

ROOFING CONTRACTOR

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This Just In: Roofing is Hard Work!

By [Josephine DeLorenzo](#)

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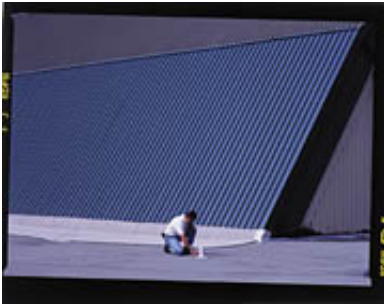
Madsen Roofing specializes in commercial and industrial applications, in addition to doing a lot of spec work for consultants. About 60 percent of the company's work is built-up and modified, 20-25 percent is single ply and the rest is metal and shingles. The company has 40 to 45 people in the field during peak season, with eight people back in the office.

There's Nothing Like Waiting for the Last Minute

Madsen Roofing was given notice to start reroofing a Northern California high school on July 28, 2000. Work had to be finished by September 6. To start with, the 530-square job required the removal of three previous roofs. The top layer was single-ply that had been put on top of two different layers of built-up roofing and fiberglass insulation.

Together, all three layers were very heavy — about 1,100 pounds per square. To make matters worse, the roof was saturated with water. "I can't imagine how heavy it was with the snow load," says Christian Madsen, vice president of Madsen Roofing. "It started to leak while we were tearing it off. We used pumps, but there wasn't much we could do." And of course, the roof had to be kept watertight during the entire process.

Just to make matters a bit more interesting, the building's electrical conduit was run on the roof – and there was no layout to go by. It was a very delicate situation, and that last layer of roofing material had to be removed carefully by hand. There would be no random swinging of the spud bar. In addition, “The electrical conduit was rusted and had to be replaced immediately,” explains Madsen. “We subbed that out to an electrician.”



The System

Once the massive tear-off was complete, crews could begin installing the complex multi-layer system that involved hot asphalt and cold adhesive. There was a minimum of 15 people working at all times, and the average was 18 people on the roof.

The first step was to install the rosin and fiberglass base sheet, which was nailed. Then crews put down two plies of Type IV fiberglass felt with hot asphalt. This layer served as the vapor barrier and temporary roof.

The next step was a tapered insulation system that involved 13 1/2 inches of insulation. Running in different directions, each piece of insulation had to be cut in and fitted so the flat roof would slope to drain. The electrical conduits were an added obstacle that had to be dealt with so the first layer of roofing would lie flat. Crews also had to install new drains and tie them into the existing system.

The actual membrane system used was Siplast's Paradiene 20/30. Both the top and base plies consist of an SBS and asphalt blend, reinforced with a fiberglass mat. The first layer after the insulation was Parabase, applied with hot asphalt. The next layer was Paradiene 20 HV, a heavy modified sheet that was installed with cold adhesive. The cap sheet, Paradiene 30 FR (the fire rated version), was also cold-applied. With this system, the base ply is adhered to the substrate and is lapped a minimum of 3 inches both side and end. The granular-surfaced top ply, is adhered to the base and is similarly lapped a minimum of 3 inches both side and end.

Another Siplast membrane, Veral, was used as flashing to provide long-term protection in the areas where the roof tends to deteriorate the most. Veral is a metal clad system, combining glass scrim-reinforced SBS-modified asphalt base with a protective foil facing. This job used two types: grayish green aluminum to match the color of the rest of the roof, and bright Polar White Spectra with factory-applied Kynar 500 finish. “Using this was a bit of a problem because Veral is torch-applied and the cold adhesive used on the 20/30 system is very flammable,” explains Madsen. “We had to have fire extinguishers ready to go, all over the roof.” Thanks to diligence and competence on the part of the crews, everything went well and the school did not burn to the ground.

One other detail that had to be attended to was an area of the roof that was adjacent to a steep-sloped metal section. Snow tended to slide off the metal on to the membrane, causing extensive damage. For that section of the flat roof, Madsen Roofing used two layers of walk pads over Siplast's Parafor 50, a heavy duty, double-reinforced modified bitumen sheet, composed of high-quality asphalt with a fiberglass-reinforced polyester

mat.

Equipment and Other Challenges

Madsen Roofing used a Graco 733 hydraulic pump with a warming device to warm the adhesives to the proper application temperature. On several occasions, the crew had to spray adhesive when it was below freezing. Thus, the lines had to be heated as well as insulated. “Everything worked because we engineered it that way,” says Madsen.

Aside from freezing temperatures, the summer weather tended to bring afternoon thunderstorms. “We could generally calculate when they would arrive,” says Madsen, “but we had to make sure the roof was watertight before leaving for the day.”

Other challenges included the fact that the building was in use the latter part of the job. Some activities had to be coordinated around class schedules, and materials and equipment had to be fenced off. Madsen Roofing kept in close communication with the administration in case classes needed to be moved, but it didn’t come to that.



Why Cold Applied?

“It seems more and more that the industry is moving toward cold-applied because modifieds are prone to blistering,” explains Madsen. “You get better bonding with adhesives, and there’s less odor for building occupants. And for the workers, they are less likely to get burned than with asphalt.” Using asphalt in California also presents challenges, as the state’s OSHA is trying to impose further regulation. Madsen Roofing uses an emissions eliminator on its kettles so there’s no odor on the ground. “It helps to reduce complaints,” says Madsen. “And because of the state’s VOC standards, we use low-VOC adhesives.”

The reduced odor of the cold-applied system is a key selling point for schools and other high-occupancy buildings. According to Tom Luther, district manager for Siplast, “As a company, we prefer the use of cold adhesives. They don’t rely on asphalt to provide adhesion, so there’s no need to worry about the temperature and chemistry of asphalt. And cold process provides stronger chemical bonds. The actual rolled goods are the waterproofing system.” Another factor to consider is the extreme weather conditions in Northern California. The system is designed to retain its elasticity through severe ultraviolet rays, thermal shocks, random ponding water and extreme low temperature.

A Job Well Done

“Madsen put together a complex job, especially the taper system,” says Luther. He and Siplast’s district technical manager were often on the site once or twice a week. “We generally do periodic field inspections of our certified contractors. If something isn’t working, we help field engineer a solution. It’s a true partnership.” The system used on the high school was extremely detailed, but “Madsen is a quality company and we weren’t so concerned with what they were doing. They were certainly up to the task. Madsen is conscientious and professional, their workmanship is not in question.”

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