

BEARING CAPACITY OF PARTIAL SKIRTED FOOTING ON CLAY

Final Project

To Complete The Requirements Of
Achieving S-1 Graduate Degree Of Civil Engineering



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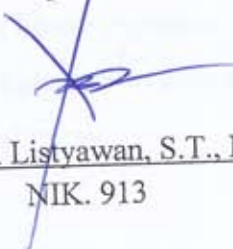
CERTIFICATION SHEET
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Final Project


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MOTTO

“Say, (O Muhammad, to mankind): ‘If you love Allah, follow me (Muhammad), Allah will love you and forgive your sins.’ Allah is Forgiving, Merciful.”
(Qur’an Surah Ali ‘Imraan verse 31)

“Verily in Rasulallah has a good example for you, for anyone who hopes Allah's Mercy and the Last Day, and remember Allah much.”
(Qur’an Surah Al Ahzab verse 21)

“Each of my Ummah will enter Jannah (Paradise), except who don't want to. Whoever obeys me, surely will enter Jannah, and whoever disobeys me, then indeed they have not wanted to.”
(Rasulullah Muhammad *shalallahu ‘alaihi wassalam*)

“I'm not the best man. If I make a good thing, so please come and help me. If I make a bad thing, then please come and correct me.
Honesty is a mandate. Lie is a betrayal.”
(Abu Bakr Ash Shiddiq *radhiallahu ‘anhu*)

“I am the worst leader, if my stomach is full, while my people are starving.”
(Umar Ibn Khattab *radhiallahu ‘anhu*)

“If our hearts are pure, it would never satiated and bored for reciting the Qur'an.”
(Utsman Ibn Affan *radhiallahu ‘anhu*)

“Knowledge is better than wealth. Knowledge will take care of you, while you are who take care the wealth. Knowledge is the judge, while the wealth is being judged.
(Ali Ibn Abi Thalib *radhiallahu ‘anhu*)

PREFACE

Assalamu 'alaikum warahmatullahi wabarakatuh

Alhamdulillah, all praise to Allah 'Azza wa Jallawho has given mercies and blessing until this Final Project can be completed. This Final Project is prepared to complete the requirements of achieving S-1 graduate degree of Civil Engineering Department, Engineering Faculty, Universitas Muhammadiyah Surakarta. The author also says thanks for all parties who give any support for arrangement this Final Project. Because of the accomplishment of this Final Project, the author will say thanks to:

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BEARING CAPACITY OF PARTIAL SKIRTED FOOTING ON CLAY

Abstract

Bearing capacity is the most important factor in designing the foundation. It is necessary to find an effort to improve the bearing capacity. Skirts that are attached on the bellow of footing can be used as an alternative of it. They are used to improve the bearing capacity of shallow footing on soft clay soil. This study is performing nine laboratory experiments on steel circular footing with different diameters and different partially skirt length, on the soft clay soil by keeping the same formation of water content and compaction method. From the accomplished laboratory tests, it was found that partial skirts are very effective to improve the ultimate bearing capacity, as they increase the length, Skirts also reduce the settlement. The settlement generally decreases, when it is observed on the same value of load, 1 kN. Skirted circular footing with the longest skirt has the best condition of settlement.

Keywords: bearing capacity, circular footing, foundation, soft clay, partial skirt.

LIST OF NOTATIONS

| | |
|----------------|---|
| B | : width or diameter of footing (m) |
| c_2 | : cohesion of soil under the footing (kN/m ²) |
| D _f | : depth of footing (m) |
| q_u | : ultimate bearing capacity (kN/m ²) |
| S | : total of settlement |
| S _c | : primary consolidation |
| S _i | : immediate settlement |
| S _s | : secondary consolidation |
| γ_1 | : unit weight of soil above the footing base (kN/m ³) |
| γ_2 | : unit weight of soil under the footing base (kN/m ³) |