

PhD - Analysis of the capacity of existing reinforced concrete pile caps : a multi-fidelity approach

Record number : OPR-1118

Overview

RESEARCH DIRECTION

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INFORMATION

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ADMINISTRATIVE UNIT(S)

Faculté de génie
Département de génie civil et de génie du
bâtiment

LEVEL(S)

3e cycle

LOCATION(S)

Campus de Sherbrooke

Project Description

Reinforced concrete pile caps are foundation elements used to transfer loads from the superstructure to the piles. Their design has evolved from flexure-based approaches to the strut-and-tie method, which is better suited to their particular geometry. In close collaboration with our industrial partner DPHV, our research project aims to study the capacity of reinforced concrete pile caps with 2 and 4 piles, under centered and eccentric loads, using a multi-fidelity approach. This project includes laboratory testing, image-based data acquisition, finite element modeling, and statistical learning techniques to identify the key variables influencing failure modes and to estimate strength.

WHAT WE ARE LOOKING FOR: We are seeking a candidate for a PhD thesis. Applicants should demonstrate curiosity, creativity, and motivation for research, and hold an academic background in civil engineering or a related field. A strong interest in numerical modeling is desirable. Experience with finite element modeling and programming in Python or Matlab is a significant asset. Proficiency in written and spoken English is essential for disseminating research results.

WHAT WE OFFER:

The PhD student will join the Faculty of Engineering at the Université de Sherbrooke (UdS). Located in Sherbrooke, a dynamic city in Québec, UdS is recognized for its excellence in research in several fields, including structural engineering. Admission will follow the university's usual criteria. The project will begin in Fall 2026 or as soon as possible.

HOW TO APPLY: Qualified candidates are invited to submit their CV, academic transcripts, a motivation letter (one page describing their past and future research interests), and, if applicable, an example of publication (for example, journal article or conference) to the following email address: pedro.bandini@usherbrooke.ca. Please indicate the offer number in the subject line of your email.

Discipline(s) by sector

Sciences naturelles et génie

Génie civil

USherbrooke.ca/recherche

Funding offered

Yes

Partner(s)

DPHV – Consultants en structure

The last update was on 23 January 2026. The University reserves the right to modify its projects without notice.