

PRORAČUN KRATKOG PILOTA S PROŠIRENJEM UZ POMOĆ SUVREMENIH RAČUNALA

CALCULATION OF SHORT LENGTH PILE WITH WIDENING USING MODERN COMPUTERS

Barchukova T.N., Zavrak N.V.

Review article

Abstract: *In this article proposed an algorithm designed to calculate the bearing capacity of soil subgrade and pile foundation. The calculation was made on the base of soil strength and deformation. The program allows to determine the bearing capacity of pile foundation of a short pile with widening (slab at the top) considering composite components of the foundation construction with use of a personal computer (PC).*

Keywords: *algorithm, bearing capacity, pc, short pile, pile with widening*

Pregledni rad

Sažetak: *U ovom članku predložen je algoritam/program za proračun nosivosti podloge temelja i pilota. Proračun je rađen na temelju karakteristika čvrstoće tla i deformacija. Program omogućava proračun nosivosti temelja od kratko pilota s proširenjem uzevši u obzir sastavne dijelove zadane konstrukcije uz pomoć računala.*

Ključne riječi: *algoritam, nosivost, pc, kratki pilot, piloti s proširenjem*

1. INTRODUCTION

In this article proposed an algorithm designed to calculate the bearing capacity of soil subgrade and pile foundation. The calculation is made on the base of soil strength and deformation. The program allows to determine the bearing capacity of pile foundation of a short pile with widening (slab at the top) considering composite components of the foundation construction with use of a personal computer (PC).

2. ASSUMPTIONS AND ALGORITHM OF THE CALCULATION

The numerical implementation of the calculating scheme for short pile with widening by used methodology is reduced to algorithms, which requires the implementation of a large amount of computation. This requires the use of modern computer technology. With the help of a specially compiled program, the algorithm for calculating the short piles with widening was implemented.

The program for calculating a horizontally loaded short pile with widening is based on the consideration of the pile foundation as a foundation structure located on the soil subgrade, characterized by rectangular diagram of coefficient of subgrade reaction at uneven compression in the vertical direction and by triangle diagram in the horizontal direction. In the process of

calculation considered parts of the construction one by one – widening as a slab and a pile. Interference on each other slab on pile taken into account by introducing an additional continuity equation of components movements at their junction.

In the calculation the following assumptions was made:

- Pile and slab are absolutely rigid in comparison to the soil subgrade;
- Foundation soil is considered as linearly deformable medium characterized by coefficients of subgrade reaction;
- Coefficient of subgrade reaction at uneven compression of subgrade under the slab in the vertical direction under the entire area of the sole is constant in magnitude;
- Coefficient of subgrade reaction at uneven slab base compression in the horizontal direction is taken as linear increasing function with depth and intensity of its distribution across the cutting edge assumed to be constant on any horizon;
- The resistance of the subgrade to the horizontal shear by the slab sole and base of the pile is not considered.

The calculation scheme of the foundation is shown in Fig. 1.

Calculation of short pile with the widening at the top is made on the basic combination of design loads with load factor equal to one.

The calculation scheme of short piles with widening is shown in Table 1.

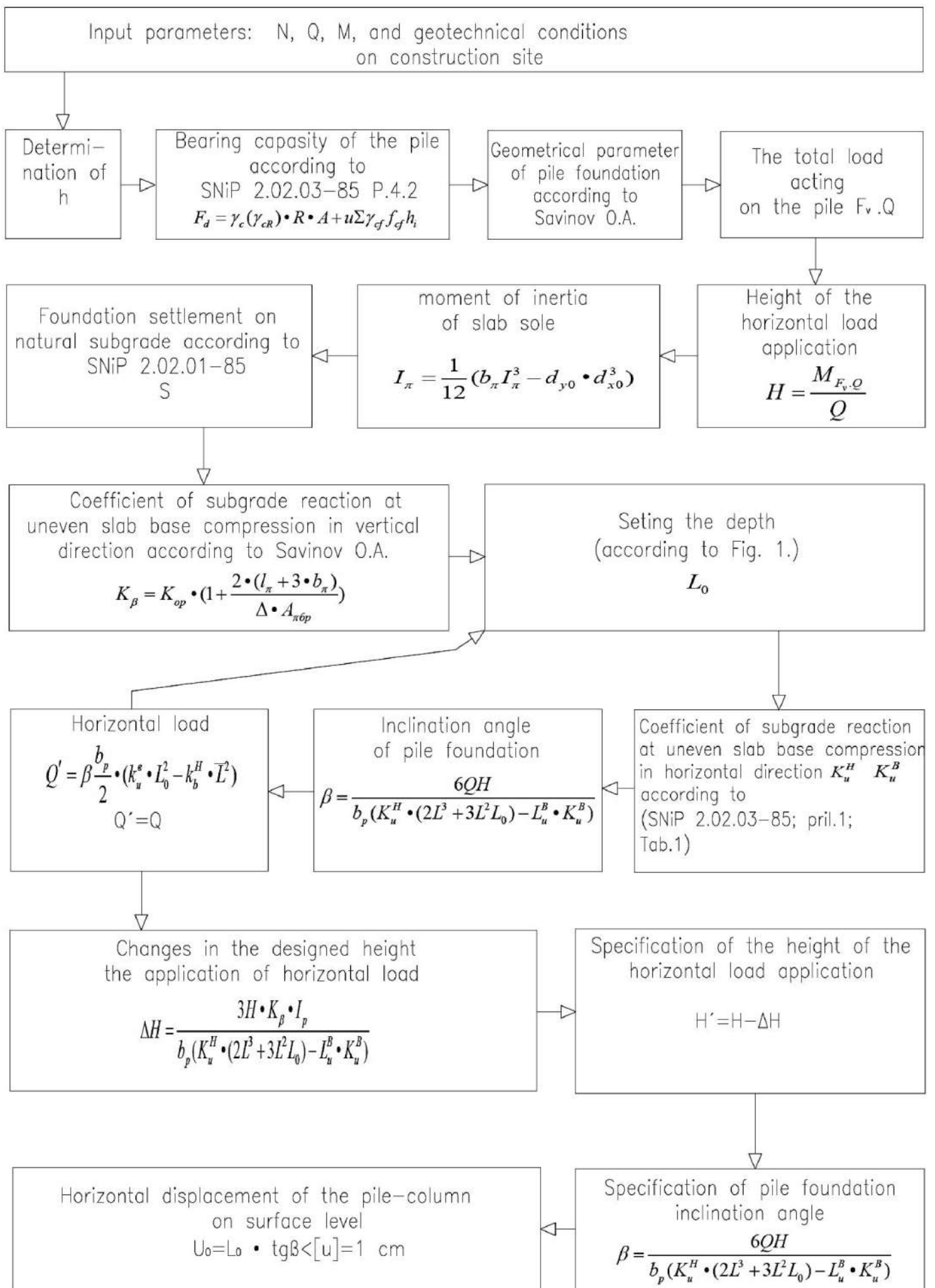


Figure 1. The calculation scheme of short piles with widening

