

RETROFIT ROOF DRAINS

- A Coming of Age

BY DAN GENOVESE

Since the mid 1980s, roof consultants' options when it came to roof drain repair or replacement on a reroof project, were one of three:

1. Subcontract a mechanical contractor;
2. Clean and rework the drain;
3. Use a retrofit drain.

That was more than 15 years ago, and not much has changed...or has it?

Subcontracting a Mechanical Contractor

Subcontracting a mechanical contractor remains a costly option. According to R.S. Means' 1999 labor cost tables, it will take a plumbing crew of two people to install a "new drain" about two hours at a combined hourly rate of \$58.70 (a plumber and an apprentice at bare costs). Add in the material cost of the new cast iron drain at \$240, and the bill will total \$357.40 per drain. Another growing trend to increase profits by a mechanical contractor is to charge a "flat rate" for this application. A mechanical contractor may charge a flat rate in the range of \$500 to \$1,000 per drain for the same procedure.

Other problems inherent with this option are:

- Coordinating schedules with the mechanical contractor.
- Increased insurance costs related to subcontractors.
- Gaining access to the underside of the roof.
- Only two to four drains per day can be replaced.

The result is a slow and expensive process.

Clean and Rework the Drain

Not much has changed here either. "Old school" dictates that the proper way to clean and rework the drain is to remove the



Original roof drain with dome removed. Note condition of the drain bowl.

Above: Original roof drain to be replaced. Note the condition of the dome.

rusty cast iron dome and clamp ring with a pickax. If it is not damaged in the process,

it needs to be thoroughly cleaned of asphalt, de-scaled of rust, and painted. If the dome and ring are damaged beyond repair, the next step is to locate expensive replacement parts, which in many cases is a job in itself. The time spent on this operation, of course, depends on the condition of the dome and ring. Plan on at least two hours per drain to clean and additional time to locate replacement parts.

The next step is to "lead-in" the drain and put back the clamping ring and dome. This procedure (of repacking the joint with oakum and lead, embedding the lead flashing in mastic, and re-threading the bolts) can take two laborers up to four hours per drain.

We are now looking at a labor and material cost in the neighborhood of \$400 to \$500 per drain. This option remains very slow and expensive.

A lot has changed with this option. Prior to the mid 1980s, a retrofit drain was just a crude-looking, "shop-made" design. Today the retrofit roof drain is precision engineered and factory produced under quality-controlled conditions. The terms "retrofit drain" and "insert drain" have similar meanings and are the two most common terms used by industry manufacturers.

Early retrofit drains were typically contractor-fabricated. These often poorly-designed versions would typically involve scrap sheet metal, copper, or lead and involve some form of soldering of hand-rolled seams that could separate. Today's retrofit drain bodies involve either Tungsten inert gas welding (T.I.G.) or spun aluminum components. Both are designed to eliminate stem and flange separation. Other common materials used for the retrofit drain body are copper and high-quality, construction-grade plastics. Domes and clamping rings for today's retrofit drains are as durable as cast iron and in many cases better. Some manufacturers offer various material types such as construction-grade plastics, formed heavy sheet metal, and cast aluminum. Cast aluminum domes are not as brittle as cast iron domes and will weather better than uncoated cast iron.

Watertightness is the ultimate goal of the building owner. Retrofit drains are not an exception. Contractor-fabricated retrofit drains never took into consideration the intricacies and variables that each roof presents when it comes to sealing the space between the retrofit stem and the existing drain leader. Without a proper seal, severe rainstorms would inevitably cause water to back up to the roof, damaging the roof assembly and the building's contents, leaving the contractor with numerous callbacks and the consultant with a bad reputation.

Today's engineered seals are quite different than those used on "shop-made" retrofit drains of the past. The cotton mop strands, mastic, and plastic cement seals of the past created the need for a more versatile and reliable watertight connection. Some of the better seals available today involve mechanical devices that employ either rubber or lead, which can conform to the inconsistencies of the drain leaders.

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Controlled Flow Or Flow Reduction?

A dilemma faced by today's manufacturers of retrofit roof drains is the misconception that the controlled flow of water from the roof through a retrofit drain is a "reduction" of flow. Many municipalities require the control of water flow from the roof to



Retrofit drain being inserted into original drain bowl by roofing contractor.



Roofing contractor putting finishing touches on retrofit drain flashing.



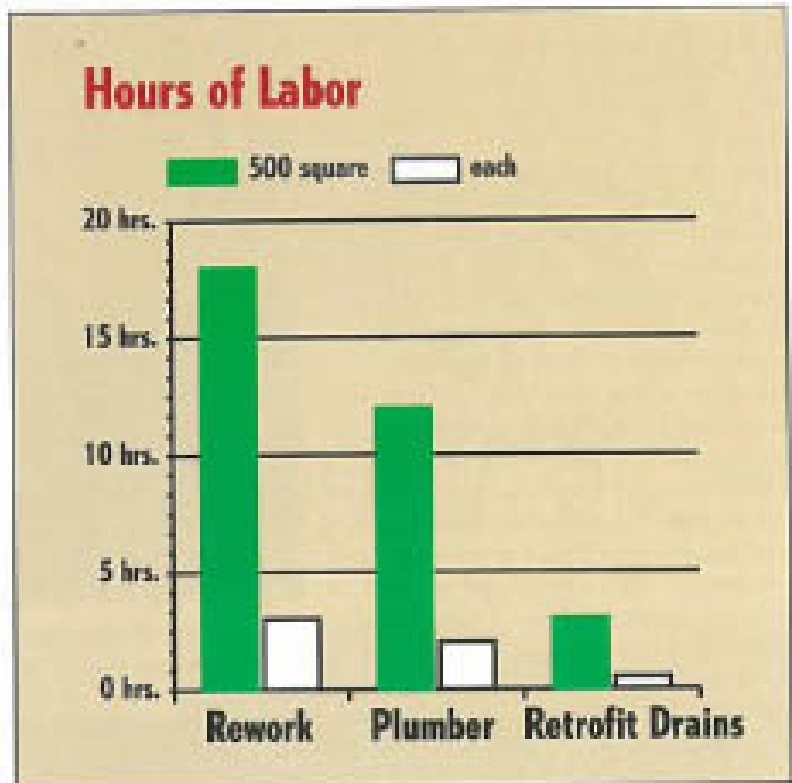
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avoid flooding the storm sewer system in periods of peak rainfall. Manufacturers of roof drains, installed for the initial construction, supply add-on devices known as "flow controls." These "flow control" devices are engineered to slow down the flow of water from the roof by employing a cone-shape design with a series of weirs within the dome. Using a "flow control" device or a retrofit roof drain will help meet the growing needs of municipalities.

Many Advantages

One of the many advantages in specifying a retrofit drain is the lower installed cost compared to the two previous options. The total time to properly install a retrofit drain can vary, but on the average, to remove the old cast iron dome and ring, clean the inside water leader, install the insert, and flash and tie-in the new roof system requires up to 30 minutes. Based on a price of \$125 per drain plus the fact that only one laborer is needed to install at an average rate of \$15 per hour, the total installed cost (not including overhead) per drain is approximately \$133. When comparing this option to the others mentioned, cost alone should be sufficient to convince those in doubt.

Of course, cost alone is not the only advantage. When considering the other advantages, the choice to use retrofit drains becomes clear. A roofing contractor will be able to control the project schedule with fewer variables. One variable is waiting for the mechanical contractor to show up, resulting in lost time. Time is also a consideration when trying to plan a profitable project. Both coordination time



This graph shows a comparison of labor between reworking drains, having a plumber install, and using retrofit roof drains. These figures represent applications for each drain and a 500-square job with six drains.



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and installation time are saved. Considering it takes approximately 30 minutes to install a retrofit drain, one roofing laborer can install as many as 16 per eight-hour day, compared to a mechanical contractor installing, at best, four in the same time period.

Avoiding additional laborers on site potentially reduces project insurance rates and enhances cost and time advantages. Who is responsible for those extra laborers? Remember, it takes two mechanical laborers to install a roof drain. Will they be covered under the roofer's insurance, or will they be responsible for their own liability? How familiar are they with the layout of the roof and its inherent hazards? What is their OSHA track record? Have they been drug tested as required by some building owners? Will the mechanical contractor be considered a subcontractor to the roofer, or will he be considered an employee? The IRS wants to know.

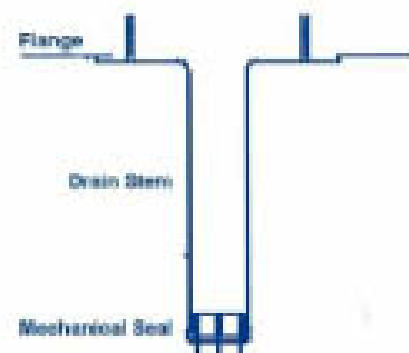
Drain replacement also means disruption for the building's occupants. A mechanical contractor needs to get directly below the roof surface to get the underside of the drain. In many cases this means moving computers, furniture, and people—not to

mention ceiling tiles, floor coverings, and walls for protection against water damage. When installing retrofit drains, all that is avoided.

Aesthetics is another advantage to retrofit drains. Just imagine a client inspecting the recently completed roofing project, only to find some drains still looking a bit crusty and in many cases not matching due to problems locating replacement parts. By specifying retrofit drains all around, the roof will truly be new and uniform.

Industry Recognition

Currently at SPRI (Sheet Membrane and



Today's precision-engineered, retrofit roof drains.

Component Suppliers to the Commercial Roofing Industry), the process is underway to develop standards regarding retrofit drains. These standards will give the design community a format and the assurance that the retrofit drain it specifies is manufactured in accordance with the needs of the commercial roofing industry.

Summary

Today's retrofit drains are indeed quite different from those of the past. The demand for improvements in quality and the industry need for standards have raised the bar to make this option an industry-accepted practice. Specifying retrofit drains on projects will provide cost savings, flexibility, piece of mind, and credibility that the other options don't offer. ■

References

RS Means, "Plumbing Cost Data 1999," Crews, p. 493.

ABOUT THE AUTHOR

Dan Genovese is the Marketing Manager for Olympic Fasteners. In 1998, Olympic Manufacturing Group, Inc. purchased U-Flow Inc., which is within the Roofing Products Division of Olympic. Genovese is also the Retrofit Drain Task Force Chair at SPRI, which is in the process of developing industry standards for insert drains. Dan has worked for Olympic for fourteen years.

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