

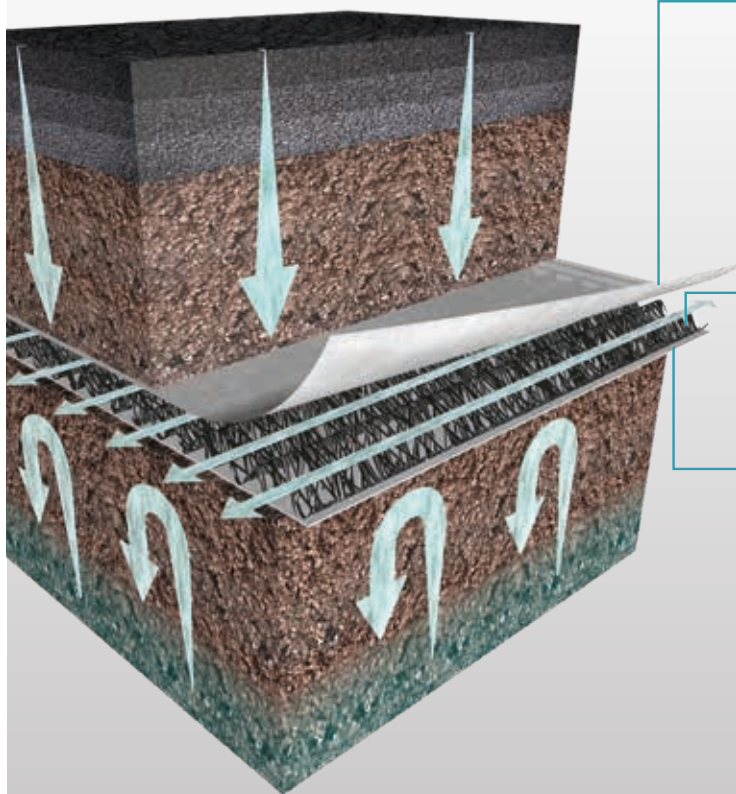
MACDRAIN™ ARCTIC BLANKET

MACCAFERRI

A DRAINAGE SYSTEM TO PREVENT GROUNDWATER CAPILLARY RISE AND FROST HEAVE

The design of paved roads in cold regions has always represented a challenge. This is mostly due to the freezing and thawing of soil water. In particular, the rise of ground water together with cold temperatures induce the formation of ice lenses in the soil underneath the road surfaces. When water freezes underneath the road, its volume expands by approximately 9%, producing a heaving of the road surface. This phenomenon is known as **Frost Heave**. Dips, bumps, potholes and cracks could be a direct result of frost heave which has a direct impact on **road safety** and **maintenance costs**.

MacDrain™ Arctic Blanket is a drainage composite system designed to prevent the frost heave phenomenon.



Nonwoven geotextile

Selected to meet the highest standard of resistance during the loading and compaction phase in the overhead structure. The top layer acts as a filter allowing water from the overlying soil to enter the drainage core below, enhancing drainage along the plane of the geosynthetic and providing enhanced soil stabilization performance.

GeoMat with W-shaped

Developed to provide drainage characteristics with high resistance to compressive loads and high flow rate thus minimizing compressive creep.

Nonwoven geotextile with hydrophobic polymer enhancement

Designed to prevent the upward capillary rise of groundwater whilst remaining permeable to downward flow.

Not permeable until **77 mm** of water head!



The unique characteristics of **MacDrain™ Arctic Blanket** bring several benefits to stakeholders if compared to the traditional layer of granular soil.



MATERIAL SAVINGS



FASTER INSTALLATION



OUTSTANDING PERFORMANCE



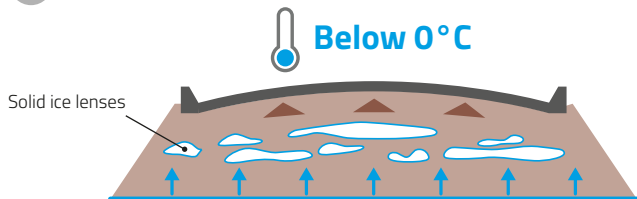
COST REDUCTION

MACDRAIN™ ARCTIC BLANKET

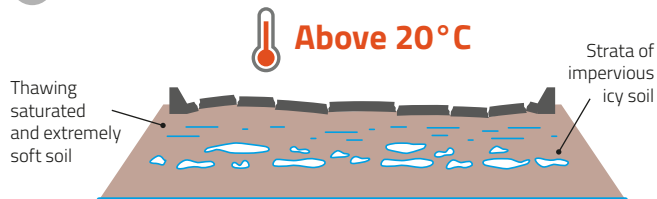
HOW DOES IT WORK?

WITHOUT MACDRAIN™ ARCTIC BLANKET

1 FROST HEAVE DEFORMATION AND CRACKING OF SURFACE ROAD LAYERS



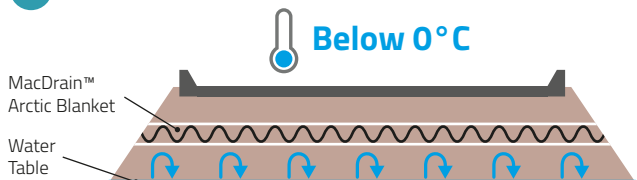
2 SURFACE ROAD DESTRUCTION DUE TO TRAFFIC AND THAWING



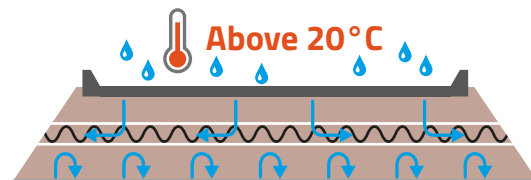
WITH MACDRAIN™ ARCTIC BLANKET

One-way valve: resists upward flow of water, while remaining permeable to downward flow when the water head exceeds the minimum bearable.

1 NO DEFORMATION AND CRACKING OF THE ROAD SURFACE



2 NO ACCUMULATION OF WATER IN THE ROAD SUB-BASE LAYER



MacDrain™ Arctic Blanket is the cost efficient and best performing alternative to capillary break keeping the degree of saturation that is liable to freeze to a minimum.

ENVIRONMENTAL SUSTAINABILITY



Material saving, faster installation and less maintenance mean reducing emissions and helping the environment.



MacDrain™ ARCTIC BLANKET

WAS EXTENSIVELY TESTED, PROVING TO WORK
AT LOW TEMPERATURES AND BECOMING PART
OF THE SINTEF DESIGN GUIDELINES

FIND OUT MORE!



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