



Advanced Characterization of **Cold Asphalt Patching Materials** in Repairing Road Pavement **Potholes**

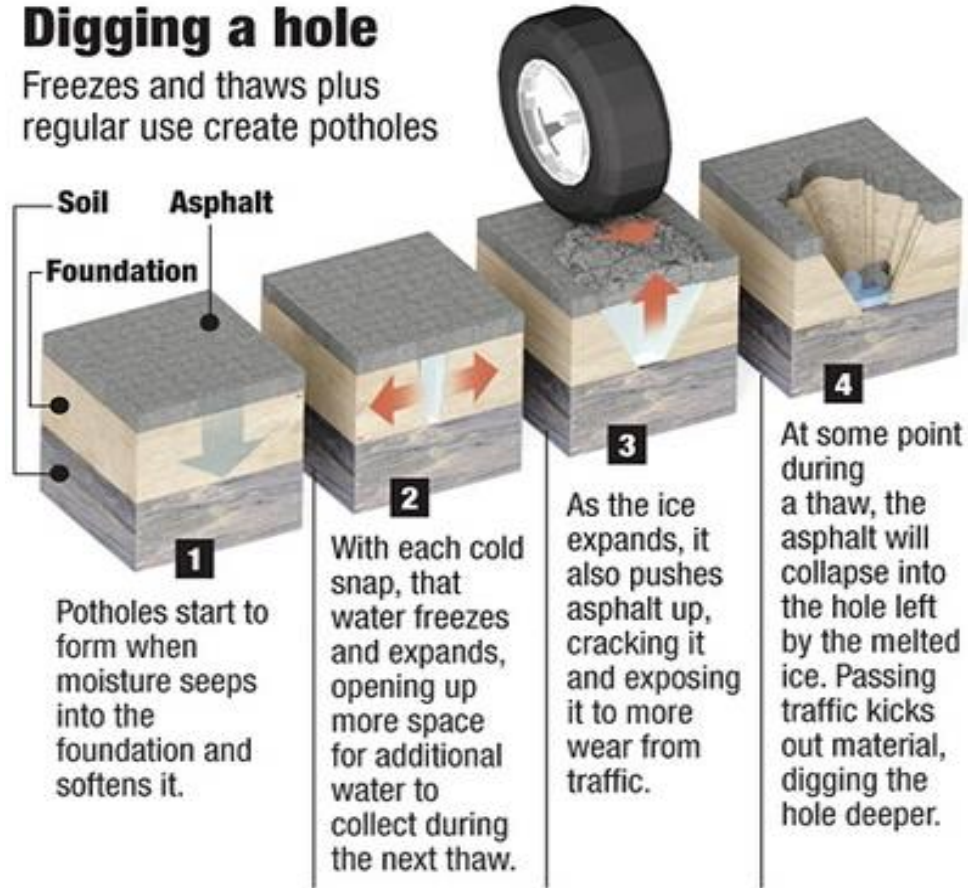
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Introduction

Digging a hole

Freezes and thaws plus regular use create potholes

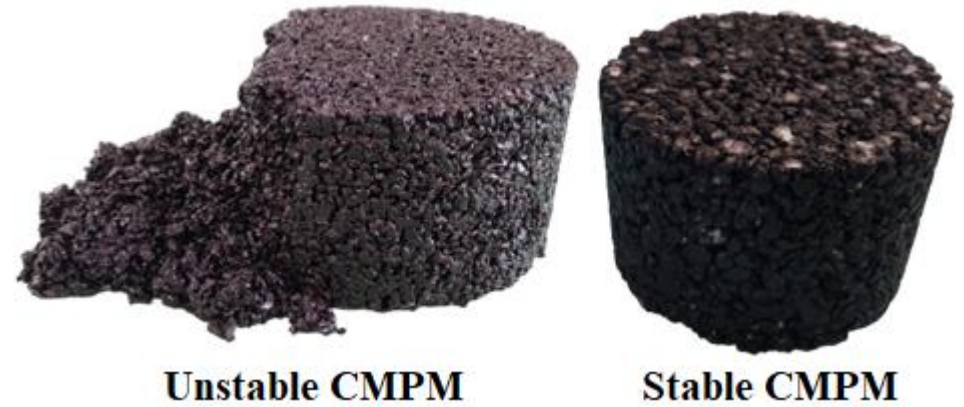
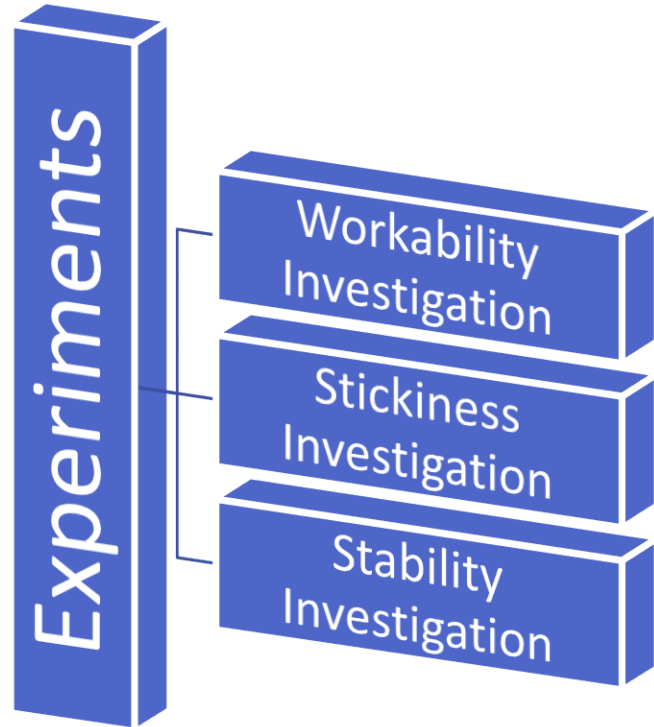


Source: www.dot.state.pa.us, Daily Herald research

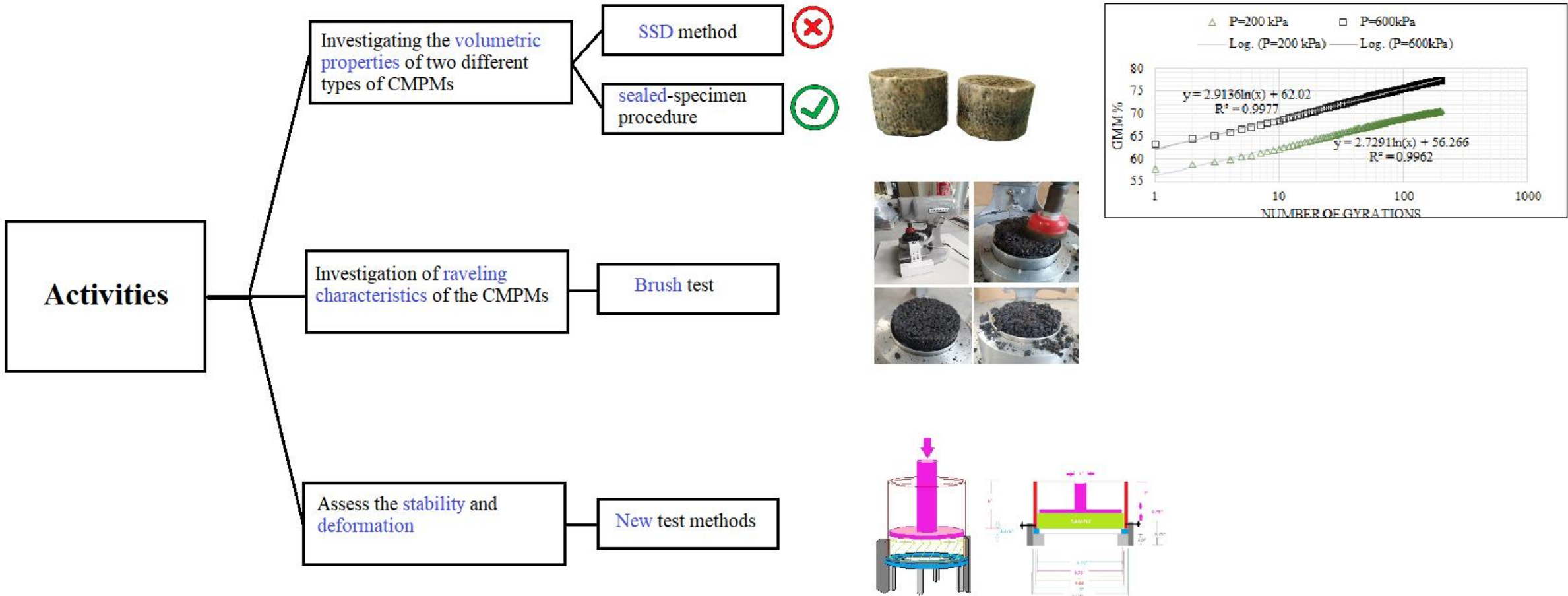
Road pavements suffer various deteriorations during their lifetime, which requires a lot of money to repair. One of the most common forms of these distresses is the **pothole** that affects the durability and life span of the pavement and **repairing them costs millions** of euros annually.

Potholes **grow** rapidly during the **winter months** when the Hot Mix Asphalt (HMA) is **not available** to repair them. **Therefore**, the bitumen-based Cold Mix Patching Materials (CMPMs) have attracted road agencies' attention to treat these kinds of distresses as they are **compatible with the adverse weather condition** and have various advantages such as; ease of handling, affordability, less required labor and equipment, long storage time, and lower environmental impacts. **However**, despite all of the mentioned advantages, CMPMs have the **lowest quality** of all the patching materials. They usually have a **short lifetime** and need treatment operations frequently. **Poor workability, poor strength and stability, insufficient adhesion and cohesion, stripping and raveling problems**, are the main problems of CMPMs.

Objectives



Performed Activities



Performed activities

- ❖ Various cylindrical specimens of CMPMs were made by Superpave Gyratory Compactor (SGC) (under 200 and 600 kPa), and Marshall compactor (with 35,50, and 75 blows), and their density and air-void contents are calculated. For measuring the bulk density to measure the volumetric properties, the sealed-specimen procedure was carried out by using paraffin as the porosity of the specimens was high and the Saturated Surface Dry (SSD) method was used that did not show successful results.
- ❖ The European Standard (EN 12697-20:2012) that is a test method to determine the depth of indentation of mastic asphalt, and an old ASTM standard were considered and modified to investigate the stability and deformation characteristics of CMPMs.
- ❖ The basic design of the mold, testing ring, loading plunger, etc., were achieved and designed, however, there is no device for applying a load, and still waiting for the repair process of all devices in the lab.