Standards Council of Canada
Conseil canadien des normes

SCC's Infrastructure Program:
Stream 3 - Phase 2 of the Northern Infrastructure Standardization Initiative

Infrastructure in the North

Canada's North is on the front line of climate change. Current climatic conditions are changing even more rapidly than the most pessimistic models had predicted. In addition to the rapidly changing physical environment, Canada's north presents unique environmental, socio-economic, cultural and geographic circumstances compared to other regions of Canada. Northern infrastructure resilience will help ensure the social and economic well-being of northern communities.

From 2011-2016, SCC led Phase 1 of the Northern Infrastructure Standardization Initiative (NISI) with support from Indigenous and Northern Affairs Canada (INAC). NISI was designed to address and work with the unique circumstances found in Canada's North.

Key to the success of NISI Phase 1 was the establishment of the Northern Advisory Committee (NAC). The NAC was established to provide strategic advice, input and guidance for the initiative to ensure that deliverables were relevant in a northern context and in the best interest of northerners.

Under NISI, five new National Standards of Canada (NSC) were developed for northern infrastructure, including:

- CAN/CSA-S500-14 - *Thermosyphon foundations for buildings in permafrost regions*
- CAN/CSA-S501-14 - *Moderating the effects of permafrost degradation on existing building foundations*
- CAN/CSA-S502-14 - *Managing changing snow load risks for buildings in Canada's North*
- CAN/CSA-S503-15 - *Community drainage system planning, design, and maintenance in northern communities*
- (In Development) CAN/BNQ 2501-500 - *Geotechnical Site Investigations for Building Foundations in Permafrost* (completion pending for 2017)

To build adaptation capacity within northern communities, SCC also facilitated the development of a variety of training and communication materials to provide end users with different methods to learn and apply the content of the standards.

Standards as Tools for Adaptation

As Canada's national standardization body, SCC develops solutions and strategies that leverage the existing Canadian standardization infrastructure and contribute to protecting the health and safety of Canadians, as well as the sustainability of Canada's development and economy. Through its standardization network of experts, SCC has the expertise to identify standards development solutions that reflect the unique circumstances of Canada's North.

Standards are important to the infrastructure life cycle. From design to construction to maintenance to decommissioning, standards and related instruments specify performance and material requirements that can be used as the integration point for climate-related risks into infrastructure planning and development processes. Standards incorporate assumptions and directives regarding climate and weather conditions (such as temperature, precipitation and wind) and climate-related

events (for example, flooding and freeze-thaw cycles) that infrastructure must withstand.

Key Issue Areas for NISI Phase II

SCC will continue to build on the success of Phase 1 by facilitating the development and deployment of additional standards related to the priority areas of:

- Operation, maintenance and decommission of sewage lagoons (to support the Northern Waste Water Infrastructure Program);
- Managing the impacts of extreme winds on infrastructure;
- Northern infrastructure foundations;
- Embankment protection in permafrost; and
- Fire protection and readiness.

Deliverables of the Northern Infrastructure Standardization Initiative

Over the next five years, with guidance from northern stakeholders, SCC will:

- Coordinate federal, provincial and territorial involvement and participation in the standards development process;
- Continue to engage the NAC and its existing northern networks to ensure deliverables are relevant for a northern context ;
- Continue to bring together infrastructure practitioners from across the North to participate and provide insight into the standards developed;
- Focus on critical infrastructure issues affected by climate change as identified and prioritized by the NAC and other key northern stakeholders;
- Endeavor to mainstream action towards adapting to a changing climate by integrating consideration of its impacts, and measures for their mitigation, into new standards; and
- Build capacity amongst northern practitioners to ensure these new standards are implemented.

Structure and Function of the Northern Advisory Committee (NAC)

Re-engaging the NAC will be an important first step as Phase 2 is initiated. Comprised of representatives who have responsibility for infrastructure management at territorial and regional governments in the north, the NAC will confirm the focus areas of the standards. Standards Development Organization(s) will be selected via a competitive contracting process to establish the necessary technical committees and develop the standard(s) related to the confirmed focus areas.

Throughout this five year process, the NAC will further contribute to work on standards by:

- Providing strategic advice and feedback to organizations working on solutions for the North;
- Implementing a strategy for keeping northern infrastructure standards up-to-date;
- Building capacity to incorporate and implement the standards; and
- Sharing knowledge among northern practitioners and regulators about issues regarding infrastructure development in a changing climate.

$1.9 million will be applied over the next five years to support this program.

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