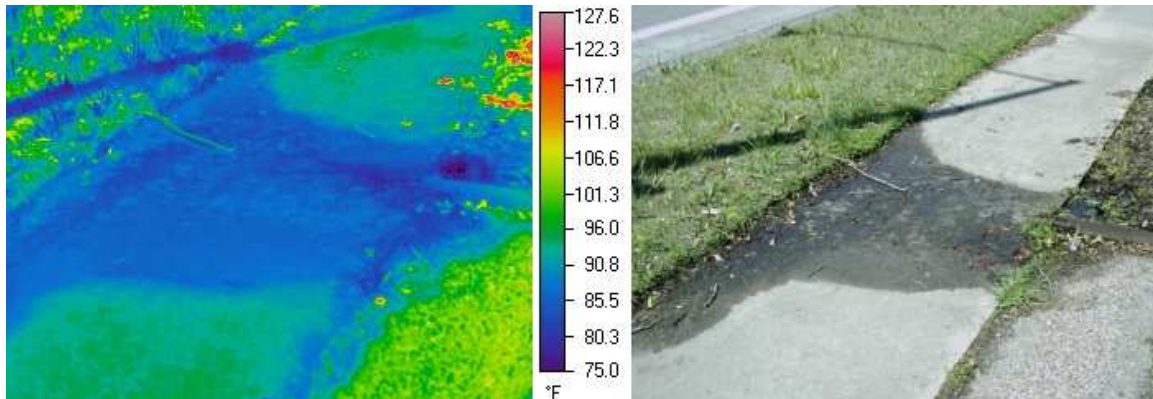


## Infrared Example 2

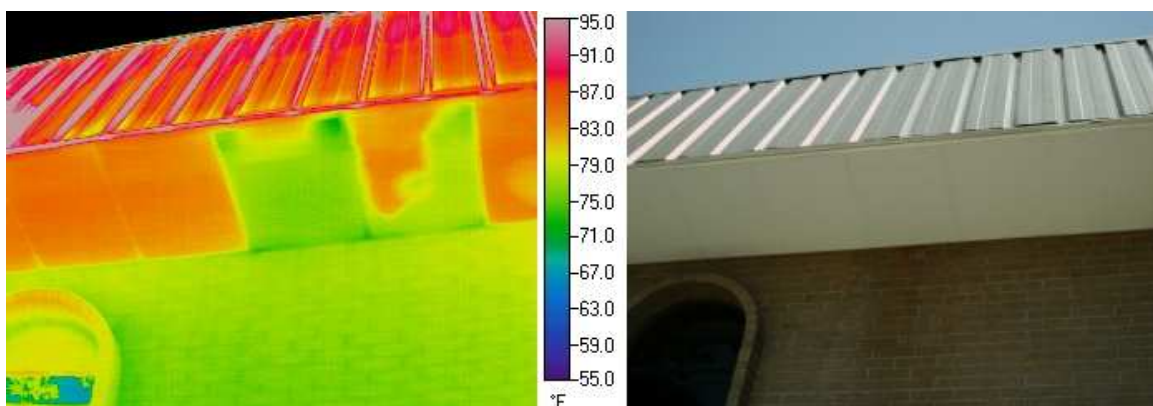
The following images help show how infrared imaging can detect moisture in materials. Figure 1 shows infrared (IR) and visible images of a water puddle on a sidewalk. The left image is the IR image and the right image is the visible image, what you see with your eyes. The scale in the center shows how the colors of the IR image relate to temperature.



**Figure 1. IR and visible images of a water puddle.**

These pictures were taken on a sunny day in the late morning, a few days after rain. As you can see, the water puddle area is much cooler than the dry area of the sidewalk. There are two reasons this tends to happen. One reason the puddle is cooler is because water tends to hold its temperature longer than most other substances and materials. Over night, the water and the sidewalk were cooled by the night air. The morning sun will actually warm the sidewalk faster than the water. Another reason is the cooling effect of evaporation. As the sun radiates its heat on this area, the water begins to evaporate, cooling the water left behind. This same effect is experienced when a person sweats and begins to feel cooler as the sweat evaporates.

These characteristics of water are reasons infrared imaging can be used to detect moisture in materials. The wet area of a material will tend to react differently to an external temperature change. So, when some materials appear to be visibly dry, infrared imaging can detect areas that are actually wet. The image below shows an area of a roof that appears to be dry, but the infrared image clearly shows a section that is wet.



**Figure 2. IR and visible images of wet materials.**