



Exterior Pro Roofing^{Inc.}

COMMERCIAL ROOFING EXPERTS



Complete Guide to **Box Gutters**

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Signs your Box Gutters are Leaking

1. Decorative trims and wood soffits are deteriorating.

In many cases the trims underneath box gutters are made of several pieces of decorative wood trim. Leaking box gutters will generally cause wood trims to lose their paint but not always. Sometimes the leaking box gutter will cause the trim to rot from the backside out.

- Look for darkening or discolored paint on the wood trim and if possible physically touch suspected areas to see if they are becoming soft or puffy. Remember most of the older and historic crown moldings and trims can be as expensive or even more expensive than the box gutter repair. Keep an eye on your wood work.

Signs your Box Gutters are Leaking

2. Paint is peeling from Masonry wall.



Leaking box gutters can allow water to enter the top of the masonry wall and can cause the wall to become wet and saturated with moisture. On buildings with painted brick, the paint will begin to peel off the wet masonry. The peeling paint will slow or stop all together the farther down the wall you inspect if moisture is cause the paint failure. The wall will be less wet the farther the distance away from the box gutter and source of the leak. This is how you can distinguish a failing paint job versus a leaking box gutter.

- Unpainted Buildings with exposed masonry walls will show signs of deteriorated mortar close to the source of the leak. The old mortar wicks up moisture in the wall and becomes soft overtime. Rain, wind and gravity will take their toll on the soft, moist brick joint and you will notice how it recesses over time.
- Persistently leaky box gutters that cause the brick to stay wet and saturated for extended periods can lead to the brick spalling. The term refers to the face of brick falling off or crumbling away. Moisture in the brick goes through the freeze - thaw cycles of winter and the freezing moisture expands busting the face of the brick off.

Signs your Box Gutters are Leaking

3. Cold, damp or damaged interior walls.

Depending on where the box gutter is leaking, the moisture problem may appear on the inside of the exterior wall located under the box gutter. Wet interior walls may grow mold, be wet and humid to the touch, sweat, or even have the plaster begin to crumble and fall off wall. In severe cases, even the wood strips behind the plaster or lathe as they are called will decay and rot. Repairing old horse hair or hog hair plaster with modern drywall products can be difficult and the repair may never match the rest of the walls.

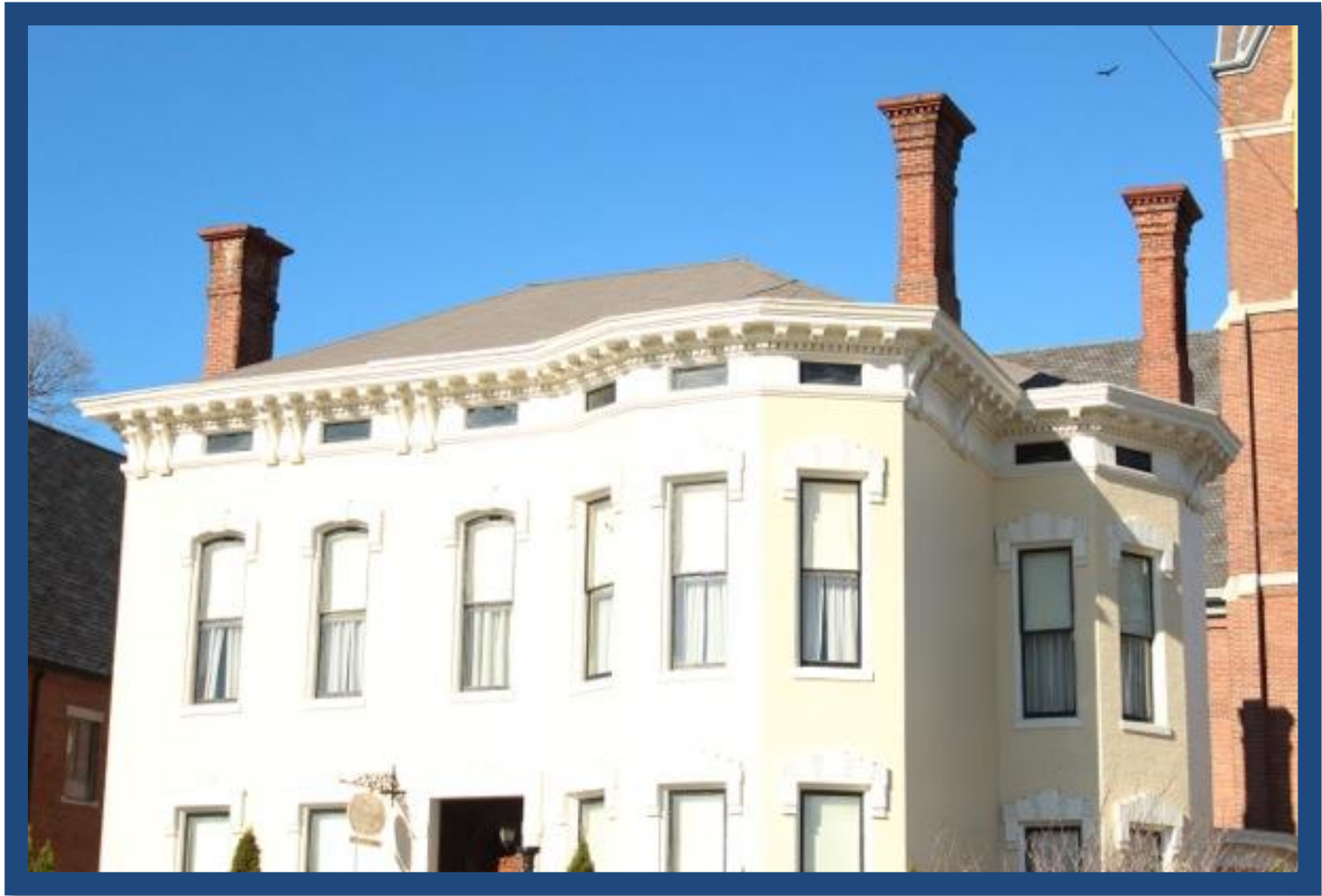
4. Sagging ceiling and floor joist.

In many historic homes or buildings the rafters and second story floor joist rest in a “pocket” in the exterior masonry wall. The rafters and joist are supported by being set into the brick wall usually several bricks thick. Long term box gutter leaks into the brick wall can cause the end of the rafter or floor joist to rot and sag under the weight of the roof or floor. Not only are these types of structural repairs expensive, they are very invasive and disruptive.

5. Stains on ceiling.

Yellow stains on the ceiling near or in the corner underneath box gutters are always suspect. Stains farther into the room are more than likely a roof leak rather than a box gutter leak.

Common Reason Box Gutters Leak



Common Reason Box Gutters Leak

If you own a home or building with box gutters then you understand the unique maintenance challenge they can present. They are easily clogged by leaves and other debris and are often high up and hard to access, not to mention the time it takes to clean and maintain them. Also box gutters can leak in different ways when they are clogged or when they are clean which can make diagnosing the problem tricky.

However the out of sight out of mind approach to box gutters can be even more painful than dedicating the time and effort it takes to keep gutters clean and flowing properly. In most cases the box gutters are built into decorative wood or sheet metal trims like crown molding, cornice trim, and corbels. These trims can be very expensive to repair or replace because tin smiths are few and far between and most of the older wood molding are no longer in production and have to be custom shaped. Here are the three most common scenarios we have come across over the years roofing and working on box gutters.

Common Reason Box Gutters Leak

Box gutters are leaking

They leak. Even right after a thorough cleaning they still leak and rain water drips through the trims. Look for pin holes or rust holes in gutter pan and/ or cracked or separated solder joints in copper or sheet metal. Leaks can occur anywhere along the box gutter but are more likely to be found in and around areas where water stands in gutter and near or in drain leading to downspout. Sheet metal has a tendency to corrode faster in areas where gutter holds water than when water passes through and gutter dries. The connection between the gutter pan and drain most often relies on a solder joint or some kind of sealant to stay weather tight and is always a suspect area for leaks.

Helpful Tip: You can use a leaf blower to efficiently and more quickly remove debris and water from the box gutter to complete an inspection and keep them clear of debris.

Common Reason Box Gutters Leak

Water flowing over box gutters

Water Spills over the front of box gutter. Water will normally spill over the front of a box gutter for one of two reasons, (1) either the drain line is clogged and the water has to go somewhere or (2) the amount of rain coming off the roof was too great and it overwhelmed the drain, meaning the drain couldn't carry away water fast enough and water excess rain spilled over the front of box gutter. Besides being able to see water spill over like Niagara falls from your gutter when it rains, you may also identify this scenario by looking for discolored areas of trim, wood or sheet metal. The places along trim where gutters constantly overflows will have most likely have cracked, bubbled or discolored paint from dirt in water.

- **Helpful Tip: If you have cleaned the box gutters and the drain leading to downspout and water still seems to be backing up, check the downspout for clogs or even underground drainage lines meant to carry water away from foundation.**

Common Reason Box Gutters Leak

Water behind the box gutters

Water runs behind gutters. This is the most serious problem that can occur with box gutters because not only can trims become damaged, water often enters the home or building and damages the inside ceiling and inside of the exterior wall.

This happens when the box gutters were designed incorrectly and the front of gutter is higher or taller than the back. In an overflow situation water rises in box gutter and instead of spilling over the front of the box gutter on the sidewalk or street below the water spills over into the building. A few signs of water entering building are water spots in the corner of ceiling and wall, water damage to interior wall, brick turning white on outside of home, paint peeling off brick or stained, and exposed brick turning white or becoming discolor inside home.

Helpful Tip: Create maintenance plan, clean box gutters often, once a season is not adequate, keep the debris clear and maintain the lining.



REPAIRING BOX GUTTERS

Pros & Cons of Different Materials

Peel & Seals

Pros:

- Easy to get
- No special tools required to install
- Adheres and sticks to many surfaces
- Easy to install

Cons:

- Difficult to properly clean surfaces
- Adhesive loses its tackiness over short period of time, especially in box gutters that hold water
- It is only a short term fix that may cause long term damage. Water & moisture getting under will rust metal pan



Caulking

Pros:

- Inexpensive and found in many stores
- Easy to install/use
- Right type of caulking used correctly can last a long time
- Quick fix

Cons:

- Caulking and sealant only works if applied to right areas
- Must be the right type sealant or caulking
- Caulking will not fix the problem of box gutters backing up water, snow, ice into building
- Drain holes are hard to seal with caulking
- Caulking remains a maintenance issue as it will break away from surfaces due to expansion & contraction cycles

Pros & Cons of Different Materials

Coatings

Pros:

- Sold in most lumber yards/stores in 5 gallons
- Easy to apply with paint roller or brush
- Can stop leaks in metal box gutters for up to a year at a time

Cons:

- Hard to clean and prep surfaces before coating can be applied
- Coatings rarely last much longer than a year because of expansion & contraction rate
- Will need to be re-applied every year
- Can be messy if not careful
- 5 gallon buckets can be difficult to transport up ladder to box gutters.



EPDM Rubber



Pros:

- Water proof membrane
- Rubber is flexible and will easily take shape

Some tools required to install but not a difficult installation

Cons:

- Rubber pieces are seams together using adhesive and caulking. "Glued Seams" can quickly degrade in standing water
- Rubber terminated over edge of gutters with aluminum termination bar and screws (it will be seen from ground and rubber shrinks over time and pulls away from edge)
- No drain boot assembly piece; installer has to field fabricate around drain
- Rubber is not fabric reinforced and tears easily

Pros & Cons of Different Materials

TPO

Pros:

- Tough membrane
- Is reinforced fabric
- Can be glued down or screwed down
- Metal trim can be fabricated using TPO weld-able metal
- Seams are hot air welded not glued

Cons:

- Is very stiff and will not conform to gutters
- Material has limited accessories (ex. Inside/outside corners)
- No drain boot assembly, area will be vulnerable
- Metal trims must be fabricated and color weld-able metal limited
- Installer must have hot air welder and know how to seam



PVC Membrane

Pros:

- Membrane is tough and flexible, takes shape easily
- Is Reinforced fabric
- Seams are hot air welded no caulking or glue
- Large assortment of trims that add appealing to building
- Many accessories including inside & outside corners
- Only membrane with drain boot assembly (properly funnels out water)
- It can be laid over top most other construction materials

Cons:

- Installer must have hot air welder and understand PVC membranes, how to weld, and the accessories



Budgeting for Box Gutter Repairs

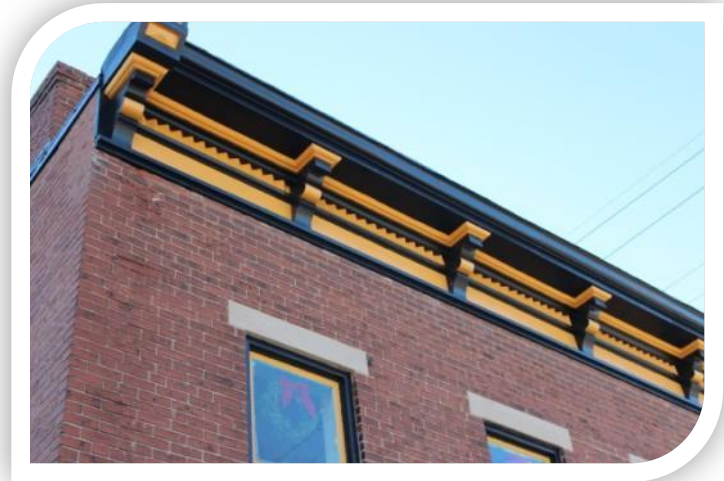
To begin putting together a practical budget for box gutters repairs, there is some research that can be done to help.

- Get referrals from friends/neighbors with box gutters
- Speaking to contractors experienced with box gutters
- Searching different material options and pricing.
- Next there are 3 key factors that drive the cost of box gutters repair....

1. Type of repairs being done

Short term fixes for box gutters such as a metal coatings or peel and stick products will cost less than longer term repair options like lining the box gutter with a roofing membrane. Not only are the materials to line the box gutters more expensive than peel and seal or metal coatings, there is more time involved in the set up and installation process. That being said, the material cost of box gutter repair is relatively small compared to the labor and set up cost of the project.

Try to find roofing contractors who have experience repairing and lining box gutters so more of the investment in your home or building goes towards the repair process and keeping workers safe than into on the job training of an unexperienced contractor. Keep in mind lining and repairing box gutters correctly is very much a notch market and you may have to interview several contractors before you find the right fit.



Budgeting for Box Gutter Repairs

2. The tie in

Lining a box gutter will mean taking a membrane up under the existing roofing material that covers the steep slope part of the home or building. The three most common roofing materials on structures that have box gutters are asphalt shingles, metal roofing, or slate roofing.

Creating a leak proof tie in between the box gutter liner and roofing material is done the easiest with shingles. Asphalt shingles are easy to remove and replace and can be purchased in just about every hardware store or building supply house. A much more time consuming task is to get the membrane liner up under an existing slate or metal roof. Plan on this being a factor when taking estimates for the box gutter repair. Try to locate extra slate tiles that closely match your existing slate ahead of time. It will be hard for the contractor know how brittle the existing slate is until he gets started. Having some extra pieces to replace slate tiles that break is a great idea. Start you search locally as slate tile in your hometown may match un nicely especially if it is the same kind and color but you can always check on line for re-claimed slate.

If your home or building has standing seam metal roofing or the old style tin roof, make sure your contractor has experience working with metal and knows how to create the water tight seal between the existing metal panels and the box gutters.

Budgeting for Box Gutter Repairs

3. Building height and accessibility

Homes with architectural features like box gutters tend to be found in historical sections of town and are usually at least two stories in height. Side yards and streets can be narrow and hard to access in historic neighborhoods. To accurately budget for your box gutter repair project you must take into consideration how difficult the job is to access. Obviously the higher and the more challenging the location, the more costly the project. Try to bundle other repairs along with the box gutter project to save future set up cost, doing a chimney cap, some painting, or maybe other roofing repairs make sense while contractors have scaffolding and/or man lifts on site.

Remember each property presents unique challenges when performing box gutter maintenance and repair. Regardless of what products you choose or which contractor does your repairs, safety is everyone's responsibility.





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