

CASE HISTORY

Ref: US0720

OUTLINE:

- Problem
- Traditional Repair Approach and its Complications
- More Efficient Approach and its Issues
- X-Phalt Approach

Permanent Repair Using X-PHALT™ of Asphalt Roadway Potholes

Problem: Potholes cause billions of dollars of vehicle damage per year and are a significant contributor to substandard road conditions which lead to highway deaths. Over 240 million vehicles travel 2.9 trillion

miles on U.S. roads per year. 92% of road surfaces are asphalt. The majority of the country’s highways were built during the 1950’s through the 1970’s with a 50 year service life design. Potholes are formed by freeze/thaw cycling, poor drainage, wear and tear, and poor maintenance.

Traditional repair approach: Historically, due to budget concerns, potholes have been repaired with a cold patch product. Cold patch provides a “quick fix”, particularly for emergency repairs. However, the average life expectancy is only 6 months to 1 year before they need to be repaired again. Too often they are not even compacted properly, exacerbating the unsafe conditions resulting from ejection, rutting, and shoving under trafficking.

More efficient repair approach: The correct procedure is to saw cut and remove the damaged material from the surrounding area and replace it with an overlay using hot mix asphalt. However, this method requires onsite heavy equipment and is expensive.

Cold Patch provides a “quick fix” with a low life expectancy.

Hot Mix provides a more permanent solution, but is expensive and requires heavy equipment.

X-Phalt™ provides a truly permanent solution at a low cost and without the necessity of on-site equipment.



Figure 1: Potholes in Asphalt Roadway

X-PHALT™ approach: X-PHALT cementitious repair mortar will chemically bond to the bitumen in asphalt pavement, creating a permanent repair. X-PHALT is applied in the same way as with concrete repair mortars – add water; mix using a drill & paddle, drum, or mortar mixer; and place. X-PHALT forms a hardened cement that will not rut, shove, or eject. X-PHALT cleans up with water; does not burn skin like Portland cement; does not require a bonding layer, heat source, or heavy onsite equipment; and does not contain any solvents or VOC’s, nor any obnoxious odors.

The result is a repair that will last as long as the surrounding road surface.



Figure 2: Saw Cut and Prepped Pothole prior to Repair with X-Phalt™

Figure 3: Repair being made with X-Phalt™



Figure 4: Damaged wear layer area removed down to sound base layer

Figure 5: Repair being made with X-Phalt™



Figure 6: X-Phalt™ very rapid repair mortar placed in both adjacent repairs with 10-15 minutes working time. Opened to traffic in less than 90 minutes.

Figure 7: X-Phalt™ repairs after 6 months of traffic. Despite being scraped by heavy equipment entering and exiting the roadway, the surfaces show no signs of cracking from abuse or shrinkage. No rutting, shoving or material ejection observed. Unchanged trowel marks from freshly placed material after 6 months of wear indicates exceptional durability.