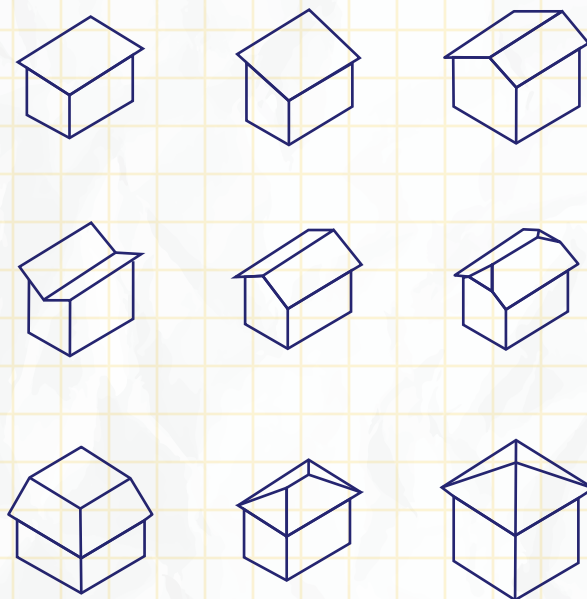


THE *Issue* WITH ROOFS

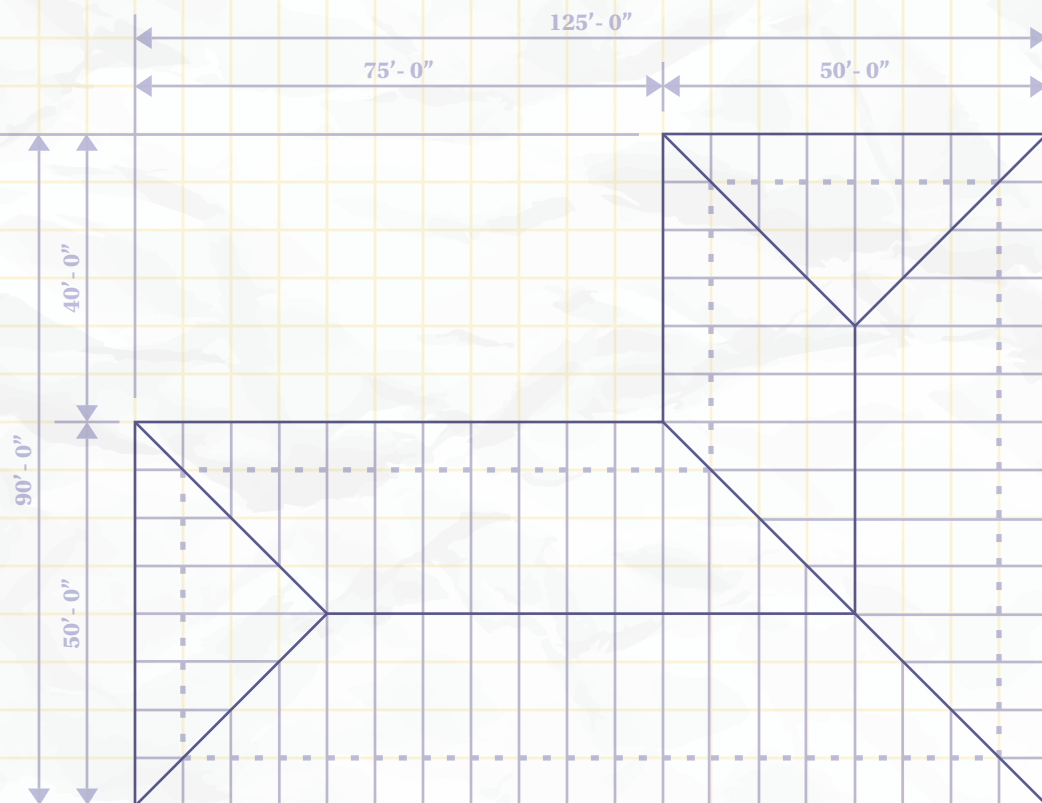
Peeling back the layers of trouble →



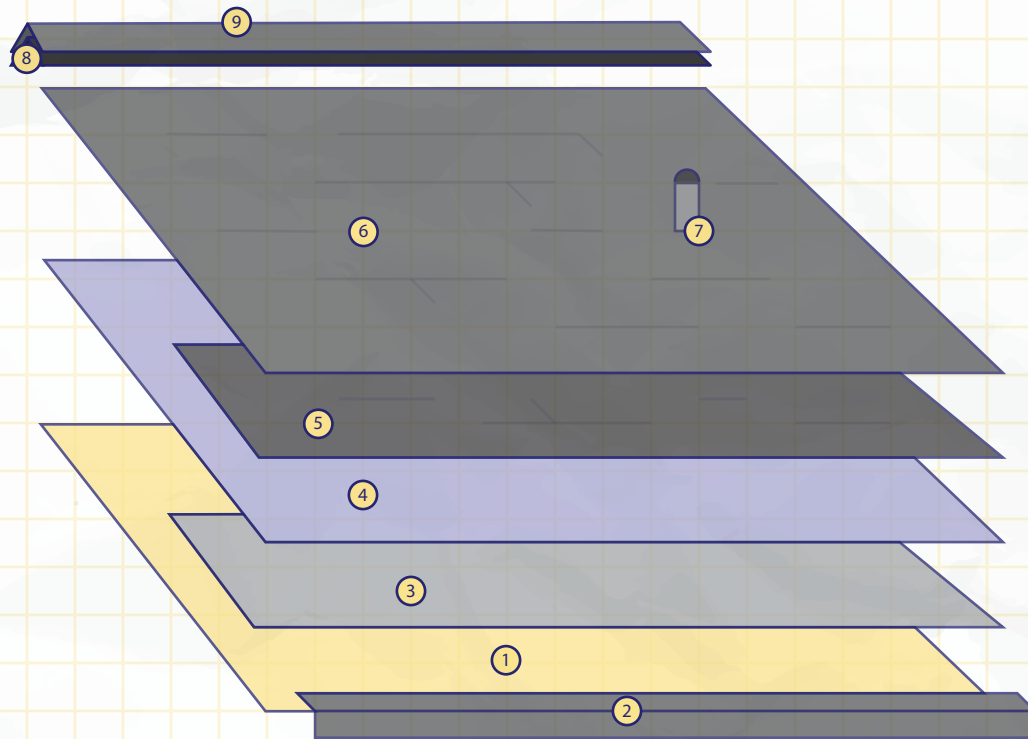


KEEP TABS *on your* SHINGLED ROOF

Think of your asphalt shingle roof as an intricate system comprised of many layers, all working together to help move water away from your building. You may assume all is well if there are no signs of water leaks, but ignoring your roof can lead to serious and expensive problems. That's why routine inspection and maintenance are essential to maximizing its longevity and minimizing the risk for unseen dangers like mold and rotting wood.



ROOF ANATOMY



- | | | |
|-------------------------|--------------------|----------------------------|
| ① Plywood Deck | ④ Moisture Barrier | ⑦ Stack (Vent) Pipe |
| ② Drip Edge | ⑤ Starter Shingles | ⑧ Ridge Vent |
| ③ Ice and Water Barrier | ⑥ Asphalt Shingles | ⑨ Ridge (and Hip) Shingles |

Look Up

Keeping tabs on your roof is as easy as looking up. While safely on the ground, try to look at your roof at least once a week and after any storms. The idea is to spot signs of trouble so they can be fixed before turning into major construction projects. Even if your building is tall, you should be able to notice things like missing shingles or debris.

Ventilation is a critical component of a healthy roof system. A properly ventilated roof will allow moisture to escape and keep the shingles and roof deck cooler, which can extend their lifespan and avoid materials failure. “If you look at a large roof assembly and notice that shingles are deteriorating faster in a certain area, it’s usually an indication that the roof is not getting enough ventilation or getting too hot. Heat and moisture are the enemies of roofing materials,” said Ward Durant, a senior risk control specialist with Brotherhood Mutual.

Another critical issue to look for is whether the shingles can quickly dry. “When roofs stay wet for too long, it can cause the shingles, fasteners, and even the wood underneath them to wear out more quickly,” offered Durant. In addition to checking the roof, he routinely advises that you check gutters for obstructions and trim overhanging trees that can prevent the roof from drying. “A typical roof should be dry within two to three hours of receiving direct sunshine,” he said.

While on the ground, start your visual inspection at the top of the roof and work your way down. Some issues that should be addressed immediately include missing shingles, gutters blocked by debris, and valleys that are full of debris. Some less obvious issues include mold or moss growing on your shingles. While this might not seem like a big deal, Durant advises, “It can grow enough that it will raise the level of the shingle, breaking its seal, and allowing wind-driven rain to get underneath the shingles.”

Continued...

It's easy to do a quick visual inspection while safely on the ground. Here's a handy list to help you get started:

Peak and Ridge Vent

- ☐ Are there any missing shingles?
- ☐ Does the ridge vent look well-secured?

Roof protrusions (plumbing vents, attic vents, etc.)

- ☐ Are they broken?
- ☐ Are they well-secured?

Roof deck

- ☐ Is it wavy, bowed, or drooping in one area? This could indicate wood rot caused by moisture.

Shingles

- ☐ Are any damaged or missing?
- ☐ Are the edges noticeably curled?
- ☐ Do you notice any small bumps caused by protruding nails?
- ☐ Do you see any gaps between or under the shingles?
- ☐ Can you see wood?
- ☐ Is there mold or moss growing on the shingles?

Valleys (where two roofs meet)

- ☐ Are these areas full of debris like leaves, pine needles, seeds, or sticks?

Gutters

- ☐ Are they full of debris?
- ☐ Do you notice vegetation growing in them?
- ☐ Do your gutters drain well away from your building's foundation?
- ☐ Are they secured to your building and in good condition?

When to Call the Pros

While frequent visual inspection of your roof from ground level is good practice, there comes a point when it's time to hire a professional to take a closer look and to make repairs. A licensed roofing contractor can thoroughly inspect your roof to find small issues that could lead to much bigger problems without repair. They have the equipment to work safely at height and have the training to use the correct methods and materials to make lasting, water-tight repairs.

If you have traditional asphalt shingles, it's a good idea to begin professional roof inspections about halfway through their life expectancy. For most roofs, this can occur approximately 10 to 15 years after installation, then annually after that. It's best practice to get an annual inspection in the spring. This can catch winter damage and prep the roof for warmer summer weather. An even better option is to have a bi-annual inspection – once in the spring and once in the fall.

During the professional inspection, a licensed roofing contractor will typically check:



Shingles for signs of wear, which can include cracking, loss of coating, holes, or tears.



Caulking or sealant around exposed fasteners, transitions, or electric service.



Flashing to make sure it's installed properly and not corroded or cracked.



Drip edge to make sure water sheds properly off the roof and into the gutter.



Weather seals on roof penetrations like vent pipes for restrooms. These rubber boots can dry out and crack, creating leaks that can go undetected for months or years.



Gutters for debris or other obstructions.



Metal Roof Basics

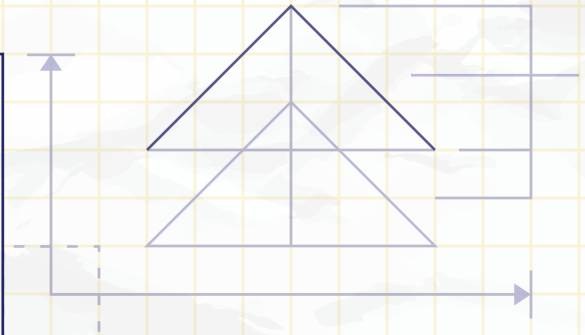
Metal roofs are becoming a popular choice for ministries. When properly installed, metal roofs can withstand higher wind speeds and are less susceptible to hail damage. Although they have a higher initial cost, they can last nearly twice as long as premium asphalt shingles. Just like asphalt shingles, metal roofs still require regular inspection and maintenance. It's important to keep debris off metal roofs and to look for any signs of loosening or lifting of the metal panels, especially near the corners.

Professional roofing contractors will also look at how the shingles are performing. "They'll check for signs of abnormal wear and inspect areas that are more prone to wind-driven rain to make sure the shingles are solidly adhered," explained Durant. Additionally, a contractor will inspect the valleys and flashing assemblies. "These areas are prone to leaking, and flashing typically requires resealing during a normal lifespan. It's important to keep a close watch on these areas."

Steeple are a feature unique to ministry buildings, but they can cause problems. "We've seen them installed over the top of the existing shingles, which can lead to leaks or early roof failure," said Durant. Additionally, condensation inside steeples can keep the roof wet. This reduces its longevity and can cause the steeple attachments to corrode, which can lead to failure during high wind.

Time to Replace

Like any building component, a roof will eventually need to be replaced. If your roof is past its prime, it's best to replace it before it fails, potentially leading to much more expensive repairs. Since roofs are installed as systems, not just the shingles, it's important to hire a certified roofing contractor trained to properly install all the components of the roof, including drip edge, membrane underlayment, flashing, and shingles.



Durant advises against installing new shingles over old, which is sometimes done with a three-tab system. It can reduce cost, but it misses several critical steps of a water-tight installation. Also, a second layer of shingles places additional weight and strain on your building. Durant recommends starting fresh so you know the condition of your sheathing and can install new flashing, underlayment, and drip edge.

Another benefit of starting fresh is knowing that your roof deck is sealed properly. This can help keep your building dry in cases where you lose some shingles during a storm. Properly installed underlayment helps keep out wind-driven rain.

Roofs can be expensive to replace, but a leaky roof can cause structural damage to your building and create mold hazards, adding significant additional repair and clean-up costs.

Durant offers a final thought, "Regular inspection and maintenance are going to help a roof last longer and will be cheaper in the long run than ignoring it. Spending a little time and treasure on your roof now can leave more for ministry in the long run." 🏠

Make Sure Your Flat Roof

is Pitch Perfect



Routine maintenance maximizes longevity and avoids catastrophic failure.

1

It's important to check the flashing around the perimeter of the roof. If it's loose, get it fixed immediately. This is a common point of failure during high winds.

2

Check for debris like plants, balls, or items left by contractors. It's common for HVAC vendors or maintenance staff to leave unused items on the roof, which can puncture the roofing membrane or become potential projectiles during high winds.

3

Flat roofs typically have several drains. Make sure they're not blocked by debris. If the roof can't drain properly, the standing water can lead to early failure of the roof covering.

4

You'll want to check any equipment mounted on the roof to make sure it's properly secured. Loose equipment or wires can damage the roof covering during high winds.

A Wednesday evening varsity basketball game is nearly over when a strong storm quickly moves into the area. It begins to rain, then a sudden gust of wind violently peels the roof off the gymnasium. Debris pelts guests as they run for cover. As you turn your attention skyward, there's nothing you can do but watch as thousands of gallons of rainwater pour into your building.

Many commercial buildings have large spanning roofs that are flat. The benefits include lower initial construction costs, architectural appeal, and needed space to mount mechanical systems. Some church, school, and college campuses may have buildings with flat roofs that cover hundreds of thousands of square feet of electronic equipment, books, students, worship services, instruments, gym floors, and more. Since you can't see a flat roof from the ground, problems like loose flashing or clogged drains may go unnoticed until it's too late. That's why routine inspection and maintenance are key to maximizing longevity and minimizing the potential for leaks and catastrophic failure.

Flat Roof Basics

A flat roof begins with the roof deck, a structural layer that transfers the external forces a roof creates (its own weight) or experiences (such as wind uplift) to the building. It can be mechanically attached, welded, or integrated (such as a poured concrete deck) to the framing. On top of the roof deck are several layers that make up the roofing system. These layers may include a vapor barrier, insulation, coverboard, and roof cover. The roof cover can be made of a variety of materials depending on the installed system. For example, a single ply membrane is made of a durable rubber or vinyl material, which can be attached by using adhesive, mechanical fasteners, or rocks known as ballast. This layer protects your building against weather, including water intrusion.

Flashing Red Flags

The perimeter edges of a flat roof are protected with a strip of metal or other material called flashing. It's a critical component of the flat roof system and provides protection against wind and rain where the roof meets the walls. It also helps prevent wind from lifting the roof cover, which can lead to significant damage or even roof failure.

Regular inspection of the flashing can help you spot problems early so they can be fixed. "From the ground or from the roof with proper safety equipment, look for waviness, degradation, rusting, and disconnected fasteners. These are all red flags for flashing that could lead to a roof cover failure," said Chris Cioffi, commercial programs manager for the Insurance Institute for Business & Home Safety (IBHS). When flashing becomes loose, wind can cause the roof membrane to detach from the building, potentially leading to catastrophic failure and water damage. "Most roof related losses start with failure of flashing," said Cioffi.

Maintaining a Flat Roof

The longevity of flat roofs can vary and is highly dependent on how it's installed and maintained. Typically, a flat roof can last from 10 to 30 years. To maximize the longevity of a flat roof, it's important to regularly perform inspections, cleaning, and repairs. Standing water, debris, and excessive wear and tear that's not quickly repaired can all contribute to a roof covering that fails.

"Roofs should be inspected and maintained at every season change, before a storm, and following a storm. This way, if an issue is noted, it can be fixed before the next storm in order to reduce loss, including water intrusion and business interruption," noted Cioffi.

Flat roofs often can't be seen from the ground, so they require direct inspection. While they can be safer to inspect than a pitched roof, you'll still need the appropriate safety equipment. As an alternative, you could use a drone to inspect the roof or hire a roofing specialist.

When hiring a contractor to perform routine inspection and maintenance on your roof, make sure they note the condition of the roofing assembly and indicate items that need immediate and near-term repair. Repairing small issues now can help prevent major problems in the future. 🛠️



THE HIGH *c o s t o f* DEFERRED MAINTENANCE

As Christian churches, schools, and colleges look to the future to build and renovate facilities designed to accommodate the modern congregation or student population, there looms an issue all too familiar to boards, business managers, and facility managers alike. Aging facilities that once stood proud to serve your people are starting to groan from years of deferred maintenance.

“Due to the complexity and diversity of facilities contained within Christian church and school campuses, deferred maintenance can be a common challenge,” said Ward Durant, a senior risk control specialist with Brotherhood Mutual. Fixing immediate needs distracts from long-term planning, so systems that seem to be working fine are ignored. Over time, small, inexpensive repairs can turn into budget-busting replacement bills.

Some of the biggest areas for deferred maintenance include roofs, HVAC, parking lots, and flooring. “These are big ticket items and the tendency is to let them slide for too long, leading to increased energy costs and the inevitable

catastrophic failure,” explained Tim Cool, founder of Smart Church Solutions, which specializes in facilities planning and management.

Here’s an example of an audit the Smart Church Solutions team recently performed on a 40,000 square foot ministry building. They found \$1.9 million in deferred maintenance. If the ministry had budgeted appropriately for maintenance and staffing during the past 20 years, it would have spent about \$900,000. Deferring their maintenance more than doubled their costs. Imagine multiplying this staggering sum across all the buildings on your campus. Your church or school could be facing millions of dollars in deferred maintenance costs.

Short-Term Gain. Long-Term Pain.

Consider that the cost of handling a replacement at its point of total failure is generally 30 times the cost of handling it on its first failure.¹ For example, you can spend a few dollars to update roof sealant, or you can spend much more later when you have to replace drywall, framing, insulation, ceiling tiles, equipment damaged by water leaks, and pay for mold remediation caused by the leaky roof.

Deferred maintenance can lead to serious safety issues, too. “Campus walkways, vehicle lanes, and parking areas can represent significant risk exposure for trips and falls, especially if they’re also used for recess activities,” explained Durant.

Budget Now to Save Later

Having an appropriate budget for Provision for Plant Replacement, Renewal, and Special Maintenance (PPRRSM) enables you to properly maintain your facilities, which typically results in saving money in the long run. Allocating capital funds or setting up an endowment fund for facilities renewal are critically important to avoiding a budget crisis as a result of deferred maintenance.

For example, taking a proactive approach to pavement surface inspection and maintenance is crucial to reduce the risk of injury and to maximize long-term performance. Regular inspections with documented conditions can help identify areas for both immediate repair and long-term replacement needs. “It’s important to manage facilities and make repairs before their point of failure. For example, a pavement maintenance program that includes joint and crack filling combined with surface sealcoating and rejuvenating components can extend pavement life cycles significantly,” said Durant.

Regular roof and HVAC inspections and maintenance will help your equipment last longer, run more efficiently, and minimize the need for more expensive repairs or replacement. There’s also the added benefit of having plenty of advance notice as the equipment nears the end of its lifecycle. Planning and budgeting for equipment replacement is always better than having to raise funds to replace a suddenly failing roof, HVAC system, or parking lot.

Preventive Maintenance

The remedy to the high cost of deferred maintenance is preventive maintenance. It’s important to look to the future and make intentional plans for addressing maintenance that will extend the life of your buildings and equipment.

Performing regular maintenance on a piece of equipment while it is still working well lessens the likelihood of a catastrophic failure. If you are looking for ways save budget dollars, adding preventive maintenance can help you stay on top of your facility needs and mitigate a large portion of corrective maintenance.

Preventive maintenance helps prevent much larger issues from causing catastrophic failure. “Facilities stewardship isn’t just prudent because God has entrusted these facilities to us. It also helps protect an organization’s budget,” said Cool. 🏠

Some Christian churches, schools, and colleges operate with razor thin budgets, often leaving physical plant managers with inadequate funding for capital renewal, the budget item that deals with building maintenance. This means that regular upkeep may get funded, but budget dollars for big-ticket repairs are reduced or eliminated to help balance the books.

As an example, “private schools typically don’t have near the funding of public schools,” said Tim Cool, founder of Smart Church Solutions. “This makes it even more important for Christian schools to perform preventive maintenance to ensure their buildings are sound, equipment is running smoothly and efficiently, and potential hazards are quickly fixed.” 🏠

1. Cool, Tim. The Four Buckets of Church Facility Budgeting. Cool Solutions Group, 2020. smartchurchsolutions.com/resources/ebook/the-four-buckets-of-church-facility-budgeting

Avoid the Voided Warranty

Quality roofing materials are designed to withstand most elements when installed correctly and maintained properly. Manufacturers often include limited or lifetime warranties on their products, so be sure to read these. You can damage your roof and void its warranty in many ways. Here are a few common ones:



Ignoring storm damage

Following a storm, be sure to visually inspect your roof for damage.



Installing a fixture

Avoid anything that penetrates or removes shingles or the membrane.



Lack of annual maintenance

Regular roof checkups extend its lifespan and save money over time.



Excessive foot traffic

Especially true if you have a green or blue roof, or you allow groups on your flat roof for any reason.



Insufficient roof ventilation

Over time, trapped heat, humidity, and water can damage the shingles or roof covering.



Unauthorized modifications or services

Always consult with a commercial roofing contractor before adding or removing anything from your roof.



Pressure washing

This can cause more shingle damage than a hailstorm. Discuss how to rid your roof of moss or other debris with your roofing contractor.



Overlook contractor's requirements

Installers and contractors often provide their own workmanship warranties. Be sure to read what is and isn't covered by their work.

Replacement Cost vs Actual Cash Value

Let's take a look at two coverage options for roofs: replacement cost and actual cash value.

If your roof is damaged by a covered claim, your insurance company needs to determine the cost to replace the roof. An independent adjuster will inspect the roof and create estimates for replacement. The estimates are based on the size of your roof, similar materials, and the current cost of materials. Likewise, a roofing contractor can provide estimates, which can be compared to the estimates written by the local adjusters. This step gives the roof a **replacement cost**, which is the total cost to replace the damaged roof.

Actual cash value is determined by applying depreciation to the replacement cost amount. Depreciation is based on the age and condition of the roof. For example, a roof covered with three-tab shingles is typically expected to last about 20 years. If the roof is 10 years old, it has lost half its life, so the actual cash value would be about half its replacement cost. This means that if the replacement cost was \$20,000, insurance would pay actual cash value, or about \$10,000 (less applicable deductible).

Ask your insurance agent about replacement cost coverage. While there may be eligibility criteria, roofs in good condition and well within their useful life expectancy generally qualify for replacement cost.



Roof Maintenance Checklist

Whether your roof is flat or sloped, regular inspection and maintenance can help maximize its longevity and minimize disruption to services. If you notice any signs of damage, contact a roofing specialist to perform repairs. This roof maintenance checklist is based on information from the Insurance Institute for Business and Home Safety® and is used with their permission.

Flat Roof – Hire a professional or perform inspection with appropriate safety equipment.

- ☐ Check perimeter flashing for signs of rusting, warping, or waviness. Make sure it's securely attached.
- ☐ Check for standing water, mold, and vegetation growth.
- ☐ Inspect the underside of the roof deck for signs of water damage. In some instances, you may need to remove drop ceiling tiles in order to access the underside of the deck.
- ☐ For single-ply membranes, inspect for worn seams, seam failure, gaps, fasteners backing out, punctures, and brittleness. For adhered or glued-down systems, inspect for excessively loose membranes and blisters.
- ☐ For ballasted roofs, inspect for uneven distribution of rocks, if present. Evenly redistribute displaced rocks to cover any exposed roof membrane.
- ☐ For built-up roofs, look for bubbles, blisters, cracks, tears, and punctures in the cover. Note when wear patterns around connections become excessive. Frequent visual inspections of embedded gravel and smooth surface protective coatings can alert you to issues caused by weathering.

Sloped Roof – Hire a professional or perform inspection from the ground unless you have experience and appropriate safety equipment.

- ☐ Check for bowing or sagging of the roof deck between rafters. The roof should appear flat, not wavy.
- ☐ Check for missing shingles, curling, or tears.
- ☐ Look for cracked or missing clay or concrete tiles.
- ☐ Inspect metal panels for loose screws and deteriorated rubber washers, discolored or worn off paint, and signs of rusting. While dents and divots are most often a cosmetic issue, sometimes they can alert you to more significant damage.
- ☐ Inspect attic space and interior drop ceiling tiles for signs of water damage.

Drainage

- ☐ Remove loose objects like leaves, sticks, and construction debris from your roof. Remove dirt and other granules from interior roof drains, gutters, and downspouts.
- ☐ Check to ensure gutters are properly sloped to the downspout.
- ☐ Verify that gutters are anchored by gutter straps designed to resist high winds.
- ☐ Inspect for missing or loose sections of the gutter system, particularly near the downspout.
- ☐ Make sure gutters drain well away from building.

Roof-mounted equipment (e.g., HVAC units, antennas, etc.)

- ☐ Check equipment and fasteners for rust. Make sure access panels are securely attached.
- ☐ Inspect equipment's connection to the building (called a curb), noting any signs of leaks or rot. Replace if needed.
- ☐ Inspect for loose flashing around roof-mounted equipment curbs and repair as necessary.
- ☐ Pull on all cables and straps to verify they are tightly secured; there should be little to no slack. Check manufacturer guidelines for more specific information.
- ☐ Clear all debris around and under roof-mounted equipment.

This is a sample document only. Your organization is responsible for compliance with all applicable laws. Accordingly, this checklist should not be used or adopted by your organization without first being reviewed and approved by a licensed attorney in your state. Brotherhood Mutual Insurance Company® assumes no liability in the preparation and distribution of this checklist.



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Mutual®**

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Resilient Ministry Routing List

- ☐ Pastor
- ☐ Administrators
- ☐ Office Staff
- ☐ Board Members
- ☐ Facilities Team
- ☐ Other

THE *Issue* WITH ROOFS

Peeling back the layers of trouble →

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