SAMCoT Guidelines & PCCH-Arctic project

ALA

CAPARDUS H2020 project workshop March 31 2022

Anatoly Sinitsyn, Sintef

SINTEF

Technology for a better society



SFI SAMCoT Guideline "Development of coastal infrastructure in cold climate

A Centre for Research-based Innovation "Sustainable Arctic Marine and Coastal Technology" (CRI – SFI SAMCoT), NTNU-SINTEF-UNIS, 2011 – 2019, with funding from The Research Council of Norway and partners

Web: <u>https://www.ntnu.edu/samcot/</u>

Guideline = a suggestion of a best practice needed by the industry for the design of environmentally friendly and sustainable coastal structures and technology





SFI SAMCoT Guideline "Development of coastal infrastructure in cold climate

SAMCoT Guidelines considers the regions defined by:

(1) Substantial frost penetration (cold regions in temperate climate)

(2) Permafrost regions

(3) Regions with sea ice

Technical Guideline and Summary Guideline

Summary Guideline is available from:

SINTEF:

https://www.sintefbok.no/book/index/1263/development of coastal infrastructure in cold climate sum mary quideline sfi samcot report

Research Gate: <u>https://www.researchgate.net/profile/Anatoly-Sinitsyn/publications</u>





SINTEF Community Rock and Soil Mech 2009-06-14





SFI SAMCoT Guideline

"Development of coastal infrastructure in cold climate

Part I. INTRODUCTION AND GENERALITIES

- 1 Scope of the Technical Guideline
- 2 Geographical boundaries for the Technical Guidelines
- 3 Coastal processes and phenomena
- 4 Coastal terminology of the present Technical Guideline
- 5 Site investigations
- 6 Arctic constrains for data acquisition and planning
- 7 Types of data, which can be acquired by means of remote sensing
- 8 Approaches for Multi-criteria analysis in locating coastal structures
- 9 Recommendations for the development of sustainable coastal infrastructure
- 10 Consideration of Climate Change

Part II. THE PROSPECT STAGE

- 1 Introduction to the PROSPECT STAGE
- 2 Data acquisition at the Design Stage
- 3 Data needs at the Prospect stage

Part III. THE DESIGN STAGE

- 1 Introduction to the DESIGN STAGE
- 2 Data acquisition at the DESIGN STAGE
- 3 Assessment of coastal dynamics
- 4 Engineering considerations for foundation design in permafrost areas
- 5 Models for Thermal, Hydraulic and Mechanical Processes in soils
- 6 Solutions and design of typical port infrastructures in Arctic conditions
- 7 Solutions and design for coastal protection
- 8 Solutions and considerations for pipeline design
- 9 Engineering challenges and considerations related to sub-sea permafrost

Part IV. THE MONITORING STAGE

- 1 Introduction to the MONITORING STAGE
- 2 Monitoring plan considerations
- 3 Monitoring methods



Polar Climate and Cultural Heritage – Preservation and Restoration Management (PCCH-Arctic)

The Research Council

PCCH-Arctic is a Collaborative and Knowledge-building Project (KSP) with funding from the Research Council of Norway (Project number: 320769) and the project partners.

Web: https://www.sintef.no/prosjekter/2021/pcch-arctic/





WP4 Methodology and Technological management development SINTEF and User partners

Risk-based methodology for foundation design in permafrost

Guideline for management of cultural heritage/(input in existing guidelines)



Categorization of proposed objects for the case studies

		Foundation types			Object types			
		Туре І	Type 2	Type 3	Focus	Secondary	Similar	Special
Longyearbyen								
1.	Some cableway posts		•		v			
	within Longyearbyen							
	urban area							
	Cableway posts		•			v		
	outside of							
	Longyearbyen urban							
	area							
2.	The Titan crane	•					(V)	
		(assumption)						
3.	The old coal			•				(V)
	cableway centre in							
	Longyearbyen							
6.	The old coal							v
	cableway centre in							
	Hiorthhamn							
	Barakk G in	•				(V ^A)		
	Hiotrhhamn							
	(Boligbrakke G)							
	Ny-Ålesund	-	•	-	_			
7.	The airship mast in		•					V
	Ny-Ålesund							
8.	The White house	•				V		
9.	The Tronderheimen					V		
	house							
10.	The London houses	•				V		
11.	The Green Harbour-	•			v			
	house							











Technology for a better society