



THE ULTIMATE GUIDE TO

Buying a Commercial Roof Repair or Replacement



INTRODUCTION

With the information in the following pages, you'll learn everything you need to know not only to avoid costly snafus and bad contractors, but to ensure you get the roof your business - and your bottom line - needs.

No one wants to waste \$50,000.

Unfortunately, it's not hard to do when you're repairing or replacing a commercial roof. These systems are complex and expensive - and they're critical to protecting your investment, whether it's a warehouse filled with products to ship, a manufacturing facility full of expensive equipment, an apartment complex, or an office building.

That's why we've put together this comprehensive guide to purchasing a commercial roof.

With the information in this guide, you'll not only avoid wasting resources, but you may even *reduce* your overhead - yes, the right commercial roof system can cut your energy costs by tens of thousands a year (more on that in our discussion of spray foam systems).

So, if you have questions about how to hire the right contractor (and avoid a bad one), what kind of roof system is best for you (and which one is not), how to file an insurance claim (and get a fair payout), or how to get the best warranty (and *not* accidentally void it), you're in the right place.

And if you'd like to chat directly with me or my business partner, Dan, don't hesitate to give us a call. We're here to help.

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CHAPTER 1

7 FACTORS YOU MUST CONSIDER BEFORE REPAIRING OR REPLACING YOUR ROOF

A commercial roof is a significant investment, and, like any investment, it requires careful planning and consideration. Unfortunately, because roofs are rarely replaced and repaired, you may not be aware of all the options and factors involved, and most contractors won't thoroughly educate you (they may even lack the education themselves).

This can leave you trying to piece together the correct information independently. Without industry knowledge and experience, this can result in an inferior solution or even an expensive mistake.

What You'll Learn:

The 7 factors you can't ignore when repairing or replacing a commercial roof.

In the following article, we'll discuss the seven most important things you should consider when repairing or replacing your commercial roof.

7 FACTORS YOU MUST CONSIDER REPAIRING OR REPLACING YOUR ROOF

1. Current Roof Type

Your current roof dictates what repair or replacement options are best for you, as different kinds of roofs are compatible with different materials, have different lifespans, and are associated with different costs.

Knowing this can help you weed out inexperienced contractors. Asphalt, for instance, is not compatible with TPO, so you don't want to repair the latter with the former, and you'll want to steer clear of any contractor that suggests you do.

It can also help you avoid wasting time. Some contractors also work with a limited number of materials - you don't want to set up an inspection only for them to hop on your roof and tell you they don't work with it.

If you're having trouble identifying your roof, an experienced contractor can do it if you provide them with a photo. If you give them your address, they may also be able to do it using Google Earth.

2. Current Roof Condition

The age and condition of the roof also determine what you can do with it.

If maintained properly, most single-ply roofs (the most common commercial flat roof) have a manufacturer-specified lifespan and warranty of 20-25 years. However, a well-maintained roof often has an additional 40-70% of life left, even after 20 years.

This means it can be restored for half the price (and warrantied for another 10-20 years) with an elastomeric coating. Metal roofs have much longer lifespans, from 35 to 70 years, but they, too, can be restored with a coating if they're in good condition.

Has your roof had multiple repairs in the past? This may indicate deeper underlying problems or poor installation. Knowing this before the inspection can give your contractor an idea of what to look for and help them provide a solution more quickly.

3. Building Use

Building use plays a critical part in creating the right solution. Different materials and installation methods will be used depending on what conditions your roof needs to withstand.

Industrial

In an industrial setting, many roofs must be strong enough to withstand heavy foot traffic or chemical exposure. This would be a contraindication for certain materials, like TPO, unless they are also treated with an elastomeric coating. PVC, an extremely tough single-ply, is an excellent choice for re-roofing industrial applications, while certain roof coatings are ideal for restoration or repairs.

Truck Dock

In a truck dock with open bays, the wind will enter the building and exert upward pressure on the roof. This may change how the assembly needs to be attached. If you have a metal roof, for instance, you can't simply attach it to the framing as you would in most cases; you'll need to lay it over decking (usually plywood), which will shield the metal panels from internal wind pressure.

Multifamily Housing

With multifamily housing, there are additional considerations and constraints placed on installation. Roofers may only be able to work between 8 am and 5 pm, and you may have to coordinate interior access with tenants.

Food Processing Plant

Special precautions must be taken in any food processing facility to ensure dust and debris are not shaken loose during repairs or installation. While traditionally this meant shutting down parts of the plant or moving equipment, more modern solutions (elastomeric coatings in particular) can often allow you to keep business operations going while protecting your products from contamination.

Hospital

In a hospital, additional precautions are needed to reduce noise, and special materials may be used to eliminate unpleasant odors. The latter can be particularly problematic as the smell from chemicals used on the roof may be taken up into the ventilation system.

Restaurant

Because the ventilation system tends to deposit grease on the roof, significantly more prep work may be required for restaurants. The roof needs to be thoroughly cleaned before repairs or restoration can begin. Additionally, certain roof membranes will disintegrate when exposed to oils and fats, so a tough material like PVC or certain elastomeric coatings is recommended.

4. Holding Period

Different roof systems and repair solutions have different life cycles. In some situations, you may only need a solution that lasts a short period. If, for instance, the building will only be in use for another 3-5 years and will then be torn down and replaced, you don't need a 20-year restoration. But a replacement may be in order if you're planning to hold the building for multiple decades. If you plan to sell the building, a healthy roof with a strong warranty will make the building more attractive to potential buyers.

5. Budget

Budget, of course, is also a constraining factor. You can't buy a Mercedes-Benz with a Buick budget - but a solid Buick will do the job. Do you have capital for roofing, or will you need financing? Good commercial roofing is never cheap, but a good contractor can craft a high-quality solution for multiple budgets.

6. HVAC Costs

If your building is climate-controlled, HVAC costs will substantially impact a roof investment. Why? A quality roof with the proper insulation can save you tens of thousands of dollars a year in reduced HVAC costs. In fact, a Texas A&M study concluded that the energy savings from a spray foam roof (the most energy-efficient roof system in the world) could pay for its entire cost in just five years. Most of our clients at GIDEON see a drop in their HVAC costs even before we finish installing the system. It's crucial to discuss insulation options with your contractor in detail, as this factor contributes both to your roof's upfront cost and your savings down the road.

7. Timeline

Time of year affects contractor availability, working conditions on the roof, and the price of roofing installations. Late Spring through early Fall is the ideal time to build a roof from a working conditions perspective, so the best contractors often get booked up for this period during the Winter months.

However, booking a project for the Winter may be ideal if you are looking for a discounted price. But not all systems can be installed in the Winter. Roof coatings, for example, will freeze if applied when temperatures are below 50 degrees Fahrenheit. On the other hand, single-ply systems like TPO and PVC will present no issues during winter installation.

Hopefully, this article has helped structure your thinking about your roof project, giving you a clearer picture of the factors involved, stimulating questions for further exploration, and providing a solid foundation for next steps.

If you need more guidance, give us a call. In a free, no-obligation consultation, we'll answer any questions and give you customized guidance.

Just call the number below or click the link on the right to schedule a time.

(833) 717-2433

Book My Free Consultation

UP NEXT: HIRING A GOOD CONTRACTOR





CHAPTER 2

HOW TO HIRE A GOOD COMMERCIAL ROOFING CONTRACTOR

The commercial roofing industry can be the wild west. On the one hand, you have world-class companies with Fortune 500 clients; on the other, you have "Bob & a Bucket" and "Chuck in a Truck" roofers who cut corners and compete solely on price. Finding a great company can be time-consuming and difficult, especially for someone unfamiliar with the industry.

At GIDEON, we've been in the roofing world for 20 years, and have worked with some of the best roofing companies in the country (and some of the worst).

What You'll Learn:

- What questions to ask a roofing contractor to determine competency.
- Common mistakes people make when hiring commercial roofers.

In this chapter, you'll learn how to find, vet, and hire a highly professional, reputable commercial roofing company so your roofing experience is a breeze - not a 5 figure headache.

4 MISTAKES PEOPLE MAKE WHEN HIRING A COMMERCIAL ROOFING CONTRACTOR

Mistake #1 Treating Roofing Like a Commodity

As a business owner or a property manager, you know that efficiency is essential. The last thing you want is to spend money on an overpriced project that doesn't contribute to the bottom line. For this reason, many people either go with the lowest roofing bid they can find or try a low-effort, low-budget, quick-fix repair. While this may save money initially, it almost always costs you far more in the long run...or even - in the case of a bad repair - in the short run.

The fact is - expertise and skill vary substantially in the roofing industry. Costly mistakes by cheap contractors are common; this is why many flat roofs last only around half of their manufacturer-intended lifespan. If your decision is heavily influenced by upfront price, you're almost certain to get a low-quality job that will create inefficiencies, lead to constant headaches, and ultimately cost you more down the line.

The same goes for quick-fix repairs. At Gideon, we often work with owners and managers who've attempted multiple quick-fix repairs, and now, due to extensive damage, they need to replace the entire assembly. They could've spent far less if they'd worked with a more experienced contractor two or three years earlier. An old 10,000-square-foot roof, for instance, can often be restored entirely (with a brand-new warranty) for around **\$40,000**. But if you wait an extra two years, just getting by with inferior patch jobs, your roof may deteriorate to the point that it needs to be replaced. How much will this cost? Around \$120,000.

Mistake #2: Not Learning About Roofing

Roofing (particularly commercial roofing) is a complex product, which means it's vital that you educate yourself on your options. Unfortunately, quality varies a great deal among roofers, so it's important that you can have an intelligent conversation with your contractor and determine their level of competence. We recommend that you learn about the types of roof systems available, the type of roof system you currently have, the pros and cons of different systems, how commercial roof warranties work, and the various components of roof systems. With this knowledge, you can make better decisions and avoid subpar solutions.

Mistake #3: Hiring a Residential Contractor

Commercial roofs are worth much more than residential, so residential contractors are often looking to step into the commercial roofing world. Unfortunately, they don't always have the requisite knowledge. They may get a call from a local building owner and enthusiastically agree to do the job, then put a solution together based on internet research and bits of advice from their contractor buddies. You may get lousy work and pay extra for it in this situation! They may, for instance, recommend a brand new roof when you only need a repair, then install it in violation of the manufacturer's recommendations, voiding the warranty. Instead of spending \$4,000 on a proper repair, you've now spent \$40,000 on an un-warranted system.

To avoid this, vetting your contractor's qualifications is essential. How long have they been doing commercial roofing? Have they ever worked on a roof like yours before? If so, how did the job turn out? Are they certified by commercial manufacturers? (Manufacturer certifications are necessary to qualify for warranties). Asking these questions can help you make sure they have the requisite qualifications.

Mistake #4: Hiring a One-Trick Pony

Some contractors (especially inexperienced ones) are one-trick ponies, meaning they only know how to install one or two roof systems. For instance, roofers specializing in TPO are common because TPO is inexpensive, easy to install, and heavily promoted by manufacturers. While TPO is an excellent system, it's not the best solution for everyone. This is why it's often better to work with a company that isn't limited to a particular system but can offer you multiple options tailored to your situation.

Ultimately, a good roofing contractor will take a consultative approach. Rather than simply presenting you with their preferred solution, they'll focus on learning about your business and your building, asking the right questions, and crafting a solution based on your needs.

HOW TO HIRE A GREAT COMPANY

Now that we've talked about the biggest mistakes you can make in the hiring process, let's talk about how to ensure you hire a roofing company that can get the job done right.

Start by creating a shortlist of contractors to consider. Recommendations from colleagues in your industry can be a valuable starting point, along with online reviews and testimonials. Make sure to check Better Business Bureau ratings and read online reviews critically—sometimes, one bad experience can color an otherwise reputable contractor unfairly.

Basic Qualifications

A good commercial roofing company will have the following qualifications:

- Licensed, if necessary. Most, but not all, states require roofing contractors to be licensed. You can check licensing requirements [here](#).
- Insured. Roofers should have general liability and worker's compensation insurance.
- Bonded. Contractors should have a surety bond that makes the surety company liable for any default or failure.

- Can provide references from past work.
- Are certified by the manufacturers of the roofing systems they use.
- Offers a minimum 2 year workmanship warranty.

Questions to Ask Your Contractor

Once you've narrowed down a list of contractors. It's time to interview them. Below, you'll find a list of questions you can ask to help determine their qualifications.

- How many years have you been in business?
- How do you perform inspections? What is your process?
 - A proper inspection is critical to success. Check out our article on inspections to learn how to evaluate them.
- Are you licensed and certified for commercial roofing work in this state?
- Do you carry liability and workers' compensation insurance?
- Can you provide references from recent projects, particularly those similar to mine?
- How would you approach my specific project? What potential challenges do you foresee?
- Do you use subcontractors? If so, how do you ensure their qualifications and reliability?
- Will you take care of obtaining the necessary permits? Are you familiar with the local building codes and regulations?
- How soon can you start the project? What would be the estimated completion date?
- Who will be my primary point of contact? How often can I expect updates, and in what form?
- What warranties do you offer on your workmanship and the materials used?
- How do you handle disagreements or issues if they arise during the project?
- What does your post-completion service look like? What happens if problems occur after the project is completed?
- How do you ensure the safety of your workers and others on the job site? Do you comply with OSHA regulations?

EVALUATING BIDS

Once you've interviewed contractors and are ready to get bids, you'll need to know how to evaluate them. In part, the understanding of roofing systems you gain in this guide will help you do that. However, many roofers skimp on quality, and may even be dishonest in an attempt to reduce their bid prices. In this section, we'll cover 6 ways, dishonest roofers skimp on quality in order to win the bid.

1. Change Orders

Unfortunately, the infamous "change order" is a common occurrence in the roofing industry. A change order occurs when your roofing contractor changes the scope of work in the middle of a project. They've discovered an unexpected issue that needs to be addressed - and now your bill is going up an extra \$15,000.

Change orders often result from a poor inspection. Your contractor may have neglected to take a core sample or research local building codes. But sometimes change orders occur because the contractor purposely left key components out of the bid to keep the price low. Now that the job is in progress and you're locked in, he can add those back in as "unexpected" additions to the scope of work.

2. Not Building a Taper System

This is the most common reason one contractor's bid is substantially lower than another's.

A taper system allows proper water drainage on a flat (or low-slope) roof. While the underlying roof deck may have a very moderate slope, it is not enough to allow for adequate water shedding, so the contractor must build a taper system on-site using tapered (or sloped) insulation underneath the waterproof membrane.

In a taper system, sloped insulation creates multiple shallow channels that direct water flow toward specific drains and scuppers along the roof's edge. It works just like your shower pan at home, but instead of directing water toward a single central drain, your roof system directs it toward multiple drains at the roof's edge.

Roofers can reduce costs by around 20% by not building a taper system.

You might think, "But water drainage is critical. Are roofers really leaving this out of the scope?" The surprising and unfortunate answer is: yes, this is extremely common. And the ponding water that results not only wears out the seams, creating leaks; it also magnifies the intensity of the sun's rays, destroying the membrane much faster. This is the reason that, despite typically coming with a 20-year warranty, most TPO roofs only last around 13 years.

Moreover, if you file a warranty or an insurance claim on a roof without a taper system, it is very likely you will be denied.

How do you protect yourself from this? If you are replacing your entire roof system (either laying a new one over the existing one or tearing-off and replacing) you should see tapered insulation in the scope of work, unless the building already has a tapered substrate (the deck, usually made of metal, wood, or concrete, that the roof assembly sits on top of). If you don't see tapered insulation, ask your contractor why.

Not Installing Coping Cap

This is another very common way of reducing bid price.

Coping caps are metal covers that go over the top of the parapet walls on a commercial roof. They're designed to direct water away from the roof and prevent water from seeping under the membrane. They also protect the top of the wall itself from being damaged by the elements.

When installing a single-ply roof membrane, your roofer should run it all the way up the parapet wall and then secure it with a metal strip called a "termination bar." The coping cap should go over the top of the parapet wall and the termination bar, covering the membrane edge and preventing water from seeping underneath and into the roof assembly.

In many cases, roofers will dispense with coping cap and only run the membrane partially up the wall, perhaps halfway. This saves them on both labor and materials, but it leaves your membrane unprotected. It is not uncommon for water to then run down the wall and eventually seep beneath the membrane, saturating the insulation and causing leaks.

Again, in the majority of cases of roof replacement, coping cap should be included on the bid, and you should ask your roofer how they plan to install the membrane. Are they running it all the way up the wall or just half-way?

Not Insulating Properly

Another area where contractors may try to skimp on costs is the insulating material. Either they will not install insulation that is thick enough to meet building code requirements, or they'll skip insulation entirely, simply installing cover board (a thin half-inch piece of rigid decking that is used to protect insulation).

Even in cases where the insulation installed does meet code requirements, however, you have to consider future cost savings when comparing insulation. The right kind of insulation can save you substantially on energy costs, more than making up for a higher upfront price. Spray foam roofs, for instance, are so energy efficient that they can pay for the entire roof system in just five years.

Always discuss insulation with your contractor. Discuss your options, energy efficiency, R-value vs U-value, and what local building code requires.

It may also be a good idea to check on them during installation to ensure they are installing the material quoted on the bid. It is not unheard of for contractors to quote a more expensive insulation material, but use a thinner, less expensive one.

Using a Lower Membrane Mil Thickness

Some roofers may reduce their costs by using a thinner membrane material of 45 mil, which is only suitable for houses, not commercial buildings. 60 mil is the standard for most membranes, and you should see at least this thickness on your bid.

Offering an Inferior Warranty

It's important to understand your warranty options thoroughly. In order to lower costs, many contractors will simply offer the standard "material warranty" from the manufacturer. Since most systems come with 20-year warranties, this may sound like a good deal, but material warranties only cover manufacturer defects, not installation errors. And in the vast majority of cases, if a roof unexpectedly fails, it is the result of installer error, not a manufacturing defect.

You may be offered a workmanship warranty (a warranty provided by the contractor that covers installation errors), but it's important to remember that these often last only two years, and roofing contractors may go out of business before then, leaving you with no recourse.

A system warranty is the gold standard. This all-inclusive warranty is guaranteed by the manufacturer and covers both fabrication defects and installation errors. But system warranties are only valid if:

- a) the roof has been installed by a contractor that's been approved by the manufacturer
- b) The manufacturer has performed a thorough inspection of the installed roof

Contractors who qualify for system warranties will be of higher quality and more expensive than contractors who do not.

But even if your contractor installs a roof with a system warranty, you may still lack protection. Why? Because many manufacturers do not inspect underneath the roof assembly for errors. They simply check the top of the roof. If, however, you file a warranty claim later on and they do discover problems with the assembly, they may deny your warranty claim. We'll cover warranties in detail in Chapter 5.

We've covered a lot in this chapter! Hopefully, you are now armed with all the knowledge you need to thoroughly vet a roofing contractor and hire someone who can get the job done right.

If you need more guidance, we're just a phone call away. We'll be happy to sit down and discuss your roofing project, at no cost to you.

Just call the number below or click the link on the right to schedule a time.

(833) 717-2433

Book My Free Consultation

UP NEXT: ROOF INSPECTIONS 



CHAPTER 3

WHAT A GOOD ROOF INSPECTION LOOKS LIKE

Would you like to pay for an expensive roof repair only to discover months later that you still have the same problem? We don't think so! Unfortunately, this is a widespread occurrence, and the number one reason is that the contractor didn't do a proper inspection.

At GIDEON, we've inspected thousands of roofs over the last twenty years, so we know what it takes to diagnose and fix your problem right the first time. In the following comprehensive article, we'll explain exactly what you need for a great roof inspection.

What You'll Learn:

- The dangers of a bad roof inspection
- What you should know to ensure you get a good inspection from a reputable company.
- How to prepare for a roof inspection.

DANGERS OF A BAD INSPECTION

Comprehensive inspections are vital to diagnosing your roofing problem and providing an accurate quote. There are rarely easy, out-of-the-box solutions to roof damage. The contractor needs to understand what damage has been done, what kind of roofing system you have, what type of insulation you have, what kind of building you have, etc., to provide you with a real solution and a reliable quote.

WHAT HAPPENS IF YOU GET A LOUSY INSPECTION?

- Wasted Time
- Wasted Money
- Leaky Roof

FACT

Many facilities managers and building owners get into a cycle of hiring a contractor to fix a problem, discovering it didn't work, hiring a new contractor, finding their repair didn't work, etc. It's a vicious cycle we see too often.

Unfortunately, not all roofing companies do a proper inspection. Many times, instead of sending a true expert to inspect your roof, companies will send salespeople. These salespeople often lack in-depth knowledge; their primary goal is to sell you a solution and make their commission. As a result, you may spend good money on a repair or a replacement, only to have the same problem in a year or two.

WHAT A GOOD INSPECTION LOOKS LIKE

Initial Consultation

A good roof inspection begins, first and foremost, with a proper consultation. The consultation allows the roofing company to set up an inspection properly, which will save time for everyone. A good roofing company will ask you three primary questions:

Where are you located?

This allows them to pull up your building on google earth. With this visual alone, they can get an idea of what kind of roof you have, how old it might be, and if there are any apparent problems.

How long have you owned the building, and what is its maintenance history?

This gives them an idea of the age of the system, where you are in the warranty period, and what kind of problems they might discover in the inspection.

Why are you calling a roofer now?

This is the most important factor in determining what type of inspection will be done. You may fall into one of four categories:

1. You're selling the building

In this case, the contractor is likely to do a basic visual inspection for obvious signs of wear or damage, estimate the remaining roof lifespan, and ask you what the potential buyers

plan on doing with the building. This last question is important because if the new owner intends to do something new with the building, it may be necessary to modify, coat, or even replace the roof. If they plan to put a restaurant in, for instance, the current roof membrane may not be able to handle grease from the ventilation system.

2. You just had a storm

In this case, a contractor should comprehensively inspect the top side of the roof, checking for hail, wind, or water damage. They should also help you file an insurance claim, and to that end, they should ask if you have photo documentation of the storm (to verify hail size, date, etc.) and storm duration.

3. You have a leak

In this case, the roofer will start with an interior inspection of the leak area to determine where it might be on the roof and what kind of decking you have, then proceed to a thorough inspection of the roof assembly, top to bottom. A core cut and infrared scan may be necessary to determine saturation.

4. You are coming to the end of your roof warranty

In this case, you need a comprehensive inspection of the roof assembly to determine if you can save the roof. In many cases, roofs at the end of their warranty have 40-70% life left and can be restored (with a brand new warranty) with a roof coating. This can save you a substantial amount of money, lowering your cost from around \$8-\$12 per square foot to \$4-\$6 per square foot.

Roof Assembly Inspection

Once they've learned what they need from the consultation, a contractor will walk the roof and inspect the assembly. While the thoroughness of an inspection depends on several factors, as noted above, we'll use a comprehensive inspection as our example.

Penetrations, Seams, Flashings

Penetrations are anything that sticks through the roof membrane, such as HVAC units, chimneys, plumbing pipes, ventilation ducts, skylights, etc. Each of these creates seams in the roof that must be sealed, and sealant failure is the most common cause of leaks.

HVAC units can cause additional problems due to the water they collect from condensation. This water accumulates in a special pan inside the unit and frequently leaks onto the roof. Because the water is acidic, it can destroy the roof membrane over time.

They will also look at other seams, such as where two single-ply membrane panels come together, as well as flashing. Like seams in the membrane or around penetrations, these are the most likely to fail and cause leaks.

Drainage System

A good contractor will also inspect the drainage system, including gutter systems, gutter troughs, downspouts, and collector's heads. What condition are they in? How well do they remove water? Is anything clogged? Are they strong enough to hold weight, such as ice in the winter?

Walls

It's also essential to inspect the walls. What condition are the walls themselves in? Does the roof material properly adhere to the walls, or is it sliding off? What kind of coping do the walls have, and what is their condition?

Understanding the height of the roof wall is vital to an accurate scope of work. The National Roofing Contractors Association (NRCA) standard requires the walls to be 8 inches above the roof membrane. If they're going to lay a new roof on top of an existing one, the roofing company may need to raise the walls. They may also need to raise the walls due to new regulations. Old buildings, for instance, require R-20 insulation, which is only 4-6 inches thick. Currently, regulations require R-30 insulation, which could be 6-16 inches thick. If you're replacing R-20 with R-30, we may need to increase the height of your roof walls.

Roof Membrane

And, of course, the roof membrane needs to be inspected. Your contractor should check for ponding water, mechanical damage from repair technicians (or even falling bullets), and debris (volleyballs, trash, bottles, plant growth). They should also check for weathering (cracking, splitting, blistering) and any signs of improper installation, such as unnecessary overlaps or exposed fasteners.

For a single-ply membrane like TPO, we also perform a "tug test" to test how well the membrane adheres to the roof deck.

It is especially important to perform an analysis of ponding water, as its presence indicates that water has infiltrated the roof assembly, saturating the insulation and compressing the roof under its weight. The roofing company needs to understand the size and depth of the depression created by ponding water so it can not only fix the underlying water saturation but re-level the area to prevent ponding in the future.

It is also important to look for anomalies. An anomaly is where the membrane or roof system differs in appearance from one area to another. This could be caused by improper installation or a manufacturing defect. Correctly identifying this can allow you to file a claim on your roof's warranty and save you from paying for a repair or replacement.

Insect infestation is another important part of assessing the membrane that you don't want your contractor to miss.

Moisture Scan

A proper moisture scan may also be necessary. A contractor will look for trapped moisture inside the roof assembly using infrared imaging. Why is this necessary? Well, it's not unheard of for a contractor to discover that a large part of the roof is saturated with moisture and recommend a complete roof replacement. This may not be necessary, however, as the rest of the roof may be moisture free. With an infrared scan, you can determine exactly how much of the roof is saturated and potentially save thousands - if not tens of thousands - of dollars.

Core Samples

Taking a core sample means cutting into the roof to determine what the assembly is composed of. This allows us to determine what we will need to do during a repair or replacement. How many membrane layers are there? What kind of insulation was used in the original installation? What kind of mechanical fasteners does the roof use, 4-inch screws or 12-inch screws? This information is vital to creating an accurate scope of work and a proper price quote.

Unfortunately, not all contractors do a core cut, which can result in an inaccurate scope of work and costly change orders in the middle of a job. Imagine purchasing a \$10,000 repair, only to learn halfway through that your contractor needs to add something to the scope of work, and it'll cost you another \$8,000. It's not an uncommon situation.

Measurements

Last but not least, we need to obtain accurate measurements of the roof assembly to create an accurate scope of work and an estimate.

Comprehensive Report and Documentation

A good contractor gives you more than a verbal report and a few photos. A proper inspection report will include photos of all roof components inspected, particularly the problem areas, as well as detailed explanations of current conditions, the prognosis for your roof system, and what work needs to be done.

HOW TO PREPARE FOR A ROOF INSPECTION

Here are some steps you can take to prepare for the inspection:

Plan the inspection: Schedule the inspection with the roofing firm at a suitable time. Choose a day with ideal weather conditions.

Notify tenants and employees: Inform your building's occupants and personnel of the scheduled inspection, as well as any anticipated interruptions or access needs. Provide them with the day and time of the inspection, as well as any sections that will be temporarily closed.

Clear the roof area: Remove any debris, equipment, or stored goods from the roof to allow us to access all areas.

Make interior spaces accessible: Make sure that the inspector has access to any internal locations that need to be examined, such as attics, higher floors, or ceilings.

Make yourself available for questions: During the inspection, make yourself or a qualified staff member accessible to answer any questions the inspector may have and offer extra information on the building or roof if needed.

Follow safety precautions: Let the inspector know about any risks or areas of concern on your property.

Gather documentation: Provide any documentation you have on your roof, such as warranties, prior inspection reports, or records of previous repairs or installs.

The last thing you want to do is pay for something you don't need, or that doesn't work, or be surprised by an expensive addition to a job you already paid for. As we've discussed in this article, avoiding these costly SNAFUs starts with a proper inspection.

If you have more questions, or are considering GIDEON for your roofing project, you can reach us at the number below. We're happy to provide you with customized guidance in a free, no obligation call.

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UP NEXT: UNDERSTANDING WARRANTIES 

CHAPTER 4

UNDERSTANDING COMMERCIAL ROOF WARRANTIES

Imagine spending \$80,000 on a brand-new roof for your building. You settle on an installer who promises you a 15-year warranty. Fast-forward two years, and you have a major leak. You call the contractor, only to discover the company has gone out of business. So you contact the manufacturer, hoping they'll guarantee their product. But after a phone call, you learn that your warranty only covers installation errors. Since the contractor is out of business, your warranty is junk. You now have to spend \$10,000 on a costly repair.

What You'll Learn:

- What a roof warranty is...and what it's not.
- Misconceptions about warranties.
- How to select a roof warranty.
- How to maintain your roof warranty.

Unfortunately, the situation described is not unheard of, so it is crucial for you to understand your warranty options thoroughly, which is why, in this article, we'll review commercial roof warranties in detail.

WHAT IS A COMMERCIAL ROOF WARRANTY?

A commercial roof warranty is an agreement that guarantees that you will not be financially responsible for repairs or replacements needed as a result of manufacturing defects or improper installation. Essentially, it ensures that your roof system will perform as intended.

Warranties help protect your investment. A commercial roof can cost anywhere from \$50,000 - \$2 million, and the last thing you want is to repair or replace something due to manufacturer or installer error. Warranties incentivize contractors and manufacturers alike to perform quality work.

Kinds of Warranties

There are three types of commercial roof warranties:

1. Material Warranties

A material warranty covers, well...the material. Provided by the manufacturer, this warranty guarantees that your roof system will be free of fabrication defects. It typically ranges from 10-30 years, though some premium systems are guaranteed for up to 50 years. It does not cover the labor cost needed to replace the defective material or any issues caused by poor workmanship or installation.

2. Workmanship Warranties

Workmanship warranties are provided by the contractor and cover problems that result from mistakes made during installation. They typically include the cost of both the labor and materials needed to fix the problem. Workmanship warranties usually last between 2 and 10 years, although some will go as high as 15.

3. System Warranties

System warranties are all-inclusive warranties that cover both manufacturing defects and installation errors. System warranties are offered by the manufacturer and are only valid if the system has been installed by a certified contractor approved by the manufacturer. A system warranty covers labor and materials costs and generally lasts 10-20 years, with a few unique systems lasting 25-35 years.

4. No-Dollar Limit (NDL) Warranty

The value of most warranties is amortized over the warranty period. In other words, if you have a 20-year warranty and file a claim in year 10, only 50% of your costs may be covered. There is no amortization with a no-dollar-limit warranty. All your expenses will be covered regardless of where you are in the warranty period.

COMMON MISCONCEPTIONS ABOUT WARRANTIES

Misconception #1: Warranties cover all kinds of damage

Warranties are limited to the specific types of damage stipulated in the agreement. This may be workmanship errors, manufacturing defects, or both. Weather events, disasters, and failures caused by lack of maintenance are generally not covered. It is also imperative to understand that modifications to the roofing system often void your warranty. For instance, installing solar panels frequently voids a commercial roof warranty.

Warranties also do not cover "consequential damages," i.e., damages to non-roof items caused by roof failure. If desks and computers, for instance, were damaged by a leak, your roof warranty will not cover them.

Misconception #2: A longer warranty means better coverage

While a longer warranty sounds great, it's important to understand limitations and exclusions. You may be covered for 30 years, but if your coverage only includes certain kinds of roof failure, it may do you little to no good.

Misconception #3: A warranty guarantees a roof's performance

Warranties usually cover only errors and defects on the part of the manufacturer or the installer. They don't guarantee that your roof will remain leak-free or stand up to large hail. Some systems, by nature, do not perform as well as others, so selecting the right one for your needs is still crucial.

Misconception #4: A warranty substitutes for proper maintenance

Many warranties require the building owner to maintain and inspect the roof regularly to maintain coverage. It is vital to read the warranty agreement carefully and understand what the manufacturer requires to maintain its validity.

SELECTING A WARRANTY

When examining different roof systems based on warranty, there are some factors to consider:

1. How Are You Using the Building?

Single-ply systems - like TPO, EPDM, and PVC - usually have a 20-year warranty. While this length of time will suffice for many organizations, there are some cases when a 25, 30, or even 35-year warranty may be a better choice.

If you are likely to remain in the same building (and put it to the same use) for many years, i.e., if you are a hospital, school, utility provider, or government organization, a longer warranty may be a better choice. Suppose you are a high-security building, such as a data center, financial institution, prison, or museum. In that case, you may want to minimize the times you have major maintenance projects done, as these could pose a security risk.

2. Are You Installing a Single-Ply System or an Elastomeric Coating?

Warranties for single-ply systems and elastomeric coatings differ in two key ways.

a) Warranty Length

While single-ply systems frequently last for 20-30 years, roof coatings usually come with 10-year systems warranties. In fact, until a decade ago, roof coatings only came with 10-year systems warranties. Now, 15 and 20-year systems warranties are available. The difference between a 10-year roof coating warranty and a 20-year one is the contractor's skill. Because fluid-applied coatings are, in a sense, manufactured on-site, the skill of the contractor is a critical element of future roof performance. Only contractors that have proven to manufacturers that they possess a very high skill level will qualify for 15 or 20-year terms.

b) Manufacturer Inspection Standards

No manufacturer will approve a warranty until they have inspected the roof to ensure it was installed to specifications and that the contractor didn't pull a "Heinz 57" (a roofer's term for cobbling together materials from multiple manufacturers). However, the kind of inspection done by single-ply manufacturers differs substantially from that done by coatings manufacturers. A single-ply manufacturer will - in most cases - only inspect the top of the roof. This means that the manufacturer does not know if the installer has complied with local building codes regarding insulation or wind resistance or if they have adhered the system properly to the deck.

The manufacturer trusts that the installer did these things correctly. So while they may approve the roof upon initial inspection, you may file a warranty claim only to discover the contractor did not install the system to specifications, potentially voiding your claim.

A coatings manufacturer, on the other hand, will do a thorough inspection (including a core cut) to determine that the system was installed to exact specifications. If it does not meet their specifications, they will not issue a warranty until the contractor re-coats the roof. This provides you with a great deal more confidence than an inspection by a single-ply manufacturer.

3. Cost

The better and longer the warranty coverage, the better and more durable your system, so you can expect a price increase for a superior warranty.

A 10-year warranty will typically add 6-10 cents per square foot to your bill, a 15-year warranty will add 15-25 cents per square foot, and a 20-year warranty will add 17-30 cents per square foot.

The key takeaway for building owners and facilities managers is that it is vital to hire a skilled and reputable contractor if you want to protect the value of your asset. Whether you choose a single-ply system or a roof coating, a skilled and honest contractor will ensure that you get a system that lasts and a warranty that is valid.

MAINTAINING YOUR WARRANTY

Different manufacturers have different requirements for maintaining their warranties. A few common ones are:

- Have regular rooftop inspections at least twice per year, immediately following rough weather and after any service work (such as HVAC maintenance).

Contact the manufacturer before doing any repairs or other roof work. They will usually require a certified contractor to perform the work according to their standards.

If filing a warranty claim, do so within 30 days of discovering the issue.

Keep a record of all work performed on the roof, including non-roof maintenance and employee traffic logs

Keep in mind this is not an exhaustive list. It's important to read the warranty and understand the specific requirements of your manufacturer.

At the end of the day, no one wants to make a bad investment. This is especially true if you own or manage a commercial building. A good, comprehensive roof warranty can provide you with invaluable protection.

If you need more guidance, give GIDEON a call. In a free, no-obligation consultation, we'll answer any questions and give you customized guidance.

Just call the number below or click the link on the right to schedule a time.

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UP NEXT: FILING AN INSURANCE CLAIM



CHAPTER 5

HOW TO FILE AN INSURANCE CLAIM ON YOUR ROOF

Unfortunately, filing an insurance claim on your commercial flat roof is not as simple and easy as it should be. There are strict dates you need to abide by and specific ways damage must be documented - and there's no guarantee your insurance company will treat you fairly.

At GIDEON, we've negotiated and settled 10s of millions of dollars in insurance claims, including many that the insurance company initially denied, so we know what it takes to process a successful claim.

What You'll Learn:

- Step-by-step instructions on for filing an insurance claim on your commercial flat roof
- Helpful tips and best practices to ensure the process goes smoothly and you get the payout you deserve.

FILING A ROOF INSURANCE CLAIM: STEP-BY-STEP

Step 1: Note the Storm Date

If you've been hit by a major storm, particularly one that includes hail, and you suspect you have storm damage, it is crucial to note the storm date. The insurance company requires this to validate your claim.

Step 2: Contact a Commercial Roofing Contractor

The next step is to contact a commercial roofing contractor to perform an inspection.

Why contact a roofing contractor before the insurance company? The reason is that your insurance claim will be decided by an insurance adjuster - who works on behalf of the insurance company, not you. His fiduciary responsibility is to the insurance carrier, *and the proof of loss is on you.*

When dealing with insurance claims, having a professional, licensed roofing contractor by your side can be the difference between a fully-paid replacement and a costly claim denial. Not only will they assess and document roof damage, but they also understand how to navigate the claims process and advocate on your behalf - and, given that scant payouts and unfairly denied claims are common in roofing, you need an advocate.

But not every contractor is qualified to handle large-loss commercial insurance claims. Look for contractors with positive customer reviews, proper licensing, manufacturer certifications, and insurance.

Once you have a few contractors on your list, ask about their experience with insurance claims and how they can assist you throughout the process. Remember, the goal is to find a contractor to advocate for you, ensuring you get the insurance payout you deserve.

Helpful Tip: When interviewing potential contractors, ask about their previous experiences with insurance claims. Have they worked with your specific insurance company before? Can they provide references from clients they've helped with insurance claims?

Step 3: Contractor's Inspection & Documentation of Damage

Once you've selected a professional roofing contractor, they'll inspect your roof. Their expertise can accurately identify issues that an untrained eye might overlook. They also will understand how insurance companies view, categorize, and validate damage, and they'll be able to document it correctly to support your claim.

During their inspection, the contractor will take photos and detailed notes of all the damage. These will form a part of the crucial documentation needed for your insurance claim. A comprehensive inspection report should include clear images of the damage, a description of the roof's condition, and the necessary repairs or replacement to restore its functionality.

Helpful Tip: Your contractor's inspection report is an essential piece of documentation. Make sure it is detailed and includes visual proof of all damages. This will greatly support your claim when presented to your insurance company.

Step 4: Contact Your Insurance Company

Once the inspection is complete and the damage has been documented, it's time to file the claim with your insurance company. Typically, this involves notifying them of the damage and expressing your intention to file a claim.

Having a roofing contractor assist with this process can be invaluable. They can help explain the nature of the damage in technical terms that your insurer will understand. Furthermore, they can advise on how to present your claim, improving your chances of a successful outcome.

Remember to provide your insurance company with your contractor's inspection report and other supporting documentation, like before-and-after photos, receipts for any immediate repairs to prevent further damage, etc.

Helpful Tip: Record all correspondence with your insurance company, including phone calls, emails, and mailed documents. This will be useful if there are any discrepancies later on during the claims process.

Step 5: Work with the Insurance Adjuster

One of the critical stages in your insurance claim process is the adjuster's inspection. This is when your insurance company sends out an adjuster to assess the damage and confirm the details of your claim.

Your roofing contractor can be a valuable advocate during this process. During the visit, they can meet with the adjuster to ensure that all damages are accurately identified and properly attributed. With their expertise, they can help counter any potential underestimation of the damage by the adjuster and argue for a comprehensive restoration that aligns with your policy's coverage.

Helpful Tip: Having your contractor present during the adjuster's visit can significantly impact the outcome of your claim. Their expert knowledge can ensure that the adjuster's assessment is accurate and fair.

Step 6: Review & Finalize the Claim with Your Contractor

Once the adjuster has completed their inspection and your insurance company presents a settlement offer, reviewing this proposal with your contractor is essential. Their expertise enables them to analyze the offer critically, comparing it with their initial estimates and confirming it covers all necessary repairs or replacements.

Many insurance companies use specific software to determine the scope of work for your claim. One of the most commonly used is Xactimate, a comprehensive estimating program for building and repair costs. Xactimate provides pricing data for specific geographic regions and can produce detailed, line-by-line estimates that include everything from labor and materials to overhead and profit.

An experienced contractor will be familiar with Xactimate and can review the scope of work offered by the insurance company to see if it meets Xactimate standards.

If the settlement offer is insufficient, your contractor can help negotiate for more accurate compensation. They can provide additional documentation or argumentation to contest the offer, aiming to reach a fair settlement that aligns with the actual cost of restoring your roof.

Helpful Tip: A contractor's assistance can be invaluable during the settlement negotiation process. They can provide a detailed breakdown of costs that strengthens your case for a fair settlement, ensuring that you don't have to settle for less than your claim's worth.

Step 7: Schedule Repair or Replacement

The next step is to schedule the required repairs or replacements upon finalizing the claim. Your contractor will help coordinate this process, setting up a convenient timeline while adhering to any deadlines set by the insurance company.

The contractor will oversee the work, ensuring it adheres to industry standards, building codes, and the specifications outlined in the insurance claim. They will also handle any necessary permits and inspections, making the process seamless for you.

Helpful Tip: Post-restoration, your contractor can provide guidance on routine maintenance and preventative measures to help avoid future damage and potential claims. Regular inspections, for example, can catch minor issues before they escalate into more costly problems, ultimately saving you time, stress, and money in the long run.

INSURANCE CLAIMS FAQ

Q: Why work with a contractor? Shouldn't I just call my insurance agent?

A: Great insurance agents are worth their weight in gold - unfortunately, your agent doesn't decide your claim.

Insurance claims are decided by the adjusters - and the adjusters work on behalf of the insurance company, not you. Their fiduciary responsibility is to the carrier, and the proof of loss is on you.

Letting the insurance company manage your entire claim is a recipe for a lowball payout or a complete denial.

Q: What if the insurance company denies my claim, despite my roofer's best efforts?

A: If the insurance company denies your claim and won't budge, and you are confident your claim qualifies, hiring a public adjuster may be worthwhile. Unlike insurance adjusters, which work for the carrier, a public adjuster works for you. They specialize in overturning unfair claim denials and can be extremely helpful. For more information, check out our article on the Top Problems Building Owners Face When Filing an Insurance Claim.

Q: Don't I need to gather estimates from multiple roofers?

A: No, you don't. Your insurance payout is based on what is needed to replace or repair your roof to its original condition with like and kind materials. All you are responsible for is your deductible.

The roofing company and your insurance carrier negotiate the rest.

When it comes to choosing a roofing company, the most important thing is that you trust the contractor to do the job right. If insurance wants you to get multiple estimates, they're just trying to get *their* price down, not yours - and you could easily get a subpar job because of it.

Q: Do roofers charge for inspections?

A: In most cases, roofing companies do free inspections for storm damage, but this may vary from contractor to contractor, so it's important to ask.

Navigating the intricacies of filing an insurance claim for your commercial roof can be daunting, especially when you're uncertain about your policy details, the documentation requirements, or the negotiation process with your insurance company. It's a challenge that can feel overwhelming without the right guidance.

If you have more questions about how to handle your insurance claim effectively, give us a call. We'll be happy to discuss your situation in a free, no obligation call.

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UP NEXT: COMPONENTS OF COMMERCIAL ROOFS





CHAPTER 6

THE BASIC COMPONENTS OF A COMMERCIAL ROOF SYSTEM

Replacing or repairing a commercial roof can be a 5 - or even 7 - figure decision that can dramatically impact your business. Unfortunately, many building owners and property managers have only a cursory understanding of what goes into their roof, making it difficult to properly evaluate roofing contractors and quotes.

While there are numerous factors to consider when purchasing a roof repair or replacement, one of the best places to start is to simply familiarize yourself with the roof's fundamental components.

What You'll Learn:

- The basic components of a commercial roof: membrane, coverboard, insulation, decking, drainage, penetrations, flashing, & edge details.

In this article we'll do just that: enumerate all the basic components of a commercial roof and their functions within the system.

ROOF SYSTEM COMPONENTS

The Membrane

The roof membrane is the outermost layer of the roof system, the first line of defense against rain, snow, wind, hail, and damaging UV rays. Because it takes a beating from the elements, it needs to be versatile enough to handle any kind of weather condition.

There are several types of membrane commonly used on flat roofs, each with unique chemical properties that make them suitable for different applications. These include:

Single-Ply Membranes: These consist of a single layer (or “ply”) of material that comes in sheets of a particular size which are laid over the insulation and fixed to the decking as a complete assembly. The 3 common types are TPO, PVC, and EPDM (Rubber). These are the most commonly used membranes, with TPO alone making up 40% of commercial flat roofs.

Metal Roofs: Made from materials like steel and aluminum, metal membranes (or panels) are tough and very long-lasting. There are two primary types: exposed fastener and standing seam.

Built-Up Roofs (BUR): This type of roof is made from alternating layers of bitumen (asphalt) and reinforcing fabrics. BUR systems were the go-to roofing choice for over a century before being overtaken by TPO single-ply membranes.

Fluid-Applied Membranes: These membranes are sprayed or rolled onto existing roofs where they cure into a tough, durable covering that protects and restores an aging roof. They are becoming more popular as they can improve the strength, longevity, and energy-efficiency of an existing roof, at a comparatively low price. They are also a popular choice for helping organizations achieve sustainability objectives, as they produce very little waste and reduce energy consumption and carbon emissions.

Modified Bitumen: These membranes consist of asphalt (bitumen) modified with plastic or rubber polymers to enhance their performance characteristics. The two common types are Atactic Polypropylene (APP) and Styrene-Butadiene-Styrene (SBS).

The Coverboard

A cover board is a board that goes between the membrane and the insulation. While not an essential part of a flat roof system, cover boards are often added to increase the strength and durability of single-ply membranes, making them more resistant to hail strikes and providing a harder surface for foot traffic.

The Insulation

The next major component of a flat roof system is the insulation, which serves to block the loss or the intrusion of thermal energy, depending on the time of year. Insulation is a particularly important element of the roof system for two reasons. Firstly, it is the single largest contributor to variations in cost - changing the insulation type can increase or reduce your bid price dramatically. Secondly, it is the only component that can turn your roof into a positive investment, i.e., it can turn the roof from a net cost to a net savings, due to its potential to substantially reduce both your building's energy consumption and the price that you are charged for electricity or natural gas.

There are two main categories of insulation for commercial roofs: rigid foam board and spray polyurethane foam (SPF)

The Deck

The deck is the base structure upon which all the other components are built. It provides basic structural support for the entire roof assembly.

There are a variety of materials that can be used to construct a roof deck, each with their own advantages:

Steel: Highly durable and resistant to fire, steel decks are often found in commercial buildings. They're designed to support heavy loads, and are usually coated or galvanized to prevent rust.

Concrete: Known for its strength and fire resistance, concrete is a popular choice for larger commercial or industrial buildings. While providing a robust deck, it can be very heavy and might require additional support.

Wood: More common in smaller commercial buildings, wood decks are lightweight and easy to work with. They're typically crafted from plywood or oriented strand board (OSB), and must be properly treated to resist moisture and pests.

Tectum: Made from a composite of wood fiber and cement, tectum decks are known for their capacity both to absorb sound and insulate buildings. These capabilities are a result of the porousness of the wood fiber and make tectum a popular choice for auditoriums, churches, and school gyms.

Drainage

Slope

Despite the name, flat roofs are not (or, at least, they shouldn't be) perfectly flat. They should have a low-slope to allow water drainage.

Not all low-slope roofs have a slope built into the decking itself. Most older buildings were built with flat decks, so the slope has to be constructed on top of the deck, either by pouring and molding lightweight concrete or gypsum or by constructing a tapered insulation system (a method in which the insulating foam boards themselves are tapered to create a slope).

Drains & Scuppers

Drains and scuppers are the exit points for water as it's shed from the roof, preventing it from accumulating and damaging the roof.

Drains: Installed at the lowest points of a roof's surface, drains capture water and funnel it away through internal piping. They often include a strainer to prevent debris from entering and clogging the drainage system.

Scuppers: Scuppers are outlets installed in the parapet or sidewalls of a roof that allow water to exit the roof and fall directly off the side of the building or into a downspout. They are typically used in combination with roof drains or can be used independently on sloped roofs where water naturally flows towards the roof edges.

Overflow Drains & Scuppers: Overflow drains and scuppers provide redundant water drainage capacity. If heavy rainfall or snowmelt exceed the drainage system's capacity, water will begin to pool on the roof for long periods, damaging the roof or even (in extreme cases) causing it to collapse altogether. Overflow drains and scuppers have lips that are usually raised 4 inches above the roof surface to remove excess water.

Penetrations

Penetrations are structures, such as pipes, vents, and HVAC units, that stick up through the roof membrane.

The seams created when the membrane abuts these penetration must be carefully sealed with flashing to prevent leaks.

Common penetrations include plumbing vents, exhaust vents, HVAC Units, skylights, and roof hatches.

Flashing & Edge Details

Flashing

Flashings help direct the flow of water around openings or changes in the roof assembly. On a commercial flat roof, the membrane itself is used as flashing, with contractors running it up or down the adjacent surface and sealing the seams.

Penetration Flashings: These are used around roof penetrations such as vents, pipes, skylights, and HVAC units. They help to create a watertight seal and direct water away from these penetrations.

Expansion Joint Flashings: These are designed to accommodate movement between different parts of a building, preventing cracks and damage to the roofing system.

Edge Details

Edge details provide a transition between the roof and the other parts of the building. They offer protection against water ingress and wind uplift.

Gravel Stops and Drip Edges: These components are installed along the perimeter of the roof. They prevent water from seeping under the roofing material and direct runoff away from the building's façade.

Coping Caps: Installed atop parapet walls, coping caps protect the upper edges of these walls and prevent water from seeping underneath the wall flashing.

Gutters and Downspouts: Although not strictly edge details, gutters and downspouts are typically installed along the roof's edge to collect and direct runoff away from the building.

You've now learned the basic components of a commercial roof system. This should prepare you well for any discussion of bids or inspections with your roofing contractor.

If you need more guidance, give us a call. In a free, no-obligation consultation, we'll answer any questions and give you customized guidance.

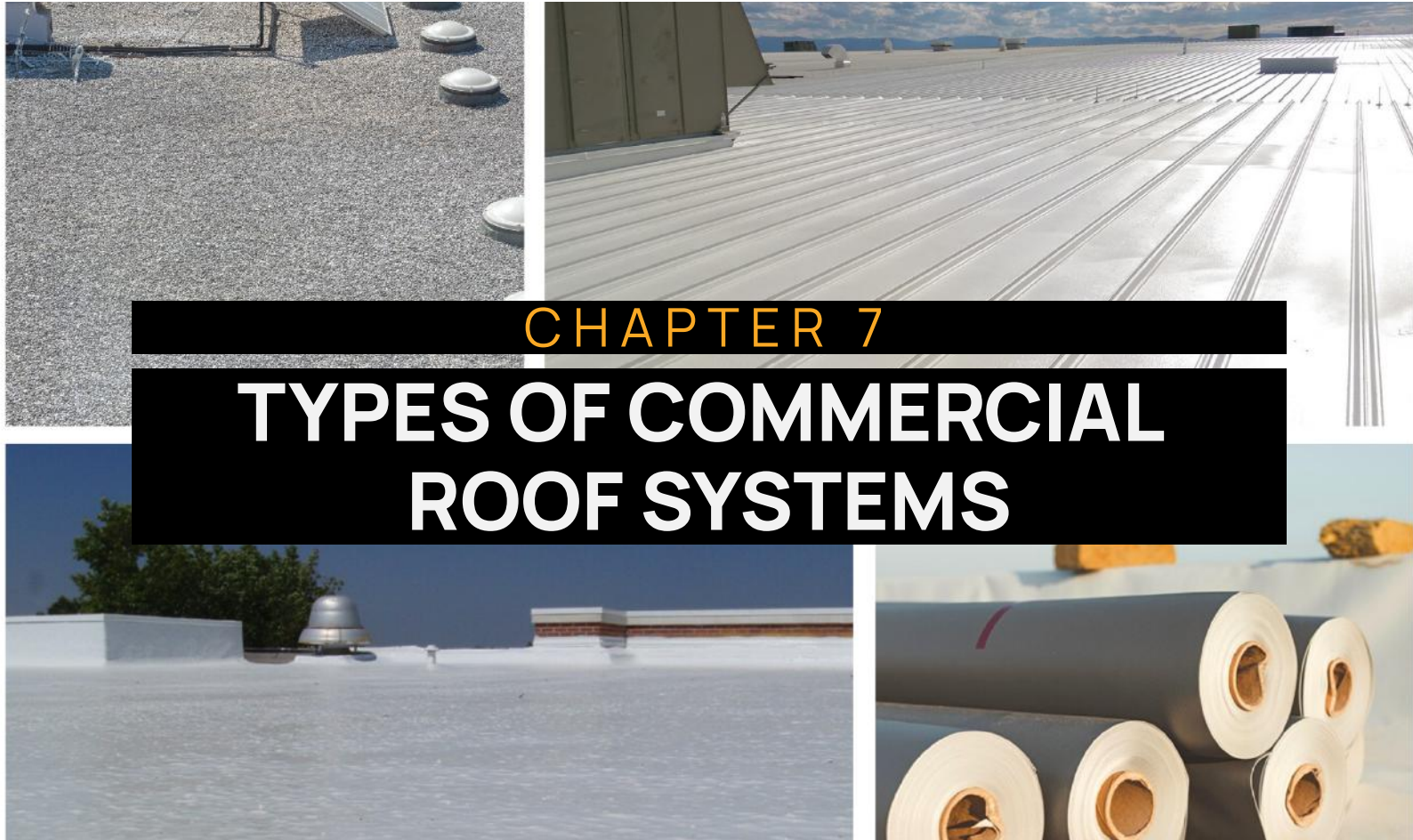
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UP NEXT: TYPES OF COMMERCIAL ROOFS





CHAPTER 7

TYPES OF COMMERCIAL ROOF SYSTEMS

When selecting a roof for your property, you're not just selecting a roof - you're investing in the future of your property. Make the wrong choice, and you could be blindsided with continual repair costs, a shortened roof lifespan, and a potential hit to your bottom line.

With over two decades of experience and tens of millions of dollars of roofs installed, we've witnessed firsthand how the right - or wrong - roofing system can impact your bottom line. That's why we've included this chapter on commercial roof systems.

What You'll Learn:

- Single-Ply roof systems
- Metal roof systems
- Modified bitumen roof systems
- Built-Up roof systems
- Elastomeric roof coatings
- Spray foam roof systems

In this chapter you'll get an overview of the most common commercial roof systems. By the end, you should have a clearer idea of which one may be the best fit for you.

SINGLE-PLY ROOFING

The term 'single-ply' describes the method of installing just a single layer of roofing material onto the roof assembly. Single ply roofing was developed to replace built-up roofing (BUR), which was the most popular choice for more than a century. Unlike built-up roofs, which comprise multiple layers of asphalt and reinforcing fabric, single-ply roofs consist of a single, light, flexible layer - making installation both easier and safer.

A single ply membrane starts off as a liquid coating, but is typically combined with a nylon fabric reinforcing scrim, then cured and turned into a solid but flexible sheet.

These roofing sheets can be fully adhered, mechanically attached, ballasted, or wind-vented.

- In fully adhered single ply roofs, the membrane is glued to the insulation layer beneath it.
- In mechanically attached single ply roofs, the membrane is fastened to the roof deck with mechanical fasteners.
- In ballasted single ply roofs, the membrane is loose-laid and held in place with gravel, pavers, or other ballast materials.
- In wind-vented systems, the membrane is laid over the entire roof like a ballasted system, but instead of securing it with ballasts, an air seal with valves uses wind pressure to hold the in place

The membrane's seams are then sealed to make the roof waterproof. Seaming methods include hot-air welding, heat induction welding, solvent welding, or self-adhesive seams. The edge of the roof is usually finished with a metal drip edge or custom fabricated coping cap.

TYPES OF SINGLE PLY ROOFING

Single-ply roofing, though encapsulating a broad classification, further diversifies into several types, each with its unique attributes, advantages, and disadvantages. In this comprehensive exploration, we will delve into the three primary types of single-ply roofing: EPDM (Ethylene Propylene Diene Monomer), PVC (Polyvinyl Chloride), and TPO (Thermoplastic Polyolefin).

1. Ethylene Propylene Diene Monomer (EPDM)

Ethylene Propylene Diene Monomer (EPDM) is a type of synthetic rubber recognized for its remarkable durability and adaptability. This membrane features a dark surface that effectively absorbs heat, rendering it an optimal choice for colder climates.

EPDM Advantages

EPDM roofing manifests resilience, boasting an exceptional resistance to UV radiation, weathering, and ozone. Moreover, its installation and repair procedures are relatively straightforward, lowering the overall lifecycle costs. It's also environmentally friendly, as it's designed to be recycled at the end of its lifespan.

Today's EPDM roof systems are to be recognized as one the best long-term roofing investments a building owner or facilities manager will make. They are a tried and true roof system.

EPDM Disadvantages

The standard EPDM's darker shade could lead to increased cooling costs in warmer climates, although there are lighter-colored variants available. An EPDM membrane can see surface temperatures of 180 degrees in the dead of summer. It's so hot that it will instantly blister the skin on your hands.

EPDM Cost

EPDM is a solid, cost-effective solution that comes in between the more expensive PVC and the least expensive TPO.

2. PVC (Polyvinyl Chloride)

Polyvinyl Chloride (PVC) is a thermoplastic single-ply roofing membrane, known for its ability to withstand chemicals and waste products. This membrane can be heat-welded at the seams, enhancing its strength significantly.

PVC Advantages

PVC roofing systems feature excellent heat-reflective properties, making them suitable for hot climates. The primary advantage of PVC is its ability to withstand numerous industrial chemicals, including salt and jet fuel, making them an excellent choice for industrial environments, airports, and coastal buildings.

PVC will also stand up to animal fats and by-products from restaurants and food manufacturing plants.

PVC is also a true Class-A fire rated product. When introduced to an open flame for a period of time the PVC material will immediately self-extinguish, never showing signs of a flame.

PVC membranes are often the single-ply of choice when installing roof top landscaping or live roof (green roof).

3. TPO (Thermoplastic Polyolefin)

Thermoplastic polyolefin (TPO) is another variant of thermoplastic single-ply roofing membranes. Like PVC, TPO is lightweight, flexible, and can be heat-welded at the seams for improved durability and waterproofing.

TPO Advantages:

TPO systems offer excellent energy efficiency due to their heat-reflective and energy-efficient properties, especially the lighter-colored versions.

TPO Disadvantages

While TPO generally performs well, it is not as chemical or fire-resistant as PVC, so it's not a great choice for industrial applications.

TPO Cost

The cost of TPO roofing is the least expensive single-ply membrane, so it's ideal for a tighter budget or if you have acres to roof on a large facility.

METAL ROOFS

There are many different types of metal roofs - from different materials, like steel vs aluminum; to different panel designs, like exposed fastener vs standing seam. Every type of metal roof possesses its own advantages and disadvantages, and each one suits different building types, budgets, and aesthetics.

Metal Roof Materials

We'll start with the different types of metal: steel, aluminum, copper, zinc, and tin.

Steel Roofs

Steel is a frontrunner in the world of metal roofing. It is appreciated for its strength, durability, and cost-effectiveness.

Galvanized Steel

Galvanized steel is steel coated with a protective layer of zinc to resist corrosion and rust. In identifying a Galvanized Steel Panel you will notice large "flake" shapes throughout the entire panel. Galvanized Steel is found primarily in corrugated exposed fastener panels. These roofs have a good strength-to-weight ratio and are commonly seen in both residential and commercial applications. They're suited to a range of climates, but are especially effective in regions prone to severe weather. Typically, the cost of a galvanized steel roof ranges from \$1.50 to \$3.50 per square foot, depending on the style.

Galvalume

Galvalume is a step up from galvanized steel. It's a steel sheet coated in an alloy of zinc and aluminum that creates exceptional resistance to rust - essentially offering the strength of steel with the superior corrosion resistance of aluminum. You can spot these panels because the finish is refined and does not have the flake shapes like a Galvanized panel. Most corrugated exposed fasteners and standing seam metal panels are Galvalume these days. It works well for agricultural buildings and industrial environments, but it can also be used in residential settings. Galvalume steel roofing costs a bit more than galvanized, ranging from \$1.75 to \$3.75 per square foot for materials, but the most popular choice for metal panel manufacturers.

Aluminum Roofs

Aluminum is lightweight and highly corrosion-resistant, making it ideal for coastal areas where salt spray is an issue. It's also energy-efficient, reflecting more sunlight than traditional roofing materials, which can help keep your property cooler. Aluminum's natural flexibility makes it easy to form it into various shapes to match architectural styles. Due to its malleable nature, Aluminum metal panels will be damaged by hail more easily than a steel panel. Its price point can range from \$3.50 to \$7.00 per square foot for materials, making it a mid-range option.

Copper Roofs

Copper is the aristocrat of metal roofing; it's long-lasting, recyclable, and beautiful, and is chosen primarily for aesthetic appeal. As a copper roof ages, it develops a unique green patina that adds a classic look to the building. However, these advantages come at a cost –copper roof materials can cost between \$15 and \$25 per square foot and due to the complexity and skill level needed they are expensive to install. It's most commonly used on historical buildings, churches, high-end residences, and unique buildings where aesthetics are paramount.

Zinc Roofs

Like copper, zinc is a high-end roofing material. Although not the most popular metal roof system, it is highly resistant to corrosion, doesn't require much maintenance, and boasts an impressive lifespan of 60 to 100 years or more. It also has the ability to 'self-heal' scratches over time. Given its durability and longevity, zinc is often used for roofs of government or institutional buildings and high-end residences. Zinc roofing typically costs between \$13.00 and \$24.00 per square foot.

Tin Roofs

Historically, 'tin' was a colloquial term for any type of metal roof, but nowadays it refers to a roof made of steel sheets coated with tin. These metal panels were often soldered together and custom fabricated by hand. Today, true tin roofs are uncommon due to the popularity of more durable and effective materials like galvanized or galvalume steel. But the term is sometimes still used in a generic sense to refer to steel roofs.

Metal Roof Styles

Beside the specific type of metal used, metal roofs also divide based on the shape and appearance of the panel and the way they are installed.

Exposed Fastener Roofs

As the name states, in this kind of roofing, the fasteners penetrate the panels and are visible on the surface. Corrugated, R-panel, and PBR-panel roofs are all types of exposed fastener metal roofing. Although their installation is easy compared to standing seam roofs, they are not as weather-tight long term or aesthetically pleasing. They may be a practical choice for agricultural or industrial buildings, and all types of commercial buildings. Anyone working within a tight budget should consider an exposed fastener metal roof system.

Corrugated Metal Roofs

Corrugated metal roofs consist of panels with wavy ribs. Metal roofs are always ribbed, as ribbing strengthens the panels. Corrugated metal roofs are made from galvanized or Galvalume steel, and are both durable and affordable. But most people don't like their appearance, and they can be noisy during rain. These are ideal for industrial plants, commercial buildings, outbuildings, barns, or homes seeking a rustic aesthetic.

R-Panel Metal Roofs

R-Panels are a more contemporary design than the corrugated style, characterized by their straight, linear ribs as opposed to rounded ones. The standard dimension of these panels is typically 36 inches in width, with the ribs standing 1 ¼ inches tall and spaced 12 inches apart. This design is the most common type of exposed fastener panel category.

PBR-Panel Metal Roofs

The PBR-panel, an acronym for purlin-bearing rib, is an advanced type of R-panel. It earns its moniker from the "purlin-bearing leg," an extra lip found on the panel's edge that increases the overlap between the panels, making the roof more resistant to water.

Standing Seam Metal Roofs

Standing Seam metal roofs are the most desired of all metal roof systems. These panels are often specified by architects and roof designers and have become a major architectural design feature for today's new commercial buildings, barndominiums, and high-end homes. Characterized by long, vertical panels with raised, interlocking seams that stand at 90 degree angles to the metal panel, standing seam metal roofs offer excellent leak protection and a sleek, modern look.

Standing Seam metal panel systems are known to have a minimal number of exposed fasteners and less horizontal seams (the biggest cause of leaks) than an exposed fastener metal panel system, resulting in a longer service life without major maintenance or repairs. They are particularly suitable for areas with heavy snowfall as their design facilitates snow sliding off. While they offer considerable advantages, these roofs are more expensive due to the complexity of their installation. They are best suited for both commercial and high-end residential properties.

Metal Tile Roofs (Stone Coated Steel)

These panels made their debut post World War II. Emulating the look of traditional clay barrel tiles, concrete, or slate tiles, metal tile roofs offer the dual benefit of beauty and durability. These are cladding (water shedding) steep slope installed on slopes 4/12 or greater. These “cannot” be installed as a low slope application. They bring down the weight on the structure significantly compared to their traditional counterparts and are more resilient to the assault of the elements. These roofs are excellent for businesses seeking the charm of tile roofs without their associated maintenance and fragility.

Metal Slate Roofs

Metal slate roofs combine the ageless elegance of slate with the strength and lightness of metal. They are a great alternative for those who desire the sophisticated look of slate without its weight or fragility. These roof systems are not commonly specified and require a high skill level for installation. However, mimicking the high-end appearance of slate also comes with a higher price tag. This style is a good fit for high-end commercial buildings aiming for a classic aesthetic.

MODIFIED BITUMEN ROOFS

A modified bitumen roofing system, often referred to as a "mod bit" roofing system, is designed for low-slope or flat roofs. Introduced in the 1960s in Europe, modified bitumen roofs were a modern upgrade to the old built up roofing systems (BUR) that had been popular since the 19th century. In a built up roof system, hot asphalt is mopped onto the roof in multiple layers. While this system is tough and extremely waterproof, it is also messy, smelly, and very difficult (even hazardous) to install, repair, and tear off.

Instead of hot-mopping asphalt onto the roof, modified bitumen roofing systems are fabricated by the manufacturer into flexible sheets that can be rolled out onto a roof. They take asphalt, combine it with polymerized rubber or plastic, and reinforce it with fiberglass, which creates a tough but flexible asphalt sheet.

These pre-formed modified bitumen membranes solved the problems associated with BUR systems, and, by the 1980s, had made their way from Europe to North America, where they have continued to be a popular choice ever since.

Pros & Cons of Modified Bitumen

Advantages

Durability

One of the main strengths of modified bitumen roofs is their resilience. Asphalt is extremely tough and resistant to physical damage, whether it's from foot traffic or falling debris, making it an excellent choice for roofs with heavy equipment or those requiring regular maintenance. Moreover, the multiple plies add redundancy; if one layer is punctured, the other layers will prevent leaks.

Weather Resistance

Modified bitumen roofs are known for their superior weather resistance. They can withstand extreme temperatures, resist UV rays, and hold up well against wind and hail.

Flexibility

Thanks to the added polymers, these roofs exhibit enhanced flexibility, reducing the risk of cracks and leaks, particularly in colder climates where more rigid materials might fail.

Ease of Repair

Should a modified bitumen roof become damaged, repairs are generally straightforward and inexpensive. This aspect contributes to the roofing system's overall lifecycle cost efficiency.

Potential Problems with Modified Bitumen Roofs

Installation Sensitivity

While not overly complicated, the installation of modified bitumen roofing does require a certain level of expertise to ensure a watertight seal and optimal performance. If using the torch down method of application, for example, installers can heat the membrane too much, causing a loss of granules.

Aesthetics

While functional, modified bitumen roofs may not be the most aesthetically pleasing option available. While they come in different colors, they tend to look fairly weathered over time.

Heat Absorption

Unless coated with a reflective material, modified bitumen roofs can absorb a significant amount of heat due to their dark color, potentially increasing cooling costs during summer months.

BUILT-UP ROOFS

Built Up Roofing (BUR) is a long-established roofing system used on low-slope or flat roofs. Its name comes from how it's installed, which involves layering, or "building up," multiple layers of material to create a solid, continuous roof covering or "membrane". These layers (called "plies") comprise alternating layers of bitumen (either asphalt or coal tar) and reinforcing fabrics. Once the roof has been "built up," it's topped with a layer of aggregate (usually gravel), which helps protect the underlying membrane from the elements, including hail and UV rays. It was once common practice to leave the roof without any aggregate topping, (known as a Smooth Tar Built-Up) , but this is rare nowadays.

BUR goes back to the 19th century, making it one of the oldest roofing methods still in use. Back then, coal tar and pitch (byproducts of the coal gasification process) were the primary elements of the waterproofing membrane. As technology advanced, asphalt (a byproduct of the oil refining process) began to replace coal tar, as it was more durable and easier to install. Over the last 150 years, improvements in materials and methods have continued to improve the strength, performance, and ease of installation of BUR systems.

Built Up Roofing Systems have four primary components:

- The base sheet
- Asphalt
- Roofing felt
- Surfacing materials

1. The base sheet

The base sheet is the first layer applied to the roof deck and is often nailed or fully adhered directly to the roof deck. This layer provides the initial waterproof barrier and serves as the foundation for the rest of the BUR system. Base sheets can be made from various materials such as fiberglass, and are often saturated with asphalt for added strength and water resistance. Some base sheets have a self-adhesive backing, while others need to be adhered using asphalt or a special roofing adhesive.

2. Bitumen

Bitumen is the primary waterproofing material in a BUR system. Roofers mop it onto the roof while it's hot, until it forms a seamless membrane. There are two main types of bitumen used in BUR systems: asphalt and coal tar.

Asphalt is more common because of its superior weathering characteristics and ease of application. There are three different types of asphalt, depending on the application method: hot asphalt, cold asphalt, and torch-down.

Coal tar, on the other hand, is more resistant to water penetration and is used on roofs exposed to harsher weather conditions or in chemical environments. Coal tar is also self-healing, that is, abrasions or cuts will naturally repair themselves.

The best coal tar roofs see 40-50 years of service life, and old-time roofers will tell you proudly that coal tar is "the best damn roof you could ever install." But these roofs are nasty for the applicators. Whether it's tearing them off or putting them on, installers may suffer chemical burns on their skin, eyes, or even lungs. As a result, coal tar has largely fallen out of favor.

3. Roofing felts or ply sheets

Ply sheets, also known as roofing felts, are the reinforcing fabrics sandwiched between the layers of bitumen. They give the built-up roof strength and stability and are typically made of glass-fiber or organic mats. These glass-fiber mats are preferred for their superior strength, resistance to moisture, and compatibility with asphalt. Organic mats, made from wood-based materials like paper or wood fiber, are less commonly used due to their susceptibility to moisture, but they're more flexible.

4. Surfacing materials

The surfacing material is the final layer of a BUR system, protecting the underlying layers from hail, mechanical damage, and UV radiation. The most common surfacing material is gravel, which is embedded in the top layer of asphalt while it's still hot.

However, there are other options, like [mineral surface cap sheets](#), which are prefabricated sheets embedded with mineral granules, or reflective coatings such as aluminum or [elastomeric coatings](#). These not only protect the roof but can also enhance its energy efficiency by reflecting sunlight and reducing heat absorption.

Pros & Cons of Built-Up Roofs

Built-Up Roofing is lauded for several key advantages:

- Firstly, it provides excellent durability. With multiple layers of bitumen and reinforcing fabrics, BUR systems offer robust protection against water, wind, and other weather elements.
- Secondly, BUR systems are known for their superior water resistance. Thanks to the seamless nature of the finished product, water intrusion is significantly minimized.
- Furthermore, BUR systems provide excellent UV protection. The top surfacing layer, whether it's gravel or a specialized coating, deflects harmful UV rays, which can extend the life of your roof.

Cons of BUR

One major drawback of BUR is the difficulty involved in installation. It's a time-consuming process that involves hot materials and specialized equipment, which is why it should only be undertaken by real roof mechanics highly trained to function as a team.

These roofs are smelly. The building's HVAC units sitting on top of the roof will draw the smell of the asphalt into the building, which can be unbearably intense.

These roofs also require pumping the asphalt (heated up to 400 degrees Fahrenheit) up to the roof, and this hot asphalt frequently drips through the cracks and seams of the decking material.

Installers often use propane gas torches with an open flame to adhere mineral cap sheets to the top layer of the membrane, which increases the risk of personal injury and building fire.

BUR systems can also put a lot of strain on the building structure due to the multiple layers and the gravel surfacing. This is an oft-overlooked issue when removing old asphalt roofs on old brick buildings. Most of the time, there are 2-3 separate roof layers weighing anywhere from 1200-2500 lbs per square. When this weight is removed, the building structure relaxes. This can cause walls, window ledges, and other parts of the building to crack.

Finally, while the multi-layered system offers durability, it also means that repairs can be more challenging and costly compared to some other roofing systems. Damage may not be apparent until it's penetrated several layers, and repairing it requires cutting through the built-up layers.

Also - while blemishes and leak-causing penetrations can be found easily on a Smooth BUR - on a BUR with gravel ballast, damage is difficult to see. Because of this, it's all too common for an inexperienced service tech to fail to fix a leak time and time again.

ELASTOMERIC ROOF COATINGS

An elastomeric roof coating is a fluid coating that cures into a seamless, durable, and highly flexible membrane. The fact that it starts as a liquid makes it easy to apply to a roof, while its elasticity means it can stretch and revert to its original shape without breaking. Modern roof coatings are made from acrylic, silicone, rubber, and urethane, each with its own advantages and disadvantages.

Pros of Elastomeric Roof Coatings

Coatings Can Extend the Lifespan of Your Roof

They say that everything breaks down with time. But it isn't time itself that erodes building materials. It's the elements. Water, wind, and - above all - sunlight slowly eat away at virtually every man-made material. This is why a traditional, uncoated roof system has to be replaced every 15-25 years.

Roof coatings shield your roof from the relentless assault of the elements. The seamless barrier they create seals the roof from rain and the sun's damaging rays. This barrier "locks your roof in time," extending its life by another 15-20 years for a fraction of the cost of a brand-new roof.

Resistance to sunlight is one of the key properties of elastomeric coatings. Ultraviolet radiation leads to cracking, fading, and other forms of deterioration on exposed roofing materials. The elastomeric polymer from which roof coatings are made reflects and absorbs these harmful rays, so the underlying substrate doesn't.

Leaks are the most common roofing problem you hear about since they're usually the first time you notice something is wrong. Leaks often occur at seams and penetrations in the roof. A seam is where two separate roof system components come together. A penetration is anything that sticks through the roof, like a pipe or an HVAC unit. Terminating metal, screws, adhesives, and other fasteners must be used to make penetrations watertight in conventional roofing systems. This system creates many "points of failure" that can leak as the roof ages.

Elastomeric coatings cover the entire roof system with a seamless membrane that prevents water from "seeping through the cracks ." The liquid covers, fills in, and waterproofs all seams and cracks.

Another common problem on commercial flat roofs is "ponding," which is exactly what it sounds like - when water sits on top of the roof for long periods and creates a small pond. Ponding eventually breaks down the underlying material and causes leaks. High solid coatings (called silicones) are impervious to ponding water. When they're properly installed, water can't break through. Additionally, before the coating is applied, the contractor can level out the roof, which will eliminate any pre-existing ponding tendencies on the original roofing system.

And not only are coatings waterproof, but they're also highly resistant to water vapor in the air. Acrylic coatings have a vapor permeability of 14%-15%; while urethanes and silicones by 4-6%; and rubberized and polyurea are perfect vapor barriers, with 0% permeability. But you only sometimes want an airtight barrier, as some underlying roof materials, like wood or cinder block, need airflow. Acrylic or silicone is a better choice for such materials.

Roof Coatings Can Help You Save on Your Energy Bill

Roof coatings can also lower your utility bill. Because white roof coatings reflect the sun's rays, your roof will absorb less heat, which reduces your HVAC load. A traditional, uncoated roof can reach temperatures up to 180 degrees in the summer. By contrast, the temperature of a coated roof may only go up to 110 degrees, a reduction of more than 40%.

A darker color may be the better choice for a roof coating in a cooler climate since helping the building retain heat is more important than keeping it out in a place with long winters and short, cool summers. In this case, a gray or black coating may be more appropriate.

But where coatings really help you save on energy bills is when they are used in conjunction with spray foam insulation. Also called "foam roofing," spray foam insulation is one of the most energy-efficient materials in the world. This superior efficiency is due, in large part, to the fact that the spray foam creates a monolithic membrane. The poly iso, in contrast, is installed in multiple rectangular sheets, creating seams through which thermal energy can move.

Research by Texas A&M has shown that the energy savings generated by spray foam insulation can pay for its cost within 4 to 5 years.

In the same vein, roof coatings are very environmentally friendly. Not only can they reduce energy usage, but they are also made from materials that are low in the emission of Volatile Organic Compounds (VOCs) and free from chlorofluorocarbons (CFCs).

Coatings Cost Less Than a New Roof

Roof coatings require a lot less labor and material than a new roof.

A new roof requires roofers to carry the materials onto the existing roof and then assemble and fasten them. This process requires a large staging area and often a large crane. Legally, you can have up to two roof systems on one building, so you may not have to remove the existing roof. But if you already have two systems stacked on each other, a labor-intensive tear-off and waste removal may be necessary. A tear-off comes with its risks, the primary one being leaks. At the end of each day, the roofers have to seal the seam between the new and old roof, a process called "drying in ." If this isn't done correctly, you are at risk of leaks and flooding.

In contrast, elastomeric roof coating installation is much simpler. The roof must be thoroughly cleaned beforehand, after which the coating can be rolled or sprayed on. The coating does not have to be carried up to the roof; it can be pumped up with a machine. And a roof coating is not legally considered a second roofing system, so there's no need for a tear-off.

Overall, roof coatings require less material, labor, and time, which translates into savings for you. These savings are the biggest reason building owners often choose coatings. When their roof is getting closer to the end of its lifespan, a coating can extend that lifespan by 10-25 years for a significantly lower price than a new roof. For example, a roof replacement may cost between \$6-\$15 per square foot. A roof coating system, by contrast, will generally run between \$3-\$7 per square foot. In addition, at the end of a coating's lifespan, you can apply a maintenance coat for half the price of the original coating system, which renews it and its warranty for another 10-20 years.

Cons of Elastomeric Roof Coatings

Overspray

Spraying is a standard method of application for elastomeric coatings. When this is done, "overspray" can occur, which is when the wind blows the spray off the roof and onto objects below. Trying to remove overspray from vehicles or other buildings is not a situation you want to be in.

Acrylic coatings dry in the air as they fall, so, fortunately, they won't stick to anything. But silicone, urethane, and rubber coatings will not dry until they hit a surface, and they are tough to remove. Overspray also floats very far through the air, "like cottonwood trees," as our founder, Eric, likes to say. To eliminate overspray, roofers can use special screens or spray inside a portable "spray tent ." You can also move cars out of the parking lot.

If overspray is a significant concern, an easy way to eliminate it is to simply...not spray the coating. A good contractor can roll the coating on most roofs instead of spraying.

Roof Coatings Can't Be Applied in Certain Weather Conditions.

Water-based coatings (acrylics) can freeze, so you cannot apply them once the temperatures go drop into the 40s Fahrenheit.

Moisture can also cause installation problems, of which morning dew is the biggest. Dew starts settling in during the evening as temperatures drop. If the dew settles onto the roof during application, moisture will get trapped underneath the coating, and the coating will bubble and blister when the sun rises in the morning. Inexperienced crews often fail to get the dew off the roof before starting work in the morning, or they'll continue coating into the evening hours.

Coatings Are Not Compatible with Every Roof System

Some roofing substrates, such as tar and gravel roofs, may not be compatible with elastomeric coatings. To guarantee that the coating adheres and offers adequate protection, contractors need to use certain kinds of primer or other preparation processes. The elastomeric covering may not bind properly without proper preparation, resulting in delamination, peeling, or blistering.

Some roofs may also be too old or too damaged to accept a roof coating. A competent installer will do a thorough inspection beforehand to determine your roof's eligibility.

Not All Coating Crews Are Experienced

Unfortunately, not all coating crews are good at their craft. Without the proper equipment and expertise, your coating may not adhere properly, resulting in roof leaks, insufficient coverage, and many other issues.

Surface preparation beforehand is critical. The coating must be applied to a clean, dry, and sound substrate for a uniform appearance and long-term adhesion. Before application begins, contractors must clean the roof thoroughly, remove any debris or loose material, and make any necessary repairs.

Getting the right thickness and coverage is also essential. If the coating is applied too thinly, it won't offer enough protection, and if it is applied too thickly, it will dry unevenly and cause other problems. A thin coating will deteriorate before the warranty period ends. A thin coating may also absorb too much moisture, which can cause adhesion failure.

SPRAY FOAM ROOF SYSTEMS

Spray polyurethane foam is an insulating material that has been used extensively in a variety of building applications for over 60 years. Its unique physical properties – namely, its ability to be sprayed as a liquid and harden into a seamless, monolithic barrier of insulation – make it highly versatile and effective.

In the roofing world, spray foam is combined with an elastomeric coating to create an extremely powerful roofing system that can be applied over an existing roof, preventing the need for tear off and dramatically improving the energy efficiency and strength of the original roofing system.

A spray foam roof system consists of three primary components: the substrate, the polyurethane foam, and the elastomeric coating.

The process begins with a thorough cleaning and repair of the substrate (which can be a roof deck or an existing single ply or other kind of roof membrane).

This is followed by the application of SPF, which expands up to 30 times its original volume upon application, forming a hard, seamless, monolithic foam surface.

The foam is then coated with the elastomeric top coat, which can be made of acrylic, silicone, or urethane. This top coat provides a durable, waterproof, and UV-resistant barrier, protecting the underlying foam.

The final product is a seamless, monolithic roofing system that is lightweight, durable, flexible, and extremely energy efficient.

The Benefits of Spray Foam Roof Systems

1. Energy Efficiency

One of the most notable benefits of spray foam roofs is their exceptional energy efficiency. This efficiency is due, in large part, to SPF's high R-value and low U-value. In the language of insulation, R-value is a measure of thermal resistance, i.e., how well a material prevents heat from flowing through it.

The higher the R-value, the better the insulating performance. SPF roofing has one of the highest R-values per inch of all insulating materials.

U-value measures the amount of heat that can be transferred through an entire roofing system as a whole. The U-value takes into account gaps and seams between insulating panels as well as the presence of metal fasteners.

In traditional insulation gaps and seams create "thermal bridging", wherein airflow transfers thermal energy; metal fasteners conduct thermal energy in a process called "thermal shorting."

The lower the U-value, the better the material is at insulating. Spray foam roofing has an exceptionally low U-value because it is seamless and does not require metal fasteners. Energy-efficient buildings are not only more comfortable for occupants, but they also significantly cut down on heating and cooling costs. This is particularly beneficial for large commercial facilities where energy costs can be a significant operational expense.

2. Waterproofing Capabilities

Another significant benefit of SPF roofing systems is their excellent waterproofing capabilities. When spray polyurethane foam is applied, it forms a seamless, monolithic layer across the entire roof. This foam layer fills in cracks, seams, and penetrations in the existing roof substrate, effectively eliminating potential pathways for water intrusion.

Moreover, the foam's closed-cell structure makes it inherently waterproof. Even if the roof's surface is somehow damaged, water cannot seep into the foam and spread throughout the roof system. This is a distinct advantage over other roofing systems, where a breach in the surface can lead to widespread water damage within the roof system.

3. Easy Maintenance

SPF roofing systems are also relatively easy to maintain. The primary maintenance requirement is the periodic inspection and recoating of the elastomeric top coat. This top coat is crucial for protecting the underlying foam from the sun's harmful UV rays, maintaining the roof's reflectivity, and ensuring its continued waterproofing and insulating performance.

Over time, the elastomeric coating can wear away, particularly in high-traffic areas. When this happens, the affected area can simply be cleaned, recoated with more elastomer, and the roof is good as new. This recoating process can be repeated indefinitely, making SPF a renewable roofing option.

4. Lightness

When considering roofing materials, weight is often a crucial factor, particularly for large commercial buildings. Despite its durability and performance, SPF is exceptionally lightweight, weighing only about 8 ounces per square foot.

5. Durability

Finally, SPF roofing systems offer remarkable durability. Although spray foam is relatively soft compared to materials like metal or concrete, it has a unique ability to flex with the building's movement, reducing the likelihood of cracking or breaking under normal conditions.

The Cons of Spray Foam Roof Systems

1. Overspray

One of the challenges faced during the installation of spray foam roofing is the risk of overspray. Overspray occurs when, during application, some of the SPF particles are carried away by the wind and land on surfaces where they are not intended to be. These surfaces could include nearby cars, buildings, or landscape features. Overspray can be a considerable concern, especially in populated areas with lots of adjacent properties and structures.

It's important to note, however, that overspray can be managed effectively. A skilled spray foam roofing contractor will be aware of the risk and take precautions such as using screens to protect nearby areas and carefully monitoring the weather to choose optimal conditions for the spray application.

2. Weather Limitations

The installation of spray foam roofs requires dry and relatively warm conditions for the foam to cure properly. Humidity can affect the foam's ability to adhere to the roof, while cold temperatures can interfere with the chemical reaction that causes the foam to expand and cure. These weather constraints can lead to scheduling issues for installation.

3. Finding Qualified Installers

As with any specialized trade, finding qualified, experienced SPF installers can be a challenge. The installation of spray foam roofing requires a high level of skill and experience to avoid problems like improper mixing, incorrect thickness, and poor adhesion to the substrate. Mistakes during the installation process can result in a less effective roof system that may fail prematurely or not deliver the expected benefits.

Therefore, it is crucial to work with a spray foam roofing contractor who has a solid track record, the necessary certifications, and positive customer reviews. The Spray Polyurethane Foam Alliance (SPFA) is a professional organization that offers training and certification for spray foam installers, and choosing a contractor with SPFA certification can help ensure a quality installation.

We've covered a lot in this article, but you should now have a good grasp of all the main commercial roof systems, including their pros, cons, and best applications.

If you have more questions, we do free consultations. In a free, no-obligation call, we'll answer any questions and give you customized guidance.

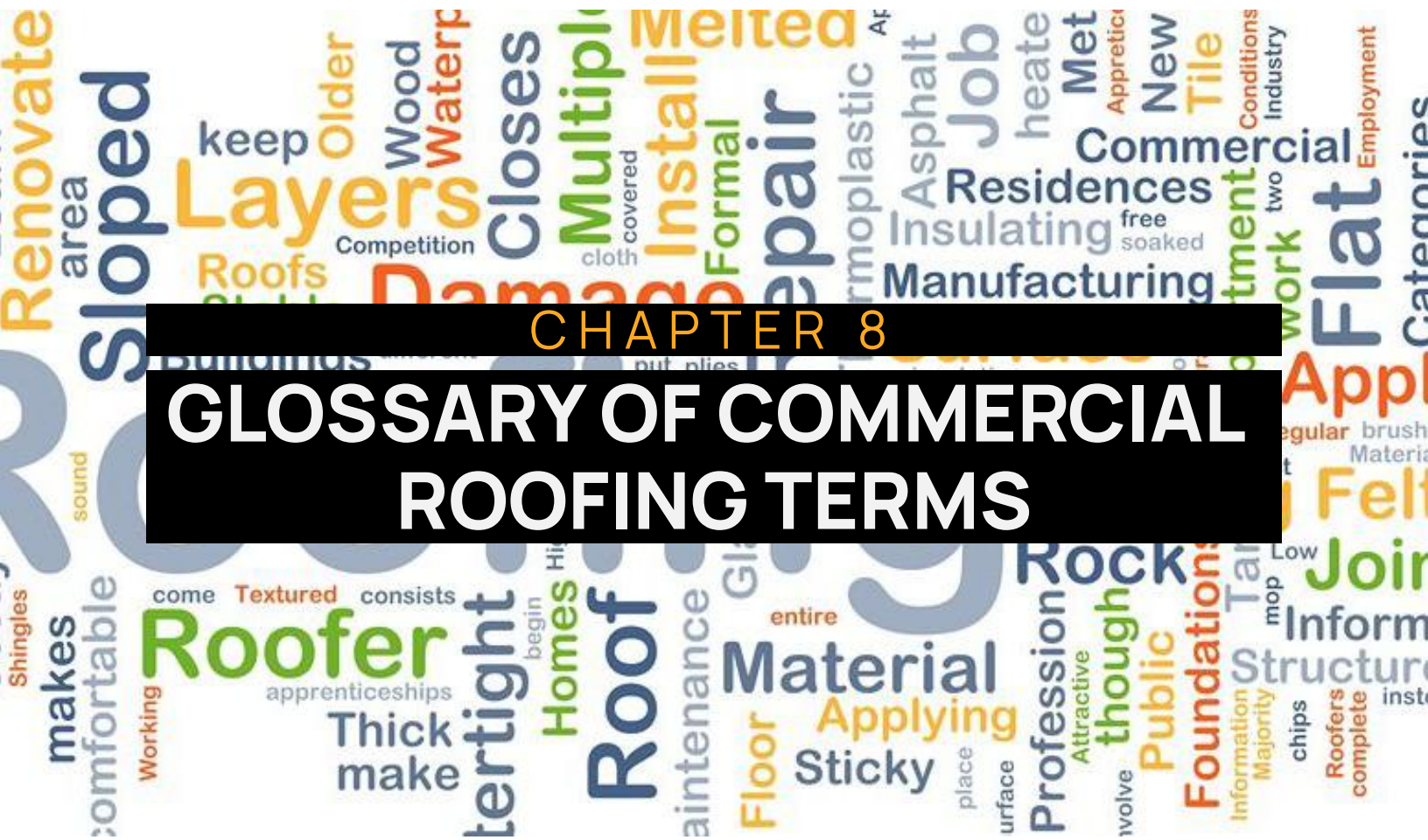
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UP NEXT: GLOSSARY OF ROOFING TERMS





CHAPTER 8

GLOSSARY OF COMMERCIAL ROOFING TERMS

Every industry has its own terminology, and commercial roofing is no exception. Listening to your contractor talk about how he recommends we "fully adhere the single-ply membrane to the substrate to make it more resistant to racking" probably has you asking for an explanation.

That's why we've compiled this glossary of commercial roofing terms. Below you'll find over 100 important roofing terms, organized alphabetically.

What You'll Learn:

- 102 commercial roofing terms you should know.

GLOSSARY OF ROOFING TERMS

- **Acoustic Insulation:** Material that reduces sound transmission.
- **Adhesion:** The bonding of one material to another.
- **Aggregate:** Crushed stone, slag, or gravel that is used to surface built-up or single-ply roofs.
- **Anchor Sheet:** A mechanically fastened base sheet in a partially adhered or mechanically attached single-ply roof system.
- **Asphalt:** A sticky, black, and viscous liquid or semi-solid form of petroleum used for roofing.
- **Backrolling:** The process of using a roller to further distribute and embed a coating after it has been sprayed.
- **Ballast:** An anchoring material, such as aggregate, or precast concrete pavers, which employ the force of gravity, and sometimes a binder, to hold roofing elements in place.
- **Ballasted Roof System:** A roofing system in which loose, heavy materials hold down a single-ply membrane.
- **Batt:** A section of fiberglass or rock wool insulation.
- **Bitumen:** The binder that holds asphalt together.
- **Blister:** A raised spot on the surface of an SPF or roof coating system, usually caused by the expansion of gas or liquid within the foam.
- **Blistering:** Bubbles or pimples in roofing materials.
- **Built-Up Roof (BUR):** A roofing system made up of layers of asphalt and a reinforcing fabric.
- **Closed-Cell Foam:** A type of foam where the cells are enclosed and packed together tightly. It's typically stronger and more resistant to water penetration compared to open-cell foam.
- **Cool Roof:** A roof that reflects more sunlight and absorbs less heat.
- **Coping:** The covering on top of a wall that is exposed to the weather, usually made of metal, masonry, or stone.

- **Counterflashing:** The part of the flashing that's goes against a vertical surface to prevent water from migrating behind the base flashing.
- **Cross Ventilation:** Air movement through a space in multiple directions.
- **Crystalline Waterproofing:** A technology that uses a reactive crystalline compound for sealing and enhancing the durability of concrete.
- **Dead Level:** Absolutely horizontal or zero slope.
- **Deck:** The part of a building on top of which the roofing system is installed.
- **Density:** In the context of SPF, it's the weight per cubic foot of the foam, often categorized into low and high density.
- **Dew Point:** The temperature at which dew is produced. This is important when applying SPF or roof coatings as it can affect adhesion and curing.
- **Drum Set:** A term referring to the two chemical components (isocyanate and resin) used to create the polyurethane foam, often sold in large drums as a set.
- **Edge Detail:** A term used to describe the specific design or type of edge.
- **Elastomeric:** Capable of returning to the original shape after being stretched.
- **Elastomeric Coating:** A coating that can stretch and return to its original shape without damage, often used to protect the SPF layer.
- **EPDM (Ethylene Propylene Diene Monomer):** A type of synthetic rubber used in single-ply roofing.
- **Expanded Polystyrene (EPS):** A type of rigid foam insulation that is less expensive and has a lower R-value than XPS foam.
- **Extruded Polystyrene (XPS):** A type of rigid insulation that has a closed cell structure and offers greater resistance to moisture and a higher R-value than EPS.
- **Felt:** A fabric, often made of wool, used as a layer in some types of roofing.
- **Fiberglass:** A type of insulation material made from fine glass fibers.
- **Fire Resistance Rating:** A rating that indicates a material's resistance to fire or slow burning. This is often considered in selecting insulation for commercial buildings.
- **Flashing:** A material used to prevent water intrusion at areas of interruption in the membrane, such as around vents or chimneys.
- **Foam-in-Place Insulation:** A type of insulation that is blown into walls or under roofs, expanding and hardening into an insulating layer.

- **Galvanic Action:** An electrochemical action that takes place when different kinds of metals are in contact in the presence of an electrolyte, resulting in corrosion.
- **Gutter:** A channel installed along the perimeter of a roof to move water from the roof to the drains or downspouts.
- **Hydrostatic Pressure:** The pressure exerted by a column of water on an underlying surface.
- **Ice Dam:** Ice that forms along the lower edge of roof slopes and impedes the flow of water off the roof.
- **Infrared Thermography:** The use of an infrared camera to measure the temperature of a roof surface and locate areas of trapped moisture.
- **Insulating Concrete Forms (ICFs):** Forms made from foam insulation that are filled with concrete, providing a well-insulated and airtight wall system.
- **Insulation:** A material used in construction to impede heat transfer.
- **Insulation Board:** A board made of insulating material used in roofing applications for energy efficiency purposes.
- **Joist:** The metal or wood beams that run parallel from wall to wall to support the roof of a building.
- **Lap Seam:** Where the end of one roll or sheet overlaps the end of the adjacent roll or sheet.
- **Live Loads:** Temporary loads the roof structure must be able to support during maintenance or construction, as required by local building codes.
- **Loose Fill Insulation:** Small particles of fiber, foam, or other materials that are blown into building cavities or attics using special equipment.
- **Low-Slope Roof:** A roof that is slightly inclined, typically with a slope ratio of 3:12 or less.
- **Membrane:** A roof covering or waterproofing layer designed to prevent water intrusion
- **Mil:** A unit of measurement used in the coating industry to determine thickness. One mil equals one-thousandth of an inch.
- **Mineral Wool:** Insulation made from molten glass, stone, or industrial waste that is spun into a fibrous structure.

- **Modified Bitumen:** A type of asphalt that can be applied to a roof to create a durable a roofing membrane.
- **Moisture Relief Vent:** A vent installed through the roofing membrane to release vapor pressure from within the roofing assembly.
- **Nail Pop:** A raised fastener in the roof membrane's surface.
- **Open-Cell Foam:** A type of foam where the cells aren't completely enclosed, resulting in a softer and less dense material that is vulnerable to water penetration.
- **Overspray:** Unintended SPF or coating that lands outside the intended application area.
- **Parapet:** A low wall that extends slightly above the roof along the perimeter.
- **Pass:** A single continuous spray application of SPF or coating.
- **Penetration:** Any object passing through the roof, like a chimney, HVAC unit, or skylight.
- **Perlite:** A natural, lightweight, insulating aggregate.
- **Permeability:** The rate at which water vapor can pass through a material.
- **Pitch:** The steepness of the roof. Mathematically, the ratio of the rise to the span, in feet.
- **Ply:** The number of layers of roofing felt, of a roofing membrane, or of layers in built-up materials or any finished piece of material.
- **Polyisocyanurate (Polyiso):** A thermoset plastic typically produced as a foam and used as rigid foam board thermal insulation.
- **Polystyrene:** A type of plastic used to make rigid foam insulation panels.
- **Ponding Water:** Water that remains on a roof surface for 48 hours or more.
- **Primer:** A coating applied to a substrate before the application of SPF or protective coating to improve adhesion.
- **PVC (Polyvinyl Chloride):** A very tough single-ply roofing material that is resistant to many chemicals and pollutants.
- **Racking:** The movement of a building's roof due to forces such as wind, seismic activity, and snow loads.
- **Ratio Check:** The process of confirming the proper ratio of SPF components to ensure optimal performance.

- **Recoat:** The process of applying a new protective coating to an SPF or roof coating system after the initial one has weathered.
- **Recoat Window:** The timeframe within which a second layer of SPF or coating can be applied without additional surface preparation.
- **Reflective Insulation:** Insulation that reduces heat transfer by radiation.
- **Rigid Foam Board Insulation:** Insulation that is typically more expensive than batt insulation but very effective in exterior wall sheathing, interior sheathing for basement walls, and more.
- **Roof Assembly:** All of the interconnected components of a roof, (including the deck, vapor retarder, insulation, and roof covering) designed to weatherproof and, sometimes, to improve the building's thermal resistance.
- **Roof Covering:** The exterior roof cover or skin of the roof assembly, consisting of membrane, panels, sheets, shingles, tiles, etc.
- **Roof Hatch:** An opening in the roof with a secure cover that allows access between the interior of a building and the roof.
- **Roof Seamer:** Machines that are used to seal lateral seams in metal roofing.
- **Roof System:** All of the components required to fully protect the topside of a building.
- **Scupper:** An opening in the parapet wall allowing water to drain from the roof.
- **Seam:** A joint formed by bringing two separate sections of material together.
- **Single-Ply Membrane:** Roofing membranes consisting of just one layer of membrane material rather than multiple.
- **Slope:** See pitch.
- **Soffit:** The underside of the eaves.
- **SPF (Spray Polyurethane Foam):** A type of roofing material that is sprayed into place and forms a continuous, seamless layer that insulates and waterproofs the roof.
- **SPF Blister:** An SPF roofing defect where a void forms between the SPF layers or between the SPF and substrate.
- **Standing Seam:** A type of metal roofing system where the seams between the panels are raised above the roofing surface.

Substrate: The surface to which the membrane is applied.

Synthetic Underlayment: A sheet material used between the roof deck and the roofing material.

Tear-Off: Removal of an existing roof system down to the structural deck.

Thermal Bridging: Areas in a building's construction where insulation is incomplete or missing, causing heat to escape or enter the building.

TPO (Thermoplastic Polyolefin): A type of single-ply roofing membrane.

U-value: A measure of the rate of heat transfer through a material or system. The lower the U-value, the greater a material's resistance to thermal transfer and the better its insulating capacity.

Underlayment: A material laid on the roof deck before installation of the primary roof covering.

Vapor Barrier: Material designed to resist diffusion of moisture through walls, ceilings, and floors.

Water Cure: A curing method for SPF involving the application of a mist of water to the foam surface.

Workmanship: The quality and configuration of a roofing system as it is applied by a contractor.

XPS Insulation: Extruded polystyrene insulation is a rigid, closed-cell foam panel insulation.

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UP NEXT: NEXT STEPS





NEXT STEPS

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