

Eliminate Ponding Water on Your Flat Roof



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Why is There Ponding Water on My Roof?

Ponding water on a flat roof can not only cause damaging leaks, it can drastically reduce the performance and life of the flat roofing membrane. For this reason Most Flat roofing material manufacture's warranties are void in the presence of or exclude ponding water specifically. Ponding water is defined by the roofing industry as water that remains on the roof for longer the 48 hours after rain.

Understanding why your flat roof is holding water is the first step to finding a solution.

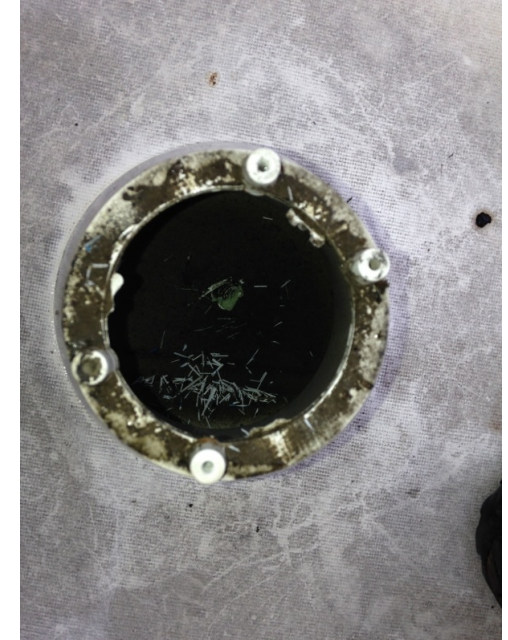
1. Inadequate or Obstructed Roof Drainage

The most common reason that flat roofs hold or pond water is because of inadequate or obstructed drainage. The good news is that this cause of ponding water is usually the easiest to correct with scheduled roof maintenance. Flat roofs drain in one of three ways: 1) through roof drains, 2) sloping towards a gutter, or 3) through a scupper - collector head that leads to a downspout. When these drains / gutters are clean and water is able to flow ponding water issues are greatly diminished or non existent.

Everything from soda pop cans , tennis balls, basket balls, leaves, paper, plastic bags and other flying debris can partially or total block your flat roof drainage. Scheduled Flat roof maintenance will ensure that you avoid this totally avoidable type of ponding water and the damage it can cause.

2. Structure, Design, Deflection.

The 2nd cause of ponding water on a flat roof is more complicated and cannot be resolved by simple cleaning the drains. This type of standing water is usually caused by either poor design or from deflection or sag in the buildings roof structure. Improperly sized , not enough, or poorly placed flat roof drainage can cause mild to sever ponding water issues as well , however this standing or ponding water is usually never as bad a when the roof structure has deflected or sagged over time.



When the structure that the flat roof is installed upon has settled or sagged the amount to ponding water will be equal to the distance that the structure has deflected below the roof gutters or scuppers. Flat roofs with internal drains are rarely affected by a sagging deck as the water will still drain toward the low spot. This is a common problem on buildings where the flat roof is installed over a concrete deck that has deflected or sagged over time but can also happen on metal or wood decks. The sag or low spot in the roof causes water to stand instead of running towards the scupper or gutter. Any water removed from the roof manually will only to return the very next rain or snow event.

3. Compressed or Saturated Roof Insulation

The third type of ponding water condition is caused by roofing insulation that has either been compressed or smashed down with heavy roofing materials or HVAC equipment during a construction project or by roof insulation that has become saturated from a leak and has degraded.

Many types of flat roofing insulations are sensitive to water and will quickly degrade or dissolve when wet. As the degraded insulation begins to dissolve and lose its shape, water is able to pond in the indentation. This problem compounds itself because the more water stands on the flat roof the more it leaks and the more it leaks the more degraded the roof insulation becomes causing even more water to stand. When this happens the screws and plates that originally held the roof insulation down will now appear to be sticking up and will be visible under the flat roofing membrane. This type of ponding water can be corrected by replacing the saturated and degraded roofing insulation the next time the flat roof is replaced.



What to do about Ponding Water on a Flat Roof

The right solution will depend on your specific flat roof situation. Consider the age and type of the flat roof, the type of decking material and structural support, and head room for possible new drain lines and tie in point to existing drains.

Here are three options for you to explore so you can choose the best performing and most cost effective solution based on your specific flat roofing situation.

1. Adding Roof Drains

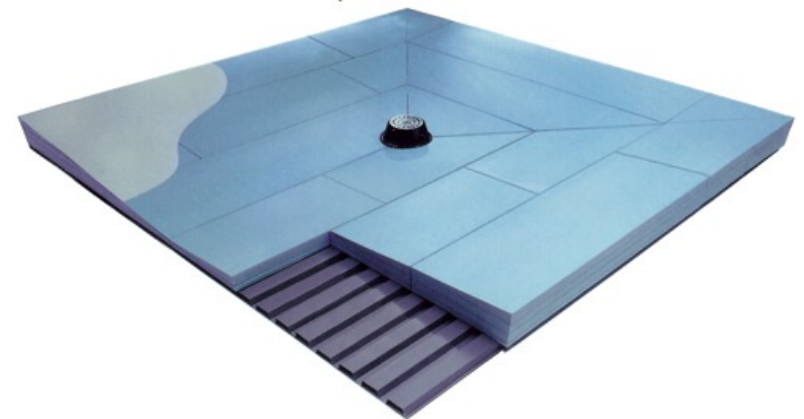
Flat roofs that pond water due to insufficient drainage can be corrected by adding either a roof drain and / or by adding through the wall scuppers that funnel water to a downspout and off the roof. In both instances location is everything.

Adding a roof drain will consist of opening up the existing roof down to the deck and then coring a hole through the deck in order to set the new drain assembly. A commercial plumber or pipe fitter will then connect drain lines from the new drain assembly to an existing drain. A Commercial roofing contractor will then work to tie in the existing flat roofing system into the new drain assemble and ensure it's water tight. It sounds straight forward and easy enough and sometimes it is but there are several factors that can influence the function and cost of adding a roof drain. Consider the type and age of existing roofing material and the ability to tie in to it, the number of layers of existing flat roofing already in place, the type of deck material to be cut, the finished ceiling height and room for new drain lines, and the distance the new drain will be away from the existing drain lines.

Building owners and faculties managers should consult with both a roofing contractor and a commercial plumber before making a final decision about adding a roof drain.

2. Using Tapered Roof Insulation

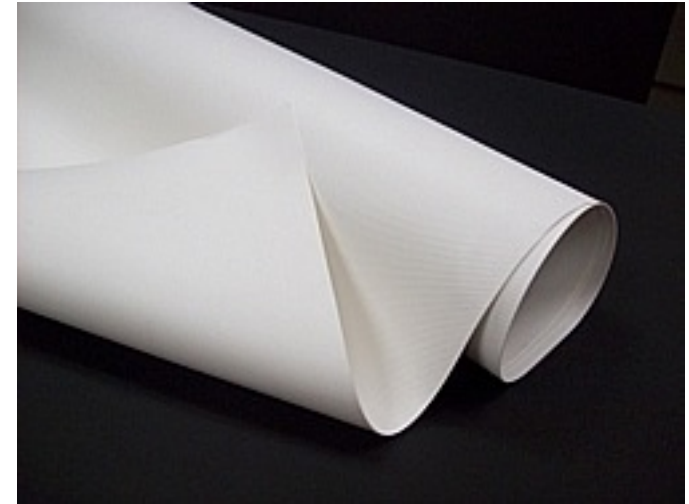
The second option that building owners have to eliminate ponding water from their flat roof is to use tapered roof insulation to better direct ponding water to existing roof drainage such as internal drains, guttering, or through the wall scuppers. Tapered roof insulation is made at an angle so it



can be used to create “fall”. Most tapered roofing insulation slopes at 1/4 inch per ft and come in 4’ x 4’ 4’ boards that can be cut and fit to create almost any shape necessary to move water towards drainage. While tapered insulation board not the least expensive type of flat roof insulation, it can be very effective at eliminating ponding water. The benefits include being easy to install, not having to core the roof’s deck, and no drain lines to plumb in.

3. Choose The right Flat Roofing Membrane

If adding a roof drain isn't feasible at your building and tapered roof insulation is out of your budget you may find that having a flat roofing membrane installed that can handle ponding water is the best solution. Many PVC membranes on the market today are engineered to withstand ponding water. These membranes typically do not rely on glue or adhesives and have hot air welded seams that are completely water tight. Ponding water has very little affect if any on these types of PVC membranes and they can be used successfully on buildings who's ponding water problems range from mild all the way to sever year round standing water.



Eliminate Flat Roof Ponding Water with Tapered Insulation

Using Tapered roof insulation is an efficient way to eliminate ponding water on a flat roof. It can be cut, fit, and installed in a way the moves ponding water towards existing drains, scuppers, or gutters. But for all the great things tapered roof insulation is, cheap is not one of them. Adding a tapered insulation package will substantially increase the price of a flat roofing project.

Understanding what tapered roof insulation is, how it works, and the basics of installation will help you make the most of your flat roofing investment.

What is Tapered Roofing Insulation?

Tapered polyisocyanurate roof insulation or tapered iso for short, is made from the same ridge foam material that normal polyiso roof insulation is made from. Regular iso board comes in flat sheets and in several different thicknesses. Tapered iso is not flat but is made with slope or “fall” and also comes in several different thicknesses but with slope. The slope causes water to move downhill on what would be an otherwise is a flat roof surface.



How it works

Tapered polyiso is sold in 4' x 4' pieces or panels that change thicknesses over 4' distance. The amount of the change in thickness in each panel is a 1/4" per foot. This means that for every foot of distance the iso get 1/4 "thicker. For example an X panel begins at 1/2" thickness and increases a 1/4" in thickness every foot. Since the piece of iso is 4' long, the thickness increase will be equal to 1/4" times 4 or a rise of 1" over the 4' distance (1/2 to 1 1/2")Flat roofers can then arrange the sloped insulation to move water towards roof drains, scuppers, or gutters.



X, Y, and Z Panels

There are three main pieces of a tapered roof insulation package that are designed to work in conduction with one another. The names of the panels are after the last three letters of

the alphabet X, Y, and Z. The size of the insulation is as at the following:

X panel measures 1/2" to 1 1/2 "in thickness

Y Panel measure 1 1/2" to 2 1/2 "in thickness

Z Panel measure 2 1/2 to 3 1/2 in thickness

These three pieces of roof insulation can be installed back to back to form a continuous slope that begins at 1/2" and ends twelve feet later at 3 1/2 ". If the slope needs to be longer than three panels or 12' you can continue this same pattern but you will have to add a base layer of 3" flat regular iso behind the Z panel. Remember the Z panel finished height was 3 1/2" so when you add a 3" base behind the 1/2" of the next X panel continues the slope. You can repeat this processes as needed to reach the height or distance you need to remove the ponding water from your flat roof.

