Expanding Your Niche
By Al Knipfig & Bryan Burke

Infrared Asphalt Restoration Growing

A Michigan contractor was called upon to repair a store front trip hazard at a Wal-Mart shopping center. The contractor received the call in early January, long after the area's hot mix asphalt plants had closed.

When viewing the job the contractor saw that in some areas the asphalt apron had heaved more than 1 in. high where it met the concrete pavement's door entrance. Fortunately for Wal-Mart — and for the contractor — an infrared unit and hotbox were commissioned to get the job done.

First, the contractor reclaimed a few hundred pounds of stockpiled hot mix asphalt, storing it in the hotbox. Then a two-person crew headed to the jobsite with rakes, lute, shovels, a plate compactor and the infrared unit.

While snow flurries filled the air, they proceeded to heat the heaved asphalt, raking and removing as required. A few shovels full of new mix were added to provide a smooth surface transition and compaction was applied.

The entire project took less than five hours, including travel time. The bill to the store was $1,400; the cost to the contractor was minimal, about $350.

Not a bad day's work for a pavement maintenance company in January.

Where has infrared been?

For years, the best available method for "permanently" repairing damaged asphalt was what is commonly known as a "remove & replace" repair.

The problems with this type of repair is that they are very expensive to install and that they are not very...

Infrared restoration is growing in popularity, as this job at The White House (top) shows. In the middle is a "pavement's-eye-view" of an infrared machine at work — then the heated result, prior to scarification and compaction.
permanent. They are expensive because they require saw cutting, excavation, tack coating, replacement of asphalt in lift, and proper compaction. All this takes a lot of time, manpower, equipment, and materials.

The main reason the repairs might not be permanent is because the finished repair is not an integral part of the surrounding pavement. The cold joint around the perimeter of the repair can eventually open to allow water into the pavement. This almost always leads to erosion and the failure of the repair.

A pavement repair alternative

The process called infrared asphalt restoration was pioneered in the early 1960's. The concept behind the process is simple: Repair only the damaged area, reuse the asphalt surrounding the damage, and make the repair an integral part of the existing pavement.

To accomplish this, the existing asphalt must be softened to a depth of at least 2 in. or 3 in. — without causing damage to it. Asphalt is damaged when it is overheated to a point where excess oxidation of the light oils occurs — or in the worst case when it is actually burned.

At some point in time every paver or pavement maintenance contractor has attempted to correct a pavement defect by using a blowtorch. What he or she has inevitably found is that long before the asphalt could be softened to a workable depth, the surface was burned and ruined.

That's what happens when too much heat is applied. It is for that reason that infrared has proven to be the most practical type of heat for softening asphalt.

Broad variety of applications

An infrared asphalt restoration, when properly installed in an appropriate application, is a permanent seamless repair.

What is an appropriate application? Or, more importantly, what is not an appropriate application?

If the pavement defect is caused by base failure infrared asphalt restoration will not correct the problem. In such cases the asphalt pave-
ment must be excavated and the base repaired in order to prevent a recurrence of the problem.

In almost every other application, infrared asphalt restoration is appropriate. Here is a partial list of applications:
- Potholes
- Utility openings
- Surface cracking (oxidation)
- Bumps & high spots
- "Bird baths" or puddles
- Trench repairs
- Manholes & storm drains
- Speed bump installation
- Handicapped ramps
- Raveling asphalt
- Oil spots
- Paver seams
- Re-directing water flow
- Pavement texturing
- Rumble strips
- Uneven bridge abutments
- Wide crack repair

The infrared restoration process

Once you have determined that the pavement defect can be corrected by using infrared asphalt restoration it is essential that the repair be properly installed. Carefully follow each of these 8 steps:

1. Sweep away any dirt, debris, loose asphalt, and standing water.

All of these materials will contaminate the asphalt that will be recycled if they are left in place.

2. Mark out the repair. It is important that the edges of the repair are as straight as possible. This serves the functional purpose of providing a straight edge for the roller to compact — plus the appearance of the repair will be improved if the edges are straight and the corners are right.

3. Apply the infrared heat to the pavement. The perimeter of the repair must be at least 6 in. inside of the heated area.

4. Cut the edge of the repair and scarify the area inside. Using the back side of a steel rake deeply cut the edge along the previously marked chalk line. Then, using the tines, scarify the entire area under repair at least 2 in. deep.

5. Spray on the rejuvenator. This will add new life to the existing asphalt.

6. Add virgin asphalt. Add enough hot plant mix asphalt to insure that the restoration will be at the proper grade once fully compacted.

7. Lute the asphalt smooth. Be sure that the surface is raked level and that the edges are approx 3/8 in. higher than the existing pavement.

8. Compact the repair. Insure that whatever compactor that you use has sufficient applied force to fully compact the repair. Compaction should start from the edges of the repair and move toward the middle.

When done properly, the infrared restoration is a seamless permanent repair. It should last as long as the existing pavement.

The heated area must be scarified to at least 2 in. deep (left). Note the clearly defined edge of the patch. Compaction of the heated area (right) is key to the success of the patch and must be done by pinching the edges first, then moving toward the center.
A major benefit of an infrared restoration is that it has no cold seam to open up and allow water to infiltrate. Also, because the entire depth of the asphalt pavement has not been disturbed, the likelihood of further settlement is greatly reduced.

As far as time is concerned, it should take less than 25 minutes to complete a "typical" infrared repair. And the infrared repair will use only a fraction of the materials, manpower, and equipment of a "remove and replace" repair.

But if infrared asphalt restoration does everything mentioned above and it has been around for more than 40 years, why hasn't it become the industry standard for asphalt repair? Partly because only recently have serious efforts been made to promote the technology.

Also, it has taken some time for the equipment to catch up with the technology. The infrared equipment available today has improved dramatically, which in turn has improved the quality of the pavement repairs.

**Who are infrared customers?**

- The market for infrared restoration runs the gauntlet of potential customers. They include:
  - Municipalities — For pothole and utility repairs,
  - Utility Companies — Restoration of utility openings,
  - Property managers and owners — Pothole repair and other pavement maintenance,
  - Paving contractors — Punch list repairs,
  - Pavement Texturing Contractors — Reheat asphalt before stenciling,
  - Homeowners — Driveway repair.

From a contractor’s perspective

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some of the major benefits include: expanding your customer base, providing a superior service at competitive prices, increasing the season from seven or eight months to 12 months.

**Winter repairs**

In many areas of the country the asphalt plants are shut down in November and don’t reopen until March. That has meant that all paving and permanent patching closed down with the plants. All that was left was emergency patching with temporary patching materials.

Infrared contractors have a saying that “they bring the warm weather to the job site with them.” The infrared heater, of course, heats the existing pavement. Additionally, by using an asphalt recycler or hotbox, a contractor can have 300°F plant mix asphalt at his or her disposal in any weather.

The recycler will reheat cold stockpiled asphalt and keep it at plant mix temperatures for up to 48 hours. The winter is a perfect time for patching in advance of the springtime rush for sealcoating and striping. Also infrared asphalt restoration is ideal for permanently repairing winter emergencies.

**Utility repairs**

Utility companies and local municipalities have a unique relationship. The municipalities want their roads preserved in good condition while the utilities continually need to cut into them.

One of the newest uses of infrared equipment is installing pavement texture to existing asphalt pavement (above). Originally, texture was installed immediately behind a paver to hot asphalt mix, but with infrared equipment, old asphalt can be brought up even quicker, without slowing the paving process. Because infrared contractors “bring the warm weather to the job site,” repairs can be made throughout the winter (below).

Standard repair methods often proved unacceptable to the municipal authority. The dilemma is most acute after a town repaves a road and places it on a five-to-seven-year moratorium (a moratorium means that the utility cannot open up a road for any reason other than an emergency). This means that no new gas services can be installed while the moratorium is in effect.

These problems are eliminated when infrared asphalt restoration is used to repair the roads. In almost every town where the utility has offered this type of repair the town has agreed to allow moratorium roads opened. The town gets to have all its roads permanently repaired and the gas company gets to hook up new customers. That’s a win/win situation.

After more than 40 years and significant technological developments, the time for infrared asphalt restoration has definitely arrived. And just as more contractors are starting to recognize how infrared repair can make their work easier and more profitable, customers are requesting infrared asphalt restoration.

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For more information on infrared restoration equipment indicate 40 on the inquiry card.