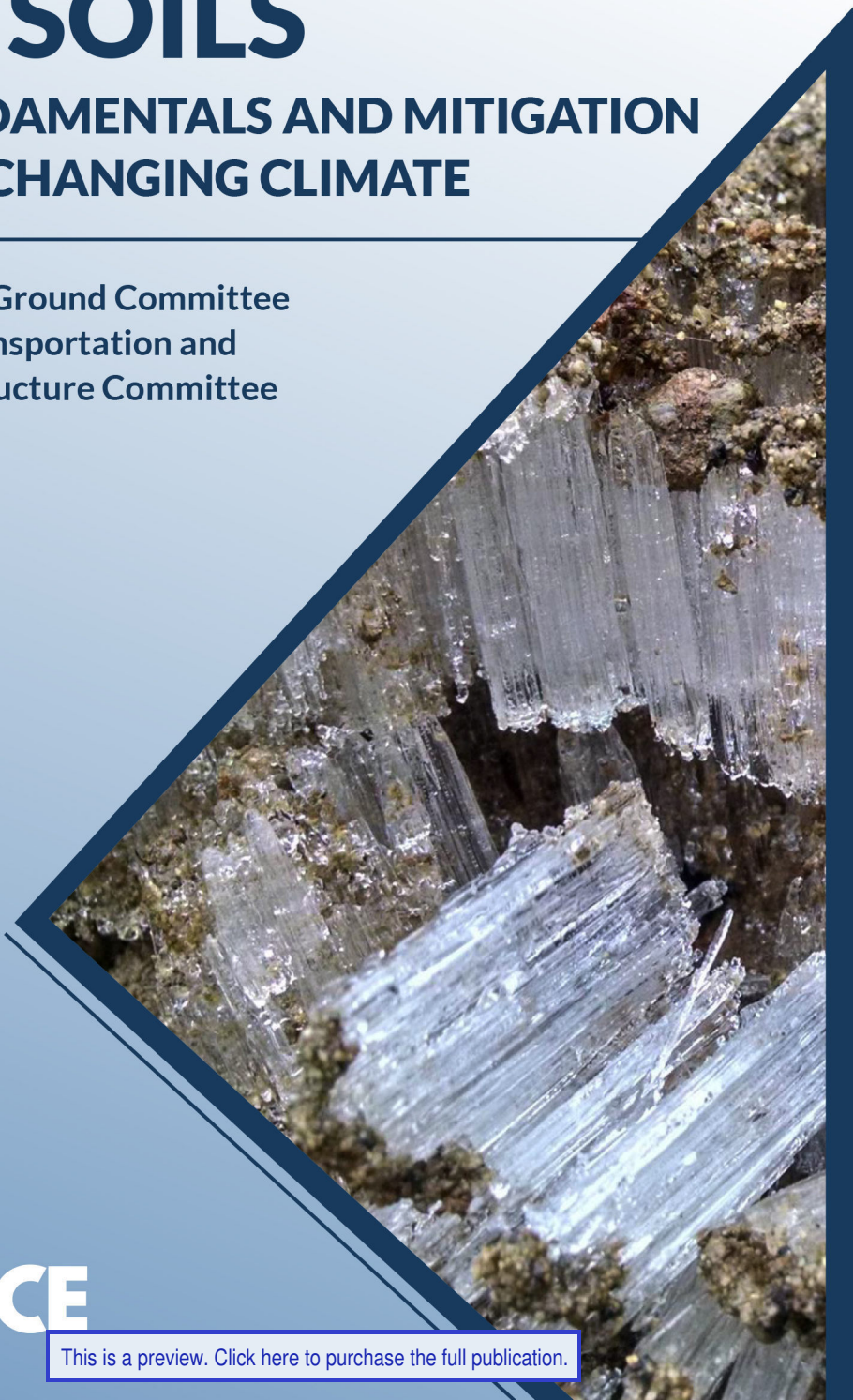
FROST ACTION IN SOILS

FUNDAMENTALS AND MITIGATION IN A CHANGING CLIMATE

Frozen Ground Committee
and Transportation and
Infrastructure Committee



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Frost Action in Soils

Fundamentals and Mitigation in a Changing Climate

Edited by
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Preface

Significant technological advancements addressing frost action in soils have occurred in the years since the 1984 ASCE Frost Action Monograph. In addition, climate change poses questions regarding associated effects on freeze–thaw action. This publication serves to update the current state of the knowledge on frost action for cold regions engineering practitioners. The first section presents the fundamentals of frost heave and thaw weakening, effects on roads and other structures, and the projected effects of climate change on frost action. The second section presents mitigation of frost heave and thaw weakening within pavement structures. The manuscript concludes with three case studies dealing with frost action and mitigation for buildings, roadways, and airfields. The intent of this publication is to describe the challenges of cold regions engineering in a changing climate and to provide state of the art tools for addressing these.

The ASCE Cold Regions Engineering Division (CRED) is extremely grateful to all of the authors and reviewers for their volunteer efforts. The manuscript was initiated and developed by the CRED Frozen Ground Committee and the Transportation and Infrastructure committee and was approved by the CRED Executive Committee. Each of the chapters has been reviewed for technical accuracy and understanding. The authors are included at each chapter heading and listed on the following page, along with the reviewers. The manuscript also benefited from the efforts of our extremely competent associate editor Wendy Wieder of CRREL and technical copy editor Emily Moynihan of BlytheVisual, LLC, NH.

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