


 TEST DATE:  
30<sup>th</sup> April 2026

 TEST CONDUCTED BY:  
Pothole R&D Team

 SAMPLE REFERENCE:  
PRD-FT-001

 TEST ENVIRONMENT:  
Domestic Freezer

### 1 OBJECTIVE

To observe and record the behaviour of the Pothole Relief Device when installed within asphalt and subjected to freeze-thaw conditions.


The test aimed to determine how water behaves within the asphalt structure during freezing, and whether the device influences pressure relief or movement of water.


### 2 TEST METHOD


An asphalt sample with the Pothole Relief Device installed was prepared and saturated with water to simulate wet road conditions.

- Sample prepared and photographed prior to freezing
- Water introduced into the asphalt structure
- Sample placed in freezer environment
- Sample removed and inspected after freezing
- Observations recorded with photographic evidence

### 4 KEY OBSERVATIONS

 The device acted as a pathway for expanding water.

 Expansion pressure appeared to be relieved vertically, rather than laterally within the asphalt.

 Surface water movement indicates controlled release rather than internal stress buildup.

### 3 EVIDENCE / RESULTS

#### BEFORE FREEZE (INITIAL CONDITION)



IMAGE 1 – PRIOR TO EXPERIMENT

- Asphalt surface level and intact
- Device installed and not visibly protruding or disturbed
- No visible water displacement at surface

#### AFTER FREEZE (POST FREEZE-THAW OBSERVATION)



IMAGE 2 – AFTER FREEZE (TOP SURFACE)




IMAGE 3 – AFTER FREEZE (UNDERSIDE VIEW)


- Water expansion observed during freezing process
- Water was forced upward through the Pothole Relief Device
- Water exited via the top of the device and spread across the asphalt surface
- No visible explosive cracking or major displacement of asphalt surrounding the device
- Device remained in position


### 5 CONCLUSION

The freeze-thaw test demonstrated that, when the Pothole Relief Device is installed, expanding water is directed upward through the device and discharged onto the surface of the asphalt.

This behaviour suggests that the device may help:

 Reduce internal pressure caused by freezing water


 Minimise stress within the surrounding asphalt structure


 Potentially reduce cracking associated with freeze-thaw cycles


#### OVERALL CONCLUSION:


The Pothole Relief Device appears to provide a functional pressure-relief pathway during freeze-thaw conditions, allowing water expansion to be managed at the surface rather than within the asphalt body.

### 6 RECOMMENDATIONS / NEXT STEPS

 Repeat testing over multiple freeze-thaw cycles

 Quantify volume of water displaced

 Compare against control sample (no device)

 Conduct controlled laboratory testing for validation

Note: This is a simple test conducted in a domestic freezer for observational purposes. Further controlled testing will be undertaken to validate and quantify long-term performance.