

THE ARIZONA BUILDING OWNERS GUIDE TO ROOF MAINTENANCE



Preferred Roof Consultants of Arizona, LLC



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ABOUT THE AUTHOR



Henry M. Staggs has been in the roofing industry since the age of 12 years old when he started working as a helper for his Great Grandfather, who owned several apartment buildings. Henry and a few of his cousins were the only kids in the family willing to climb up on the roof and make roof repairs, and in Henry's family, if you were a kid who wanted to earn a few extra bucks, you worked for Great Grandpa.

In his early 20's Henry opened a company S.L.S Services Inc. For the next few years, he built a thriving little company in his home town in Kansas. Re-roofing homes, working as a subcontractor, and even landing a second-tier subcontract on a nearby military base. Due to some regrettable circumstances, S.L.S services, Inc. was close about seven years later, and Henry moved to Arizona with his wife.

Henry worked for several contractors here in Arizona over the years, before he moved to Oklahoma for a few years to run a roofing company there. Henry took a roofing company from a garage to a \$2,600,000.00 business in a few short years. Henry had come to love Arizona in the years he had lived there and wanted to go back, so he sold that company and came back to Arizona.

Back in Arizona again, Henry opened a new roofing company servicing the realtor market, which is a very underserved market. Most roofers in Arizona will avoid realtors leaving that market wide open. Henry started to learn what a roof inspection is, how to identify problems and started on a road that would eventually lead him to become a roof consultant.

Henry ran that company Rooffix, LLC for several years until he became sick and had to go onto bed rest and a very harsh medical treatment for over a year. Sadly, that company did not survive, and Henry started to reconsider what his career path should be.

Henry started investigating what it meant to be a roof consultant and even applied for a job with a few local consulting firms—but ultimately opened up his consulting firm Preferred Roof Consultants of Arizona, LLC. Since that time, Henry has become an authorized OSHA trainer and a leader in RCI (Roof Consultants Institute), which is now known as IIBEC (International Institute of Building Envelope Consultants). In 2018 Henry

started the local Arizona branch of RCI later to become IIBEC. Elected liaison in 2018 and the president in 2019 - 2020.

In addition to his consulting work, Henry spends his own time and money on various projects to help improve the industry, which includes the IIBEC educational meetings, the Arizona pre-apprentice programs, and www.thearizonaroofer.com, an informational and informative site for the roofing industry.

Henry has a passion for this industry like no one else. If you need help with your roofing project, you can't go wrong by calling Henry for his help.

What some of Henry's clients have said

*Henry Staggs has been knowledgeable and professional in the work he has completed for MAC6. He is prompt in answering calls and emails and goes the extra mile. He has been an asset in all things roofing. Would highly recommend him – **Chrissy B***

PRC consulted on two tile roof replacements at apartment communities we manage in the greater Phoenix area. PRC was thorough and caught a number of items the roofer needed to correct on both jobs. Their communication was great. A roof is a major investment and having a professional help manage installation is money well spent.

*The specific services provided were initial condition and spec reports and roughly 5 job inspections per property. – **Mark M***

*Henry Staggs continues to advocate for us as we pursue our claim against Lowe's. Henry initially inspected our roof in October; yesterday he met with an inspector from the Registrar of Contractors (ROC) to review the complaints that we filed against Lowe's. He reviewed each written defect with the state inspector and discussed how these defects compromise the integrity of the roof. I strongly encourage anyone who is installing a new roof - or already had one installed - to have it inspected. We would never have known about this substandard workmanship if we had not contacted Henry. Like many, we assumed that Lowe's (a Fortune 500 company) would inspect their work, take pride in quality workmanship, and have the integrity enough to acknowledge inferior, defective workmanship. – **Carol R***

*Henry I appreciate you and your energy and moving forward for the future, I respect that and support it keep going brother! I appreciate you and your willingness to adapt to a new community of people and challenging everyone for the youth, it is about a generation and everyone around us, great job keep going brother you're doing good!"- **Jason Kill from Roofing Solutions & Concepts***

*Henry can help steer you through the treacherous waters of commercial roof work - **Dave Homerding Weathersure Systems***

*Henry does great work and is very knowledgeable about his trade and products. - **Gordon Byrn Midway Chevrolet Commercial Fleet Headquarters***

*Henry is passionate about improving the roofing industry and takes an active role in developing the Roofing industry and its leaders - **Dewayne Steele Rust-Oleum***

INTRODUCTION

There isn't enough attention to the roof system. It is the very thing that protects the rest of the building and everything and everyone inside it. A roof maintenance program should be an easy sell. But the opposite is true, and it is a tough sell to the owners. It does cost money, and it takes time, and there is some work involved in taking care of the roof system. But adversely, not taking care of the roof runs the risk of a much more significant expense, and even injury to the people and property inside.

A few years ago, we had an unusual amount of rain in Arizona, which overwhelmed many buildings whose roof systems can not handle that amount of water all at once. A particular grocery store's roof flooded by one rainstorm; then, another rainstorm came along before that water had drained from the roof. Rainwater is heavy, and it caused a roof collapse, the materials broke open a gas line. The gas reached an open flame, and the building burned down completely. Thankfully no one was hurt or worse. This example is a great example to illustrate the importance of taking care of the roof. Do you think the owners of that building had any idea that collapse and fire would have happened? Or that it happened because they failed to take care of the roof?

That is why I am writing this book to help building owner's, be it a commercial building or your home, understand why roof maintenance is essential. Give you all the necessary information need get started, and if you feel up to the task, how to put your roof maintenance program together.

A more proactive approach will save you money and help prevent problems in the future.

WARRANTY

Any warranty is very likely to have a maintenance and inspection requirement in it. Just like anything else, you have your part to play in keeping the roof system in good condition. Indeed, you can understand why a contractor or manufacturer would exclude building owner negligence from their warranty coverages, which they have no control over.

There are four basic types of roof warranties; you may have one or more of these. If you are not sure, you might need to find out.

Two-year labor

Arizona law holds the contractor liable for the roof for the first two years. It is not, however, a labor warranty, as many would describe it. Arizona has established workmanship standards for every licensed trade. Hopefully, your roof was installed, at or above the minimum requirements, but if not, you have two years from the completion date to file a complaint with the ROC (registrar of contractors).

The Contractor Labor Warranty

The most common contractor labor warranty is five years. Meaning they are promising to do the work correctly, and if they do not do the job correctly, they will correct it. Similar to the two-year workmanship standards, only based on the scope of work that you signed, and industry standards. Read the contractor's warranty terms very carefully; they love to list all the things they don't cover.

The Materials Defect Warranty

All manufacturers will warrant that their materials are free of any known defects when they leave their facility. When you read "20 years" or whatever the term is for the warranty. All that means is the manufacturer is promising to replace any materials found to be defective. They will not cover the labor to remove and reinstall new materials, and often the coverage depreciates. If you buy a 10-year roof material, and in 5 years it fails due to a defect, the manufacturer will drop off the value of 5 years of materials in your parking lot and wish you the best of luck. Keep in mind this type of warranty only covers the materials if found to be defective; it is NOT a labor warranty.

Systems Warranty or No Dollar Limit Warranty

This warranty I often recommend to my commercial clients as a roof consultant. This warranty offered by the manufacturer and covers the materials and the labor. Usually, the contractor will own the job for the first two years, and the manufacturer picks it up for the remainder of the term. The manufacturer is responsible for the materials defect warranty from day one. And there may not be any depreciated value in these types of warranties.

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Additionally, when you buy this extra warranty coverage, the manufacturer will take a more active interest in the project. The contractor will usually need to be certified by the manufacturer, and the manufacturer will inspect the work.

THE MOST COMMON ROOF SYSTEMS IN ARIZONA

There are many different kinds of roof systems, and in Arizona, we find a handful of them that are very common. Like any other region of the nation, our specific climate is more conducive to certain types of roof systems than it is to others. In this book, we will discuss the most common roof systems in Arizona, recognizing that there are other systems out there. To which these principles still apply.

There are two basic types of roofs; a low sloped roof system, also called a flat roof. And a steep-sloped roofer system, meaning there is a sloped roof system. Each one of these systems has specific design requirements.

LOW SLOPED

BUR

Built-up roofing, are layers of asphalt materials adhered using bitumen. Manufactures also manufacture pre-built up rolls in the factory that can be installed using hot bitumen or made to be self-adhering. Most of the time, the cap sheet, the top layer is granulated. Small bits of rock are pressed into the material to protect the asphalt and to give the roof a pleasing appearance.

SPF

Polyurethane spray foam and coating roofing systems are a monolithic system, no seams. Applied by using spray equipment, and coated with an elastomeric roof coating. The most common roof coating in Arizona is acrylic coating, but silicone coatings are on the rise, and occasionally, you may find a urethane coating.

Cementitious roof systems also fall into this category, which is an SPF and coating roof with cement added to the mix for strength.

SINGLE PLY

As the name implies, this is a single ply of roofing materials, unlike the built-up roofing system, there is only one layer of proactive roof materials. TPO (Thermoplastic polyolefin) and PVC (Polyvinyl chloride) are trendy materials in Arizona; both are white and reflective. You might find an EPDM (Ethylene Propylene Diene Monomer) here and there; this one is a black roof covering. Single-ply systems can be mechanically fastened, fully adhered to, or held in place using a ballast (rocks).

STEEP SLOPED

CONCRETE OR CLAY TILE

Concrete or clay are formed into various tile shapes; low, medium, or high profile. They are hung or fastened to a batten, a wood strip attached to the deck over the underlayment. Concrete and clay tile are very durable and can provide a long service life when installed correctly.

ASPHALT SHINGLES

Used more in residential applications, they are manufactured by applying asphalt over a reinforcing material such as fiberglass. Then covered with crushed colored rock, called granules. Shingles are fastened directly to the deck over the underlayment.

METAL

Metal roofing comes in many shapes, styles, colors, and sizes. Made from Steel, Aluminum or copper and when installed correctly, looks good and can provide 50 years of reliable service.

OTHER ROOF SYSTEMS NOT MENTIONED

There are many other roof systems on the market, as different as the materials may be the principles in this book are the same. For specific details about a roof system that is not listed here, reach out to the manufacturer for their literature on that system.



BUR BUILT UP ROOFING



SPF POLYURATHANE SPRAY ROOFING



ASPHALT SHINGLE

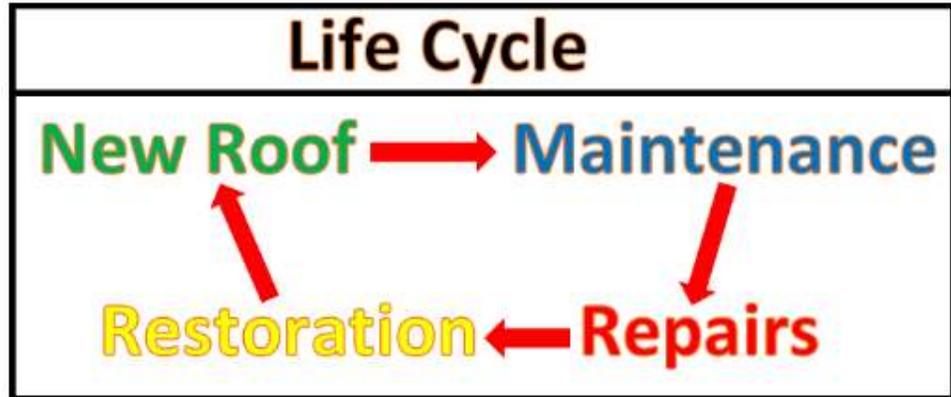


CONCRETE TILE

PROACTIVE PLANNING

THE LIFE CYCLE OF A ROOF

Every roof system has a somewhat predictable life cycle after installation. If the roof was installed correctly and is maintained, you can expect the advertised service life from that system. You may be able to restore the roof and extend its



service life. Roof restoration systems can include; Acrylic, silicone, and other types of coatings, which usually involve some reinforcing fabric. Foam over the existing roof system and apply a coating material is also popular, or you might install a single-ply roof material over the existing materials.

These restoration systems may extend the service life for another ten to twenty years, but only if the existing roof material is in good enough condition to restore. If the roof was not maintained, is too damaged, or has been wet with latent moisture in the system, restoration may not be an option. Reach out to a manufacturer or a roof consultant for a proper evaluation.

PREVENTIVE MAINTENANCE PROGRAM

Your preventative maintenance program will include regularly scheduled inspections and corrective actions. In Arizona, our monsoon season from June to September. Most people experience problems with their roofs during the monsoon season. When we get most of our rain, high winds, and dust storms. Ideally, you should plan at least two inspections, one before and one after the monsoon season. The first to inspect the roof for potential problems and take corrective action. The second to identify any damage that might have been caused by monsoon weather.

You might want to ask your roofing professional to conduct a moisture survey using non-destructive tools such as an infrared camera and/or impedance moisture meter. Appearances can be deceiving; on a low sloped roof system, moisture can be trapped beneath the roof covering and won't be visible to the naked eye.

Keep in mind that during the monsoon season and for several months after the monsoon season, most roof consultants and roof contractors get very busy. Schedule your inspection as far in advance as possible, and ask your roofing professional to keep you on their calendar at the same time(s) each year.

You should also have someone inspect the roof any time anyone accesses the roof for any reason. If you have staff who are qualified, that might save you some cost. Or you can include these types of visits in your contract with your roofing professional who is performing your annual or bi-annual inspections.

INSPECTION PROCESS

Let me start this section by saying, “you get what you pay for.” Contractors have known for years that FREE roof inspections are great for marketing. The more they do, the higher their odds of closing a repair or reroof contract. Be careful if you choose to take advantage of a FREE roof inspection, some contractors might provide you with a genuine inspection, but your odds are low. You would do better paying a good roof consultant, who does not do any repair or re-roofing work and getting a non-biased and accurate roof inspection report.

A typical roof inspection will include:

- A visual inspection of the perimeter of the building, the drains, the landscape, cladding, and fenestrations (windows and doors) for any evidence of damage.
- A visual inspection of the building’s fascia and soffit for any evidence of water intrusion.
- A visual inspection of the roof system, the drains on the roof, the condition of the roof covering materials, penetrations and rooftop equipment, etc. For any evidence water intrusion, damage, or a potential problem that could result in water intrusion.
- All findings are documented in writing and with photographs, along with any recommended corrective actions.

DO'S AND DON'T'S

- Do understand that proper maintenance will help to extend the service life of your roof
 - Do have your roof inspected twice per year, before and after the monsoon season.
 - Do have your roof inspected after severe weather or some other event that has the potential of having caused some damage to left debris on your roof.
 - Do have the exterior of your building inspected as well, cracks in the walls, clogged gutters, slipping materials, and so on are all signs of a possible roof issue.
 - Do make sure that anyone who goes on the roof is signed into your log, knows what they are doing, and are there for a specific reason. (more on a roof access log later)
 - Do make sure your roof is clean and keep your roof drains or gutters clear.
 - Do have a basic understanding of the early warning signs and know when to call the experts.
 - Do understand that penetrations, flashings, and wall abutment areas are vulnerable to leaking.
 - Do understand that not every “roof leak” is a roof leak. Be open to other possibilities.
 - Do your due diligence and investigate any contractor or other roofing professional before hiring them.
 - Do make sure any contractor you are considering is licensed with the ROC as a CR42 roofing classification
-

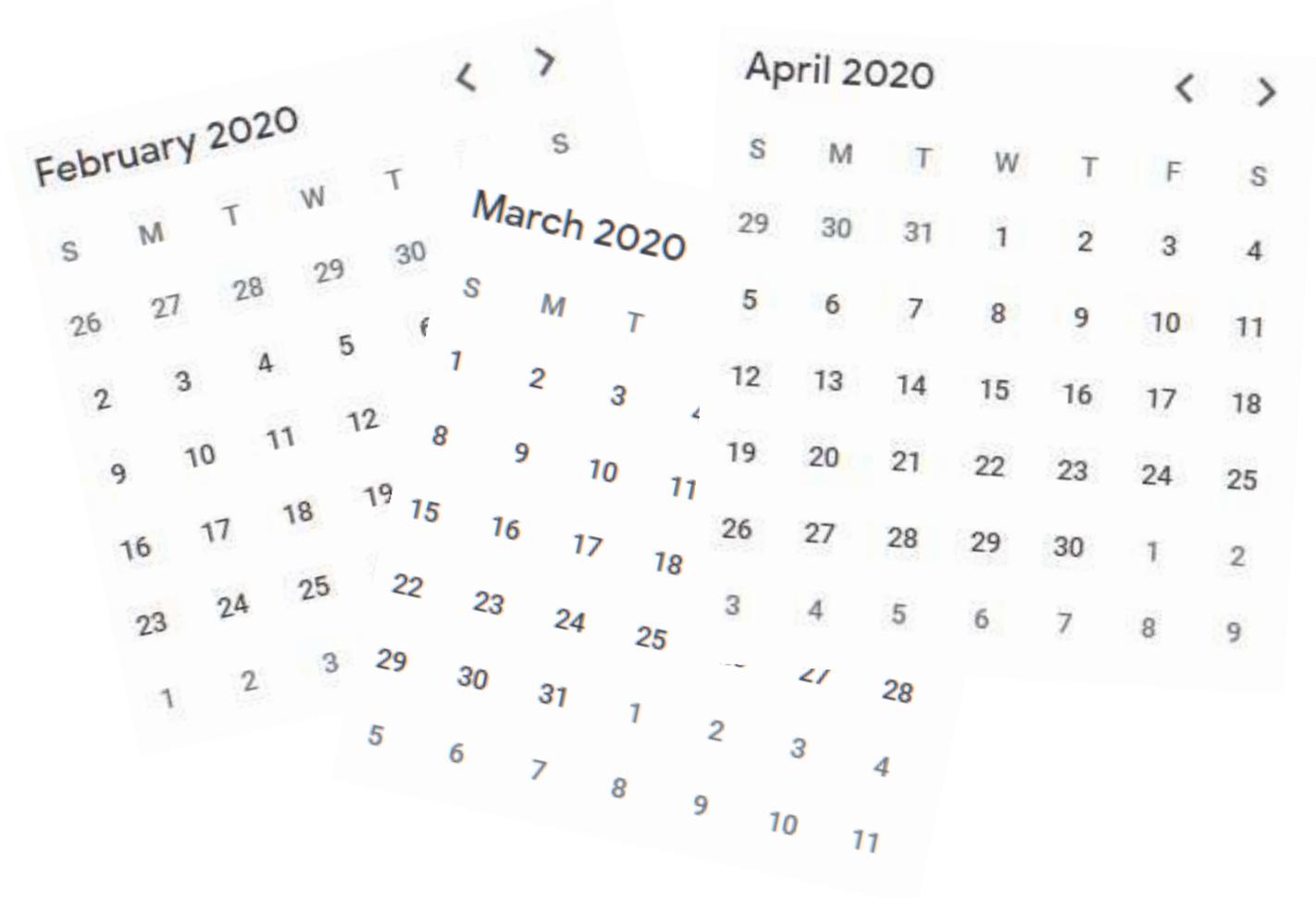
- Don't let just anyone go up onto the roof.
- Don't allow anyone to access the roof without signing in, and you might consider having someone escort them.
- Don't allow anyone to make any alterations or penetrations without your roofing contractor present to assure the roof system is not compromised.
- Don't allow anyone to use materials not approved by the manufacturer for the roof system in place.
- Don't get any bids from any contractors for repair or reroofing without a well-written job specification and invitation to bid package.
- Don't re-roof over existing failed roofing. It is possible to restore some roof systems, get the professional opinion of a roof consultant or manufacturing representative
- Don't believe any sales pitch guarantees that seem too good to be true.
- Don't hire contractors and other professionals based on price alone.
- Don't work with any contractor or another roofing professional who seems to be backpedaling on their promises.

PLANNING AND SCHEDULING

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Plan and schedule your inspection(s) well ahead of the monsoon season, and stay on your roofing professional's calendar. During and just after the monsoon season, any good roofing professional, contractor, or consultant. Will become very busy and getting on their schedule can be tough, you might end up waiting for a few months and crossing your fingers in that time, that you don't have a problem. Additionally, since the monsoon season is when Arizona sees most of its rainfall for the year, you don't want a leak in your roof when you can't get anyone out to take care of it.

Knowing where you are in the life cycle of the roof makes it so much easier to plan for the expense and not be surprised by them. Having a record of inspections can help you prepare for the eventuality of a roof restoration or replacement as well. Roofing is a costly project, and very disruptive to the building occupants as well.



HOW TO SPOT A PROBLEM BEFORE IT IS A PROBLEM

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OVERVIEW BASICS

Thankfully roofing materials deteriorate slowly and predictably. If you know how materials deteriorate over time, usually, that knowledge can help you make predictions of a roof's service life during a visual inspection. Knowing what is and isn't normal, will also let you know when you need to call in a professional.

The following condition descriptions assume the materials have been correctly installed and without defects at the time of installation. Nearly all roof leaks are the result of installer error; hiring a third-party consultant to monitor the project during installation, is one of the best things you can do to protect your investment.

BUR

When inspecting a built-up roofing system, there are several conditions that you should look for that will give you an indication where the roof system is its life cycle:

Alligatoring is when the asphalt material has begun to shrink and starts to crack, resembling the dried mud of a desert floor, or the skin of an alligator. These cracks will get worse as the material ages and should be carefully monitored.

Blistering happens when moisture or some other contaminant has intruded into the system and is trapped beneath the roofing, or between the layers of roofing material. It will expand and delaminate the materials, leaving behind a soft round shaped bubbles anywhere from the size of a small pebble to the size of a softball or larger.

Ridging, or Buckling, is due to either thermal expansion (heat causing materials to stretch) or problems with the insulation or decking beneath the roofing materials. The defect appears as a long hump or wrinkle in the material, sometimes straight and other times wavy. Eventually, the top of the materials could break open and allow water intrusion.

Wind damage is very similar in appearance to ridging and buckling. Often the damage will be observed in the corners and along the walls. There will usually be random-looking wrinkles in the materials, but when you look closer, you can see that a pattern. That resembles a bed sheet if you pinched the corner, lifted it, and let go quickly.

Granular loss is when the granules on the top sheet of material come loose and wash away either by water draining and carrying the granules to the drains, or wind blowing them off the roof. You can see the loose granules at the corners, near drains, in low areas, and on the ground near the downspouts. The granules protect the asphalt

materials from ultra-violet light degradation; the more severe the granule loss is, the closer the roof system is to the end of its service life.

SPF

Polyurethane spray foam and coating roofing can be an excellent system providing years of service life. When inspecting an SPF roof system, the following conditions are indicators as to the roof's existing service life.

Standing water is when water stands on the roof for more than 48 hours. There are very few waterproofing roof materials. Most are "water-resistant," which means that eventually, water can permeate the material and intrude into the system or the substrate. Look for areas where dirt has collected and examined the coating materials for peeling or wrinkled areas.

Delamination or blistering is when the SPF becomes unadhered to the decking, resulting in bubbles from the size of a dime to grapefruit or more substantial. They can be softer or as hard as the rest of the roof; extensive blistering areas can be walked on and overlooked by the untrained eye. If there is moisture present, the blister should be cut out and repaired.

Blistering in the coating is when moisture or some other contaminate is trapped between the coating and SPF materials, causing bubbles in various sized from smaller than a dime to as large as a grapefruit. The size and visibility of the blistering will depend significantly on the ambient temperature. The blistering coating should be cut out, the area cleaned, and a new coating applied.

Exposed and burnt foam, SPF makes an excellent roofing material but is very vulnerable to ultra-violet light and, when exposed for too long, will start to turn a dark orange color and crystalize. As it does, the material becomes brittle and turns to dust and washed away from wind and rain.

SINGLE PLY

Single-ply is what it sounds like, one-ply (layer) of material. In Arizona, most of the single-ply is TPO or PVC. There are some EPDM roofs out there, but I have not seen many of them. There are various ways that the material can be installed are; Fastened, adhered, or held in place with the rock (ballast). Single-ply is a controversial roof system; roofers seem to love it or hate it.

Loose laps, laps in the field, penetration flashings, walls, and any place where the material overlaps itself can come loose. If laps are loose enough, water and debris may intrude and loosen the laps more eventually becoming a leak.

Exposed scrim, the scrim is the reinforcing material embedded in the single-ply sheet. If the scrim is visible that the material has already degraded and may already be leaking.

CONCRETE OR CLAY TILE

Concrete and clay tile are prevalent roof materials in Arizona, used in residential and commercial applications. Tile can provide service for decades; it's the underlayment and flashings that degrade and need to be removed and replaced. Concrete and clay tiles roofs make great steep sloped roofs and when installed correctly, will provide many years of service life

Loose and slipping tile; this is something that you can see from the ground. Look near hips and any place the roof meets a wall. Often the cut tile used in those areas will slip down and expose the underlayment to ultraviolet light.

Cracked or broken tile, it is common to see the lower right-hand corner of a concrete tile chipped off. What you want to look for are chips that are more than three inches from the bottom or cracks and breaks in the tile that can allow water to get onto the deck.

Curling underlayment, depending on the installation, you might be able to see the edge of the underlayment at the eave. If not, and you can safely go up onto the roof, you can find a lap about the fourth or fifth row, uplift the tile and look at the underlayment. Make a note of the amount of curling in the underlayment.

Cracked and missing mortar, the mortar will often crack and come loose before any other component. Broken and loose mortar can allow water intrusion and ultra-violet exposure. Both of which will accelerate the deterioration of the underlayment.

ASPHALT SHINGLES

Asphalt shingles come in several styles, three-tab, laminated or architectural, and various styles of designer and heavyweight shingles. Asphalt shingles are manufactured by embedding a fiberglass reinforcing mat in asphalt and then pressing colored minerals (granules) into the surface of the shingle. Protecting the asphalt from ultra-violet light and giving the shingle a pleasing finished appearance. Look for these signs of problems.;

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Granular loss, over time, the minerals pressing into the surface of the shingle come loose and fall off the roof. You may see them in your guttering or near your downspouts, or you may see it as darker spots on the roof itself. The more granular loss, the more exposed the asphalt is to ultraviolet light, and the more rapid the shingles will deteriorate.

Exposed fiberglass, if you can see a sparkle at the edges of the shingles from the right vantage point. You can see the side of the fiberglass mat embedded into the asphalt; this is an indication the asphalt is deteriorating, the shingles are becoming thinner and weaker.

Loose shingles, there are various reasons shingles may become loose, but once the shingles are loose, debris is blown under them loosening them more and more. Until eventually, they blow off the roof, exposing the underlayment.

Curling or cupping shingles, as the asphalt deteriorates, the shingle will start to shrink. You may see this as curling; the shingles are lifting at the bottom and turning into towards its self. Or you might see the corners curling inward, creating a cupping effect. Either way, this is a sure sign that the shingles have reached the end of their useful service life.

Missing shingles, one of the final stages of a dying shingle roof are missing shingles. They have become so weak and deteriorated that even the slightest breeze will blow them off entirely. If the roof is new, it may be an installer error. But if the roof is older, it is time to start planning for a new roof very soon.

ROOF TRAFFIC

KEEPING A LOG OF ROOF TRAFFIC

A roof log is a simple record of the “who, what, when, and why” of any persons accessing the roof. Home or office, you should keep a history of who accesses your roof. Why were they there, what did they and when? Keeping this record will help you if you are ever investigating damage other than normal deterioration. For example, HVAC technicians are notorious for leaving their debris on the roof. That debris can become embedded into the materials or end up clogging up a drain. There is also the possibility of chemical spillage on the roof.

WHO CAN GO ONTO THE ROOF?

The only persons who ever go onto the roof should be professionals who know how to walk on a roof safely and have a specific reason for being on the roof. These people would include maintenance personal, HVAC people, sometimes the plumber, painter or another tradesperson, and of course, the roofing contractor and roof inspectors. We also suggest that people access the roof in teams of at least two; in the case of an accident or some other kind of emergency, there is someone to address the issue and perform the necessary assistance.

WHY GO ONTO THE ROOF?

The rooftop is no place for leisure time; or regular foot traffic. And indeed, they aren't designed for furniture or dragging carts and other things across the roof. Any damage, be it small or otherwise, can compromise the roof system and lead to expensive problems.

Whoever goes on the roof should have a good reason, such as; servicing rooftop equipment, performing inspections, cleaning debris from the rooftop, and clearing the drains? Following up after technicians to make sure they did not cause damage or leave trash behind. Access the roof only when there is a good reason.

WHEN TO GO ONTO THE ROOF?

Roofing materials are not designed for traffic; keep the traffic restricted to the area intended for foot traffic, such as liquid applied walkways, or walk pads.

The best times to access the roof is during the cooler part of the day when the ambient temperature is lower there are fewer chances to damage the roof materials. Especially if the material is an asphalt material, such as a built-up or shingled roof. Other roofing materials are more forgiving, but as a general rule of thumb, non-roofers should only have access to the roof in the cooler parts of the day.

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In Arizona, during the summer months, this might mean from 4 am to 10, or 11 am. The winter months are much more forgiving, and there are days when a worker can be on the roof all day. Let's not forget that heat can harm the work, as well as the roof materials.

ROOF ALTERATIONS, SPILLS OR CHANGE OF USE

ROOF ALTERATIONS

There are times when work on the roof will require some disturbance or destruction of the roofing materials. If anyone is going to make any alterations, you should first know their intentions and the reason for the modifications. Do not give tradesperson a free pass to do whatever they want; make sure they explain and justify the alteration. If you have any concerns at all, reach out to a roof consultant or your roofing contractor to inspect the area before paying the tradesperson.

Alterations can be a leak source, and they may also void your roof warranty.

SPILLS

Some types of things like oils, or grease from a kitchen vent, or spill by other tradespersons, don't play well with the roofing material. There could very well be chemical reactions that result in accelerated deterioration of the roof materials. Another excellent reason to make sure your roof checked out by a consultant or contractor after any tradesperson has been on the roof, or after any event that may have resulted in some foreign materials ending up on the roof.

If you have any kitchen vents on the roof, you must install an excellent grease containment system and maintain it. If you are not able to willing or the occupant is not ready or prepared, specialty companies will.

CHANGE OF USE

Believe it or not, the stuff going inside the building impacts the roof in several ways; for example, if the use of the building does not produce any moisture, there won't be any vapor trying to drive its way up and out through the roof. If the building use changes and there is more moisture produced. You will have vapor trying to drive through the roof and to the outside. Causing damage to the roof covering materials.

If there is any change of use of the building or space, contact a roof consultant to examine the existing roof system to determine if the system meets the new purpose.

WORKING WITH A CONTRACTOR

WHAT KIND OF CONTRACTOR DO YOU NEED?

Not every contractor is capable of doing every job, although far too many of them will advertise that they can. A few can pull it off, but for the most part, contractors tend to be good at a few things, ok at others, and should never attempt other things. For example, contractors tend to be either residential or commercial contractors. Being one or the other requires a different setup, various tools, and different business models. Some contractors are steep-sloped, and others are low sloped, again, each of these types of roof systems requires different setups, tools, and business models.

If you are a commercial building owner with a steep-sloped roof, you want to find a contractor who can do large scale steep roof projects. If your commercial building is a low sloped system (flat roof), you need a contractor set up for large scale low sloped roof systems.

Likewise, if your building is a residential shingle family home, you need a contractor whose business is able up to do that kind of work.

Arizona used to offer and residential roofing license, and a commercial roofing license. A few years back from the date of writing this book, Arizona changed that separation and combined them both into a dual license. Arizona is making every roofer both a commercial and residential roofing contractor.

Another thing to consider is the full scope of the work to be completed if there are more items to be completed that are not roofing — such as moving AC units' around, installed duct work or electrical conduits, carpentry work, and so on. A roofing contractor might even be the right contractor anyways; you might need a general contractor who can manage the entire project.

What licenses allow roofing work?

CR42 Dual

A SIMPLE VETTING PROCESS

If you search online for how to find a contractor, you will find thousands of articles, all of them more or less, with the same content. While most of the tips are valid. There are some other things that you can do. Check out a contractor before considering them; keep in mind

that even with the best due diligence on your part, any contractor can still end up doing a poor job. As the saying goes, “Hope for the best and plan for the worst.”

1. Look the contractor up at <http://www.azroc.gov> make sure they are licensed to do the work you are asking them to do, and that their bond is current. You can also look for any complaints against the contractor. If you are interested in that contractor's history with the ROC (Registrar of Contractors), call them and ask. You will find they are welcoming and very happy to answer any of your questions.
2. Look them up on Yelp or other sites that DO NOT CHARGE FOR LEADS. If the site is selling to a contractor, I don't bother reading their ratings. If the website, on the other hand, makes money from advertising and does not sell leads, I take the ratings much more seriously. The Better Business Bureau, by the way, makes their money charging businesses for membership, I have seen an F rating on their site jump to an A+ in a few months. Just use your common sense and compare various rating sites. Look for a pattern of behavior.
3. Look them up on the www.azcc.gov Arizona Corporate Commission site to make sure they are a business in good standing with the State. You can also find out how long they have been in business under that name, their business address, the people in charge, and so on.
4. Look them up on the www.azica.gov Arizona Industrial Commission to make sure they carry workman's compensation insurance. The site is a little tough to navigate at the time I was writing this book, but there is a lot of valuable information to read. Keep in mind that while the site will list every business as having or not having WC insurance, it won't tell you the terms of the policy.
5. Look them up on the local superior court web site for the county you live in; if they do business in several counties, you might look at those as well. As consultants, we look at the company and the executives up to see what they have in the court system. Do not worry too much if they have had a few bumps in the road, it happens. But if you see a pattern of them being sued or suing people, or criminal convictions. Take those things into consideration.
6. Visit their web site and take note of any manufacturer certifications they advertising as having. Most manufacturers have an option on their website for looking up certified contractors, make sure they are certified by the manufacturer as advertised and in good standing. Many manufacturers require financial stability and proof of insurance to be approved. That won't guarantee excellent performance, but it sure helps.

7. Look them up on the OSHA (Occupational Safety and Health Administration) do a search for the establishment, and you will be able to see their record of violations and the results of each one. Some larger companies are bound to have a few; it's the nature of doing business. Pay attention to the words "serious" and "repeat" if you see those words, it could mean they are not the safest company, and the last thing you want is a careless contractor risking their employee's well being on your property.

HAVING A PREWRITTEN SCOPE OF WORK

Have your scope of work already thought out and written up before you call on any contractors for bids. Present them with that scope of work and make sure they bid on that scope of work. Some contractors will try to convince you to change your scope of work, to make it easier for them. If you have done your homework and got help from professionals who understand the roof system, insist they bid only on the scope of work you have provided.

If you have an existing roof warranty, the terms of the warranty should specify the type of maintenance work required. If you don't have one, the manufacture of the kind of system that you have installed will probably have a "specimen" copy of the warranty on their site; you can always call or email them for a list of maintenance recommendations.

If you don't feel that you are qualified or have the time to do the research, and write a scope of work, reach out to a roof consultant or architect to help.

SOLICITING BIDS AND SELECTING A CONTRACTOR

IMPORTANT MEETINGS AND WHY YOU NEED TO HAVE THEM

Most contractors want to get a contract and start the job; they interpret meetings as impedance and can be resistant at times. Never the less, meetings must take place to mitigate any miscommunications and problems when the work starts.

The Pre-Bid meeting; Schedule a date and time for all the bidders to come out to the site, inspect the roof and the location, and ask your professional whatever questions they might have. Keep in mind that these guys are there to sell their company.

The Pre-Construction or Pre-Instillation meeting; After you have selected a contractor, and completed all the contract negotiations, schedule a date and time to meet with the contractor and their site supervisorial staff to discuss the project. Contractors have a bad habit of sending out their sales staff and managers to meetings like this, and that is ok; however, it is crucial for the actual person(s) who

will be on-site supervising the work is present for the meeting. So important that if they are not present, cancel the meeting and reschedule it for another date.

This meeting is the contractor's last opportunity before the work begins to inspect the site conditions, to ask any last-minute questions concerning the project specification, and to work out the logistical details. Such as; when they can work, where supplies will be stored, where equipment will be stored, and so on.

Take good notes, review them with the persons in attendance, get their signature on the meeting notes. Later email them to all parties and save them as part of the contract documents.

MONITORING THE PROJECT

Quality assurance and quality control are two different things, but also very similar. Pay attention to the words “assurance” and “control.” The contractor controls the work; they provide the materials and labor to complete the work; they provide the training and resources the workers need to do their job. The quality assurance person is there as the eyes and ears of the owner, to document the work progress. And to assure that the contractor is performing in conformance with the job specification and construction documents.

Monitoring should be done by someone who does not work for the contractor and has an understanding of the roofing process and roof materials.

FINAL INSPECTION AND CLOSEOUT

Before paying the contractor, be sure to walk the site to inspect both the roof and the grounds if you are not able to comfortably and safely get on the roof. Or you don't know what you are looking at; you should hire a third-party monitor. You get one shot to make sure the work is correct, that the area of the grounds is clean, and all the roofer's stuff is gone.

Also, make sure that you have all the documents that the roofer owes you, such as lien waiver(s) and warranty documents. As long as you still have some money due to the contractor, you can get them to do more, but sadly as soon as you pay that contractor, it might be very hard or even impossible to get anything from them. They move onto the next project and get too busy to come back and deal with you.

WHY THE ROOFERS PROGRESS REPORTS ARE NOT RELIABLE

Some contractors will offer progress reports, and every contractor should be documenting the work they do. Keep in mind, though, that the roofer is there to finish and get paid. Their reports can often be more of a marketing tool than an accurate progress report.

WORKING WITH A ROOF CONSULTANT

WHAT IS A CONSULTANTS ROLE?

The consultant has a very significant and vital role in the success of the project. They will perform any initial inspections and testing to determine the current condition of the roof. They will draft specifications and work with the manufacturers to make sure the system they are recommending is the right system for your needs. Consultants are the designers and typically have a better understanding of roofing science and design than a contractor does. Consultants will also assist in the bidding process and monitor the installation as quality assurance. Most importantly, the consultant works for the owner's best interest and is their eyes and ears for the owner.

WHICH CONSULTANT IS RIGHT FOR YOU?

Consultants will have their areas of expertise. When you are considering using a consultant, make sure that your particular project fits with their areas of expertise. And that the type of service they provide is the service that you need.

A SIMPLE VETTING PROCESS

There is no licensing required to be a roofing consultant in Arizona, although some consultants may hold a roofing contractor's license. There is one private association that offers certifications to consultants specifically and several industry associations who provide certifications for various kinds to their segment of the industry.

SOLICITING BIDS AND SELECTING A CONSULTANT

Consultants can be found online search "Roof Consultant CITY." You can also reach out to the local IIBEC (Institute of International Building Envelope Consultants) or go to their site and search for one in your area. You may also ask others you know who have worked with consultants in the past, and get a recommendation from them.

WHY ROOFERS TRY TO GET AROUND THE CONSULTANT

Some roofing contractors will welcome a consultant on the project. For them, that's another set of trained eyes to make sure the work is correct. On the other hand, other contractors feel the presence of a consultant is an insult to their abilities to perform. They see the consultant as a "baby sitter," or they know they cant do substandard work and cut corners with eyes pressing down on them. Most consultants will have a list of contractors they have worked with and always looking for new ones to add to the list. Those contractors already

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understand the process and have shown they can work with the consultant, or they wouldn't be on the consultant's list. The bottom line is, you need someone to watch out for your best interest, and if any particular contractor is resistant to having a consultant on-site, that should be a red flag. There is a reason, and usually, its that they won't be able to cut corners and do a substandard job.

FORMS AND CHECKLIST

VISITOR LOG

Use to record all visitors to the rooftop

REPAIR LOG

Use to keep a record of repairs and maintenance work

INSPECTION FORM

Use when performing a visual inspection of the roof

REQUEST FOR PROPOSAL (CONTRACTOR)

Use when you need to bids for repair or other work from qualified contractors

REQUEST FOR PROPOSAL (CONSULTANT)

Use when you need bids for services from a qualified roof consultant

ROOF/ACCESS REPAIR AND MAINTANENCE LOG

Date: _____ Area Accessed: _____

Reason for roof access: _____

Names of the persons accessing the roof

Date: _____ Area Accessed: _____

Reason for roof access: _____

Names of the persons accessing the roof

ROOF INSPECTION FORM

Location Address: _____ Date: _____

Person inspecting the roof: _____

Reason for the inspection: Pre-monsoon season Post-monsoon season Weather event Follow up after other visitor Other: _____

Type of roof system: Single ply Modified bitumen Built up roofing Metal Shingles Concrete tile Other: _____

Y	N	N/A	Condition
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<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Evidence of standing water on ground near storm drains
--------------------------	--------------------------	--------------------------	--

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Gutters/downspouts/storm drains blocked with debris
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<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Cracks, gaps or other damage to the gutters/downspouts/drains
--------------------------	--------------------------	--------------------------	---

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Standing water or evidence of past standing water on the roof deck
--------------------------	--------------------------	--------------------------	--

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Accumulation of debris on the roof
--------------------------	--------------------------	--------------------------	------------------------------------

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Suspected water intrusion
--------------------------	--------------------------	--------------------------	---------------------------

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Evidence of bird, rodent or insect infestation
--------------------------	--------------------------	--------------------------	--

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Roof materials damaged or missing
--------------------------	--------------------------	--------------------------	-----------------------------------

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Cracks or loose materials around rooftop penetrations
--------------------------	--------------------------	--------------------------	---

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Flashings not sealed, coming loose or damaged
--------------------------	--------------------------	--------------------------	---

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Cracks, gaps or other damage to parapet walls
--------------------------	--------------------------	--------------------------	---

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Debris accumulating under mechanical units
--------------------------	--------------------------	--------------------------	--

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Grease or other contaminants on the roof
--------------------------	--------------------------	--------------------------	--

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Other: _____
--------------------------	--------------------------	--------------------------	--------------

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Other: _____
--------------------------	--------------------------	--------------------------	--------------

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Other: _____
--------------------------	--------------------------	--------------------------	--------------

Findings: _____

Corrective Actions: _____

REQUEST FOR PROPOSAL (CONSULTANT)

We are accepting bids for roofing consulting services at the address below.

Site Address: _____

City: _____ State: _____ Zip: _____

Bids are submitted to:

Company name: _____

Contactor name: _____

Address: _____

City: _____ State: _____ Zip: _____

We need:

Roof survey and condition assessment

Bidding and specifications

Project monitoring

Roof Maintenance plan

Other: _____

Bids are due by _____ at _____ Delivered by email to: _____

At _____

Tell us more about you

What is your area of expertise? _____

How long have you been in business? _____

What credentials have you earned? _____

Do you have experience with the type of roof we have _____

Do you have experience with this type of project? _____

If you have additional information that you believe is relevant to the bidding process, please include it with your bid.

Signature _____ Name/Title _____

REQUEST FOR PROPOSAL (CONTRACTOR)

We are accepting bids for roofing work to be performed at the address below, when submitting your bid please submit your base price for the work as described in the summary below on your letter head, include your wood replacement cost sheet and do not include a contract at this time.

Site Address: _____

City: _____ State: _____ Zip: _____

Bids are submitted to:

Company name: _____

Contact name: _____

Address: _____

City: _____ State: _____ Zip: _____

The following summary is not intended to be a job specification, a detailed job specification will be provided/required before the job begins.

Job summary:

A pre-bid meeting will be held on _____ at _____ at the above location. You are required to attend the meeting for your bid accepted.

Bids are due by _____ at _____ Delivered by email to: _____

At _____

To qualify as a bidder, you must:

Be currently licensed and bonded in Arizona - ROC Number and class: _____

Carry General Liability Insurance - Limits _____

Carry Commercial Auto Liability Insurance – Limits: _____

Carry Workers Compensation Insurance – Limits: _____

Have five years' experience with the above described work; _____ YES _____NO

Be willing to work in compliance with all OSHA 1926 construction standards _____ YES _____NO

If you use sub-contractors, they will be required to provide the same insurance coverages and be willing to comply with the job specifications and OSHA 1926 standards as well as any other requirements to work at the above site address. Will you be using sub-contractors _____ YES _____ NO

If you have additional information that you believe is relevant to the bidding process, please include it with your base bid summary.

Signature _____ Name/Title _____