rigid board systems do not compensate for deflection in the existing substrate. With the NVS System, a slurry coat of lightweight insulating concrete corrects substrate irregularities and low spots. Then, Insulperm insulation boards, placed in a stair-step configuration, create a slope-to-drain contour that effectively removes water from the roof's surface. If necessary, saddles or crickets can be built into the final configuration of the deck easily and inexpensively.

- **Some tapered roof insulations lose R-value over time.**
- **Because NVS is HCFC-free, its R-value remains constant.**

Some rigid board insulations contain HCFCs (Hydrochlorofluorocarbon), which provide high insulation values initially, but can dissipate with time. As HCFCs dissipate, R-values are reduced, producing an effect known as "Thermal Drift." Insulperm, which can be installed in thicknesses necessary to achieve desired R-values, does not contain any HCFCs. Therefore, its insulation value remains constant throughout the life of the roof system. Additionally, the gaps, thermal shorts, and open joints that are inherent in rigid board applications are not found in the NVS System. This results in higher insulating efficiency.

- **Construction and maintenance traffic damage the roof.**
- **NVS' high compressive strength reduces the potential for damage from foot and other traffic.**

The finished NVS surface provides a minimum compressive strength of 300 psi, and a compressive resistance of over 43,200 pounds per square foot. By comparison, polyisocyanurate has an average compression resistance of 21 psi or, 3,000 pounds per square foot. The compressive strength of NVS helps to minimize membrane damage resulting from construction and maintenance traffic.

#### **Why NVS is the lowest life cycle cost roof insulation.**

- **By reducing stress, NVS prolongs membrane life.**

The NVS System works to enhance the performance of roof membranes and prolong membrane life by reducing thermal and mechanical stress. NVS has more mass than rigid board. Therefore, the membrane experiences slower temperature changes and less severe temperature extremes, so there is a minimum of thermal stress on the roof membrane. And because NVS produces a monolithic surface, free of gaps or working joints found with rigid insulation, mechanical stress on the membrane is lessened.

- **NVS is a responsible environmental choice, and a sound investment.**

Unlike many rigid boards, properly applied NVS is highly resistant to damage from moisture. Therefore, it is reroofable in most cases. By saving disposal costs and space in landfills, NVS has both financial and environmental advantages. Reroofability has a significant positive impact on the life cycle cost of a roof system.

#### **The Complete Siplast System.**

Siplast is the only commercial manufacturer to offer a complete reroofing package that combines SBS-modified bitumen membranes with the added benefits of lightweight insulating concrete. Used together, Siplast SBS-modified bitumen roof membranes and NVS create a superior roof with single source responsibility from one manufacturer.

# Reroofing with NVS

Every NVS reroofing project is unique. Depending on the condition of the existing roof system, NVS can eliminate the need for costly tear-off and simplify surface preparation. The proper course of action is always determined by the building owner's evaluation team as they study existing conditions and specific building needs.



**1. Severe ponding water.** This 295,200-square foot building is less than twenty years old. Two previous roof systems failed; the Siplast Paradiene 20/30 and NVS System is the owner's third attempt and best option for providing a reliable, long-lasting roofing solution. Chronic ponding water is indicative of inadequate slope-to-drain.



**2. Marking the existing roof for repairs.** It was determined in a structural review that NVS could be poured directly over the existing built-up roof on this facility without affecting the integrity of the assembly. By pouring over the existing system, costs of complete tear-off and removal are saved, and additional insulation value is added as slope-to-drain is corrected.

First, moisture scans are used to determine what areas of the existing roof are wet. Wet insulation is replaced, and damaged areas of the roof and flashing are repaired to a watertight condition.



**3. Slurry.** After the existing roof is completely sealed, a thin slurry coat of NVS Lightweight Insulating Concrete is poured in place. This slurry corrects any substrate irregularities or low spots, and bonds the Insulperm Insulation Board to the substrate.



**4. Placing Insulperm.** Insulperm Insulation Board is placed into the slurry in a stair-step configuration. Insulperm can be installed in thicknesses from one to sixteen inches to achieve high insulation values.



# Reroofing with NVS



**5. Stair-stepped Insulperm.** Insulperm Insulation Board creates a slope-to-drain contour that effectively removes water from the roof's surface.



**6. Top fill.** A top fill of NVS is poured over the Insulperm, filling the holes in the Insulperm and locking it into the system without the use of fasteners. Because of its high compressive and tensile strength, NVS requires only a one-inch minimum thickness over the top of the Insulperm.



**7. Screeding.** The pour is screeded to a smooth finished surface.



**8. Paradiene 20 application.**

Roofing over NVS may begin as soon as 48 hours after finishing the pour. During the normal 48-hour curing time, the finished NVS surface is resistant to water damage and, together with the repaired existing roof system, will protect the building interior from rainfall. Following the application of a base sheet with NVS fasteners, Paradiene 20 is applied.



**9. Paradiene 30 application.**

Siplast's Paradiene 20/30 SBS-modified bitumen membrane system is lightweight, highly flexible, simple to apply, and easy to maintain. It has an enviable performance history in some of the harshest weather conditions imaginable. This performance is enhanced when the membrane is installed over NVS Lightweight Insulating Concrete.



**Siplast**

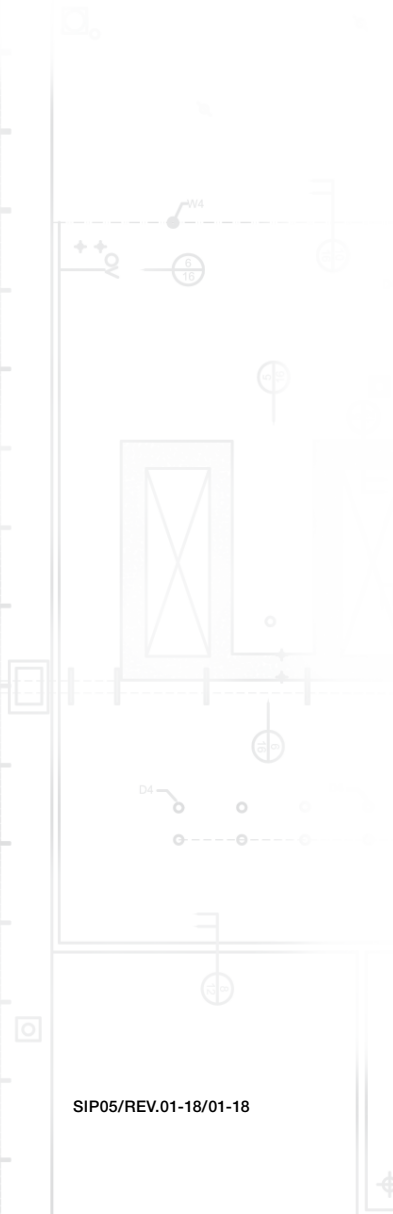
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