NEWS RELEASE BACKGROUNDER FOR:

Standards Council of Canada approves national standard to address climate change impact on Northern community drainage systems

The provisions of CAN/CSA-S503-15 *Community drainage system planning, design, and maintenance in northern communities* were derived from existing best practices among, and may be incorporated directly into, community land use plans. Additionally, the standard is intended to:

- specify techniques for planning and implementing community drainage systems, to account for the effects of both a changing climate and permafrost regime
- describe practices for site and community planning that help to conserve community infrastructure, or, at least, avoid actively contributing to its degradation
- provide low-cost, implementable solutions, given local constraints on capacity and resources
- help Northern communities protect community assets
- promote public health and safety in Northern communities

As part of the Standards Council of Canada's (SCC) Northern Infrastructure Standardization Initiative (NISI), this National Standard of Canada was developed by CSA Group, an SCC-accredited standards development organization.

How NISI improves Northerners' lives

A project led by SCC, with support from Aboriginal Affairs and Northern Development Canada and funding from the Government of Canada's Clean Air Agenda, NISI's aim is to work with Northerners to put in place effective standards to address climate risks inherent in the design, planning and management of Northern infrastructure.

Changes in temperature, precipitation and typical weather patterns have been documented throughout Northern Canada. The effects of these changes to climate and weather patterns could cause significant shifts in permafrost conditions and hydrogeological characteristics of certain building sites, which will directly impact infrastructure in the North and the people who live there.

Addressing the effects of these changes is a priority for the Government of Canada, and this new standard is an important step in supporting the stability of existing and future infrastructure in northern communities. It is one of the many ways SCC is working collaboratively with the Northern Advisory Committee, comprised of representatives from Northern territorial and regional governments and other organizations involved in Canada's standardization network.

Benefits of other NISI standards

The three earlier NISI standards were published by CSA Group in 2014.

Thermosyphon foundations for buildings in permafrost regions will help ensure that thermosyphon foundations are sited, designed, installed and monitored correctly, ensuring the long-term performance of thermosyphon-supported foundation systems under changing environmental conditions. Thermosyphons keep the ground frozen and stable in cold climates by transferring the heat from the ground to the air when appropriate temperature differentials prevail. Heated structures built on permafrost without mitigative systems, such as thermosyphons, can degrade the permafrost and destabilize a structure's foundation. This standard will ensure the stability of thermosyphon-supported foundations of new buildings constructed on permafrost and the future safety of buildings in Canada's North. View webinar, *Thermosyphon foundations for buildings in permafrost regions*.

Moderating the effects of permafrost degradation on existing building foundations standard outlines the steps to be taken in order to maintain, assess and mitigate permafrost loss beneath and adjacent to existing buildings. Permafrost is soil and sediment that remains at or below 0°C for at least two consecutive years, while the active layer is the upper part of the soil environment that thaws every summer. Building on permafrost can be difficult because degradation to the permafrost can destabilize the structure. Also, many of the existing buildings in the North were designed without considering climate change or were not adequately designed to account for the rate and extent of permafrost degradation currently projected.

Managing changing snow load risks for buildings in Canada's North is designed to inform communities about safe snow removal methods for rooftops of existing Northern buildings. The standard also aims to reduce the risk to building occupants, of increasing snow accumulations and weights. Arctic regions have seen an increase in snowfall and extreme snow events. Adding to this issue is the occurrence of rain after a snowfall, which turns to ice and increases the weight or load of snow on buildings and housing. This increased weight can lead to structural damage, such as a collapsed roof.