

CARACTERIZAÇÃO GEOTÉCNICA DE SOLOS MOLES

Estudo do local experimental da Quinta do Foja (Baixo Mondego)

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por

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ÍNDICE GERAL

Resumo.....	IX
Abstract	XI
Agradecimentos.....	XIII
Lista de abreviaturas.....	XV
Lista de símbolos.....	XVII
Índice de texto	XXIII
Índice de figuras	XXXIII
Índice de quadros	XLVII

1. Introdução.....	1
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PARTE I- ESTADO DO CONHECIMENTO SOBRE SOLOS MOLES

2. Geologia da engenharia dos solos moles.....	13
3. Caracterização geotécnica de solos moles.....	33
4. Aspectos geológicos e geotécnicos de depósitos de solos moles portugueses.....	153

PARTE II- CARACTERIZAÇÃO GEOTÉCNICA DO LOCAL EXPERIMENTAL DA QUINTA DO FOJA (DEPÓSITO DE SOLOS MOLES DO BAIXO MONDEGO)

5. Prospecção geotécnica.....	171
6. Análise e classificação.....	197
7. Compressibilidade e consolidação	249

ÍNDICE GERAL

8. Comportamento tensão-deformação-resistência ao corte	297
9. Conclusões gerais e suas implicações na investigação futura	395
Referências bibliográficas.....	405

RESUMO

A ocupação de depósitos de fraca qualidade geotécnica tem-se intensificado nos anos mais recentes, em consequência do desenvolvimento da cada vez mais exigente civilização moderna. A realização de diversas obras sobre depósitos de solos moles em Portugal, nomeadamente no Baixo Mondego, motivou o desenvolvimento, no Departamento de Engenharia Civil da Universidade de Coimbra, de um programa de investigação no domínio do comportamento destes depósitos, no qual este trabalho se enquadra.

A primeira parte deste trabalho descreve o estado actual do conhecimento relativamente aos solos moles, abordando assuntos tão diversos como os aspectos geológicos mais significativos em depósitos de solos moles e as suas propriedades físicas, de identificação e mecânicas comuns, assim como o modo como estas se podem caracterizar. Apresentam-se ainda as características geológicas e geotécnicas de alguns dos principais depósitos de solos moles existentes em Portugal continental, os quais apresentam semelhanças assinaláveis.

A segunda parte do trabalho apresenta os resultados da caracterização geotécnica do local experimental da Quinta do Foja, localizado no depósito aluvionar do Baixo Mondego, onde se espera vir a executar um aterro experimental que permita desenvolver significativamente o conhecimento acerca dos solos moles aí presentes. Os trabalhos experimentais desenvolvidos incluíram, para além de ensaios de campo, ensaios laboratoriais executados sobre amostras recolhidas no depósito durante as fases de prospecção geotécnica. No que se refere aos ensaios de campo, foram executados ensaios SPT, ensaios de molinete e ensaios com o dilatómetro de Marchetti. Os ensaios laboratoriais visaram a avaliação das características físicas, de identificação e de consolidação, assim como a caracterização do comportamento tensão-deformação-resistência ao corte dos solos. Para a concretização deste último objectivo, foram realizados ensaios triaxiais de compressão e extensão sobre amostras intactas e reconstituídas submetidas a diferentes tipos de consolidação, comparando os resultados entre si e com os medidos pelos ensaios de molinete no campo.

As propriedades dos solos moles ensaiados, nos quais a composição granulométrica é dominada pela fracção siltosa e a caulinite é o único mineral argiloso, são quase sempre fortemente condicionadas pela matéria orgânica, ainda que esta seja, em termos de peso, um constituinte menor desses solos. A enorme influência que a matéria orgânica exerce sobre o comportamento dos solos moles ensaiados é particularmente evidente nos valores e variabilidade de algumas das suas propriedades físicas e de plasticidade, na magnitude e relativa independência face ao estado de tensão efectiva do seu índice de vazios, e ainda no facto de o comportamento dos solos se caracterizar por uma combinação pouco usual de alta plasticidade e compressibilidade com elevada resistência intrínseca. Tal influência determinou que, neste trabalho, fosse dedicada particular atenção aos factores que condicionam a quantificação do teor em matéria orgânica de um solo, os quais variam desde o estado das amostras ao método de ensaio.

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Abreviaturas:

- ASCE- American Society for Civil Engineers;
ASTM- American Society for Testing and Materials;
ECONMIG- European Conference on Numerical methods in Geotechnical Engineering;
ECSMFE- European Conference on Soil Mechanics and Foundations Engineering;
ICCMAG- International Conference on Computer Methods and Advances in Geomechanics;
ICSMFE- International Conference on Soil Mechanics and Foundations Engineering;
JAE- Junta Autónoma das Estradas;
JSSMFE- Japanese Society of Soil Mechanics and Foundation Engineering;
LCPC- Laboratoire Central des Ponts et Chaussées;
LNEC- Laboratório Nacional de Engenharia Civil;
RCASMFE- Regional Conference for Asia on Soil Mechanics and Foundations Engineering.

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