INVITATION TO PARTICIPATE IN THE BC-ETS 02 PREDICTION EVENT FOR A CFA PILE

A test programme is underway at BC Experimental Testing Site 02 (BC-ETS 02) in Balneário Camboriú, Santa Catarina, Brazil (**www.bc-ets.com.br**). The programme includes an instrumented continuous flight auger (CFA) pile, 0.60 m in diameter and 20.0 m in length, to be subjected to a static compression load test. Civil and geotechnical engineers are invited to participate in a prediction event structured in successive phases, from initial estimates based on ground investigation data and nominal pile geometry through revised predictions incorporating as-built information. The purpose is to generate and disseminate knowledge in foundation engineering — not to rank or compare individual participants.

Typical subsurface conditions. The figure below shows selected SPT, SCPTu, CPT and DMT profiles representative of the test area. The groundwater table is shallow, at about 1.5 m depth. The upper profile consists mainly of loose fine to medium sands extending to about 9 m, underlain by fine clayey sands and a pronounced soft compressible interval between approximately 12 and 17 m depth. Below this, the profile transitions through sandy layers with increasing resistance near the pile-toe level, grading into residual soils at greater depth. The complete site investigation data will be available for download on the project website.

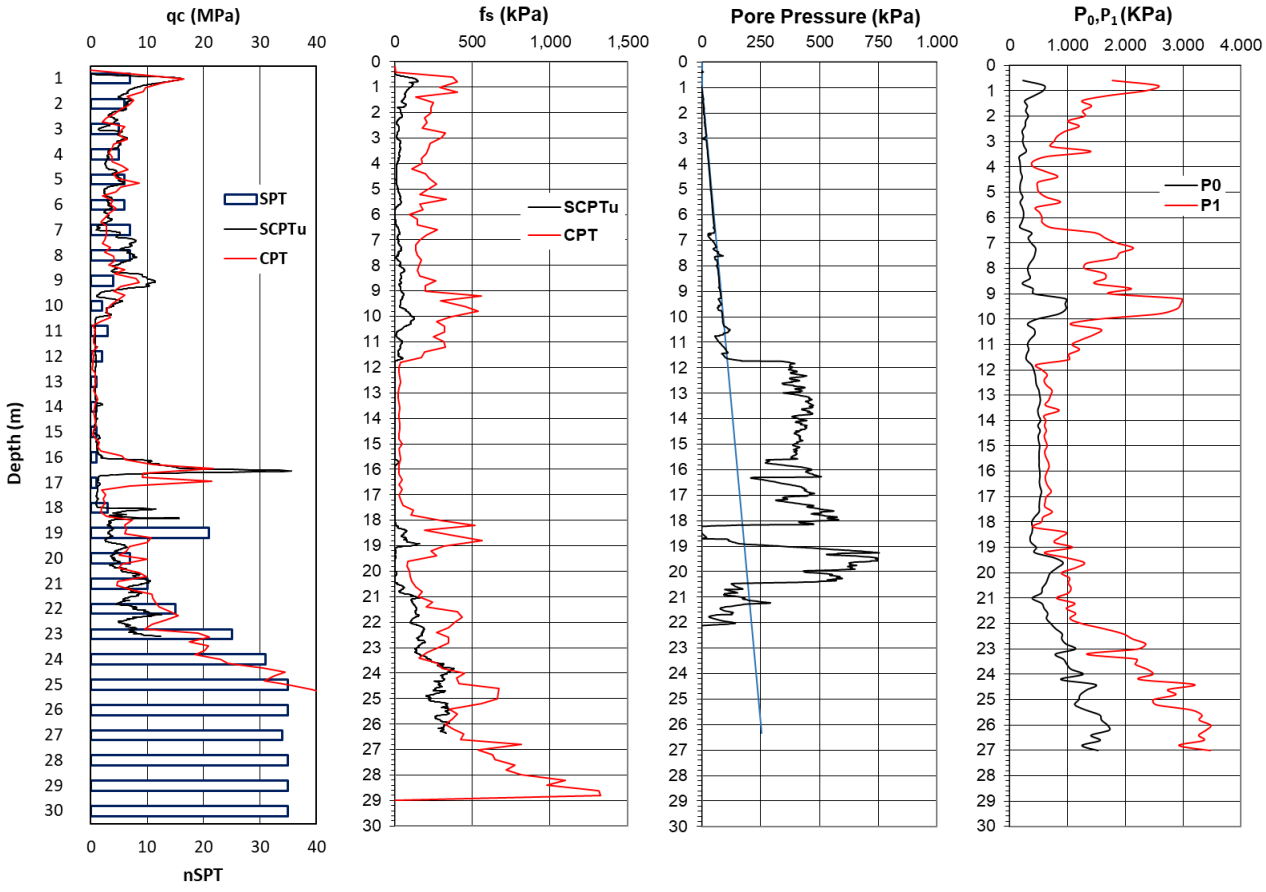

Fig. 1 SPT, SCPTu, CPT, and DMT profiles representative of the test area.

Test pile and load test. The pile will be instrumented with full-depth DFOS strain sensing along the reinforcement, discrete electrical strain gauges at selected depths, a toe telltale, and full-depth DFOS thermal profiling for as-built geometry and integrity assessment. CFA installation parameters will be recorded continuously throughout construction.

The static compression loading test will use a reaction system formed by helical piles. The applied load will be measured by a calibrated load cell, and pile-head movement will be recorded throughout. All load increments will be equal, with a holding period of 15 minutes per increment. No unloading-reloading cycles will be included. The test will continue until the measured response indicates failure or excessive movement.

Prediction phases. Predictions are requested in three successive phases.

- **Phase 1.** Participants are asked to submit, based on the available ground investigation data and nominal pile geometry:
    a) the predicted pile-head load-movement curve;
    b) the predicted axial load distribution along the pile at the predicted failure load;
    c) the predicted ultimate or failure load;
    d) the predicted ultimate shaft resistance;
    e) the predicted ultimate toe resistance; and
    f) a brief description of the methodology adopted, stating the investigation data utilized, main assumptions, and any method or software employed.
- **Phase 2.** Participants who submitted Phase 1 are invited to maintain or revise their original prediction based on selected as-built information, including CFA execution records, installation-energy plots, thermal profiling results for as-built geometry and integrity, and the measured concrete elastic modulus at the relevant test age.
- **Phase 3.** After the loading-test results are released, participants are invited to interpret the pile capacity from the measured load-movement response, applying their preferred criterion.

Schedule and submission. The ground investigation data and the submission template are available for download at www.bc-ets.com.br. The schedule for the three phases is as follows:

- Phase 1: Submission deadline: 31 May 2026.
- Phase 2: Selected as-built information will be released on the project website on 1 June 2026. Submission deadline: 30 June 2026.
- Phase 3: Measured loading test results will be released on the project website on a date to be confirmed. Submission deadline: three weeks after release.

Submissions should be sent by email to contato@bc-ets.com.br using the provided template.

Downloads: https://www.bc-ets.com.br/downloads-02

Principles. The purpose of this event is to generate and disseminate knowledge. It is not a competition, and there will be no prizes, ranking, or individual recognition. Submissions will be treated as confidential by the organizing committee and discussed only in aggregated or anonymized form, unless otherwise agreed.

Ricardo Born
On behalf of the BC-ETS Organizing Committee