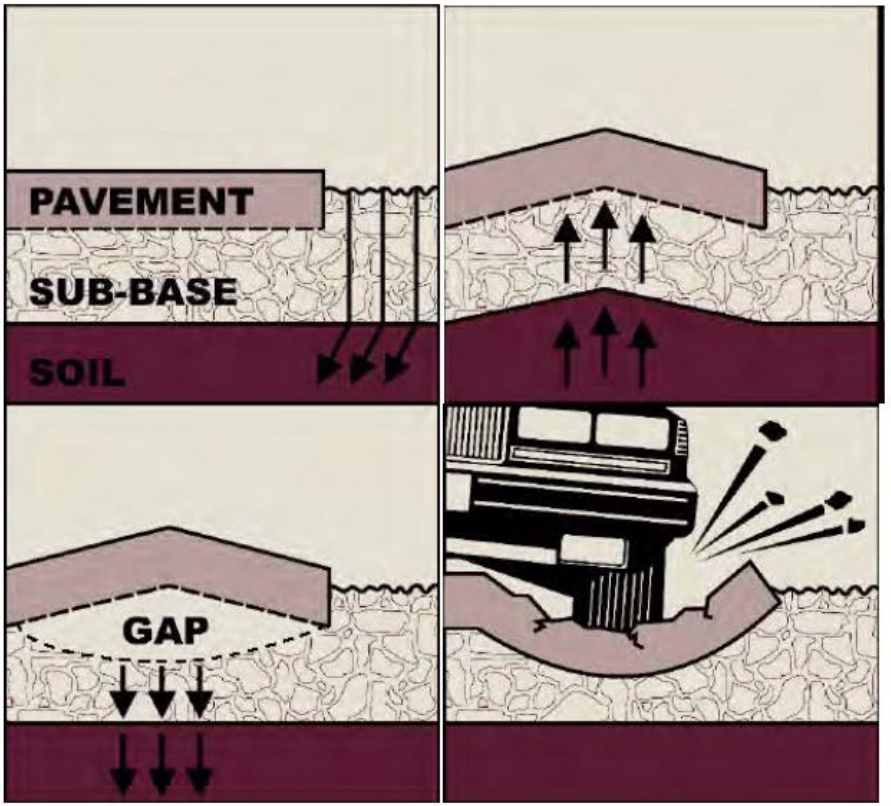
The Life of Pavement

Taken from the Chelan County Public Works 2012 Pavement Management Report

Figure 1: Frost Heave of Pavement by Repeated Freezing and Thawing of Penetrated Water.
Source: Michigan Department of Transportation



A paved road is made up of layers: sub-grade soil, crushed rock sub-base and an asphalt pavement surface. Potholes develop on road surfaces as the result of stress deterioration of traffic-impacted, untreated roadways and by penetration of water into the sub-grade of the structure.

Typically, a new pavement starts out as a black, crack-free surface. With weathering and traffic, the surface dries, turns grayish and shows signs of loose aggregates (exposed rocks). Left untreated, this dried surface begins to crack linearly under traffic loadings. These cracks form paneled or "block" cracks.

The cracks then allow water to penetrate into the roadway structure, which results in frost action (repeated expansion, caused by freezing, and thawing of water), pavement upheaval and collapse, as shown in figure 1. Over time the area increases and the cracking becomes more severe, which may lead to actual section loss. This process can be exasperated by having an inadequate or thin sub-base that cannot take up the difference or areas with poor drainage.