Republic of Iraq
Ministry of Higher
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Bored Pile

Annual project Submitted to the Department of Building of and Construction Engineering of the University of Technology in Partial Fulfillment of Requirements for the Degree of B.Sc. In Road Way and Bridge Engineering

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الاهداء

الى من سهرت علي الليالي ....
وغمرتني بالحب والحنان .....
واشعرتني بالسعادة والامان .....
والدتي الحنونة
الى من ضحى بحياته كي نسعد .....
الى من بذل روحه لايصالي لهذا الطريق .....
الى النور الذي اضاء لي دربي .....
والدي الحبيب
الى اصدقاء عمري....
واحباء قلبي ....
اخوتي الاحباء

شكر وتقدير

بعد الحمد والشكر لله تعالى لا يسعني إلا إن أقدم امتناني وتقديري إلى رئاسة القسم وإلى الأساتذة الأفاضل وإلى الأستاذ

المشرف حسام حكمت الذي كان سعي بجهوده المخلصة وتوجيهاته القيمة في الإشراف علي .

وأتقدم بالشكر إلى كل من أهلي وأساتذتي وزملائي وزميلاتي لدعمهم المستمر لي وإلى كل من كان له الفضل في تشجيعي وحثي على إكمال هذا العمل.

Contents :

Introduction

In our steady "Bored Piles" we focus on nine chapters as follow:

Chapter 1 " general specifications" in this chapter we explain that many requirements for bored piles such that construction, reinforcement, pile caps, concrete trim, problems of bored piles,…etc.

Chapter 2"Shaft Friction of Bored Piles in Hard Clay" in this chapter we explain that the Pile foundations are the part of a heavy structure used to carry and transfer its load to the bearing ground located at some depth below ground surface. Depending upon various factors like nature of substrata, depth of ground water table, depth of stronger stratum, type and quantum of load to be supported etc., piles are designed. Pile testing is considered a fundamental part of pile foundation design. It is one of the most effective means of dealing with uncertainties that inevitably arise during the design and construction of piles.

Chapter 3"experimental and numerical analyses of bored pile foundations tropical soil "in this chapter we explain that the numerical analysis was carried out with some of the piles, in order to simulate there in situ behavior with the existing (lab and field) data. Two types of piles were selected for this particular analysis, i.e., a mechanically bored and a "root" type cast-in-place pile. The numerical analysis was done with a semi analytical procedure. This software computes the settlement and the distribution of the normal force inside the pile and actual shear resistance at any depth in the pile's shaft

Chapter 4 "numerical analyses of load tests on bored piles"in this chapter we explain that theacceptance of numerical analyses in geotechnical problems is growing and finite element calculations are more and more used in the design of foundations in particular for the design of piled raft foundations. Nevertheless the bearing capacity of a single pile is most usually determined by pile load tests or by empirical methods. For this reason numerical analyses of a load test on a bored pile in stiff clay are shown in full detail and modeling aspects will be discussed. In the paper the influence of several variables on the load-settlement behavior of the pile are discussed, i.e. the mesh dependency as well as the effect of interface elements. Different constitutive models are used to simulate the mathematical numerical analyses are compared with the results of the pile load test.

Chapter 5 "concrete for wet processed bored piles" in this chapter we explain that thequality of piles depends on a good construction process including drilling, reinforcement installation and concrete pouring as well as on good quality of concrete. Quality of concrete has some influence on the workmanship with interrelated performances. For wet-process bored piles, concrete is cast under drilling slurry using termite pipes. Good quality concrete in bored piling sense means that the properties and characteristics of the concrete are suitable for the process of work and subsequently meet requirements of the finished product. Continuous concrete pouring which is mandatory in piling and it is sometime disrupted by blockage of segregated or prematurely set concrete mix in the termite pipe. Early setting of concrete after pouring in bored hole can also cause discontinuities in pile by accidental lifting of set concrete during extraction of the temporary casing. Dampness is sometimes found in top section of piles constructed in water-bearing permeable soil layer. The dampness was found to be caused by capillary action of ground water through interconnecting voids formed in the improperly mixed concrete.

Chapter 6 "particular specification for large diameter bored piles with bell-outs" in this chapter we explain that theLarge Diameter Bored Piles with Bell-outs are piles of a diameter exceeding 600 mm formed by boring, chiseling or grabbing with an enlarged base formed by under-reaming, plus filling with concrete. The bell-out at the pile base shall be formed within the bedrock with the use of a reverse circulation drill incorporating an under-reaming head.

Chapter 7 "particular specification for large diameter bored piles socketed into bedrocks" in this chapter we explain that theLarge Diameter Bored Piles Socketed into Bedrocks are those of a diameter exceeding 600 mm formed by boring, chiseling or grabbing, plus filling with concrete. The embedment depth into rocks shall be greater than 600 mm and formed by reverse circulation drill or other method approved by the Supervising Officer (SO), and design requirements for bored piles.

Chapter 8 "design and construction of bored pile foundation" in this chapter we explain that theBored piles are commonly used as foundation to support heavily loaded structures such as high-rise buildings and bridges in view of its