

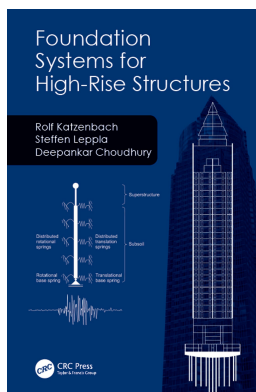
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Foundation Systems for High-Rise Structures

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Introduction

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Chapter I

Introduction

According to the technical regulations, all types of foundation systems for high-rise buildings and civil engineering structures have to be analyzed for stability and serviceability. Analyses are based on the mechanical parameters of the soil and on the modeling of the soil–structure interaction. The analysis of the stability and the serviceability of the following foundation systems will be explained:

- Spread foundations, for example, strip foundations and raft foundation
- Deep foundations, for example, pile foundations
- Combined foundations, for example, Combined Pile-Raft Foundations (CPRF)
- Special foundations, for example, caisson foundations and well foundations

The development of foundation systems related to the height of the superstructure can be seen by the example of Frankfurt am Main, Germany, where in the last decades several high-rise buildings were founded in the settlement-active Frankfurt Clay ([Figure 1.1](#)).

This book covers the basics of stability and serviceability and the necessary soil investigation parameters, the valid technical regulations, and the measures to guarantee the four-eye principle. In addition, special aspects of foundation systems such as geothermal use and the reuse of existing foundations are described.

2 Foundation Systems for High-Rise Structures

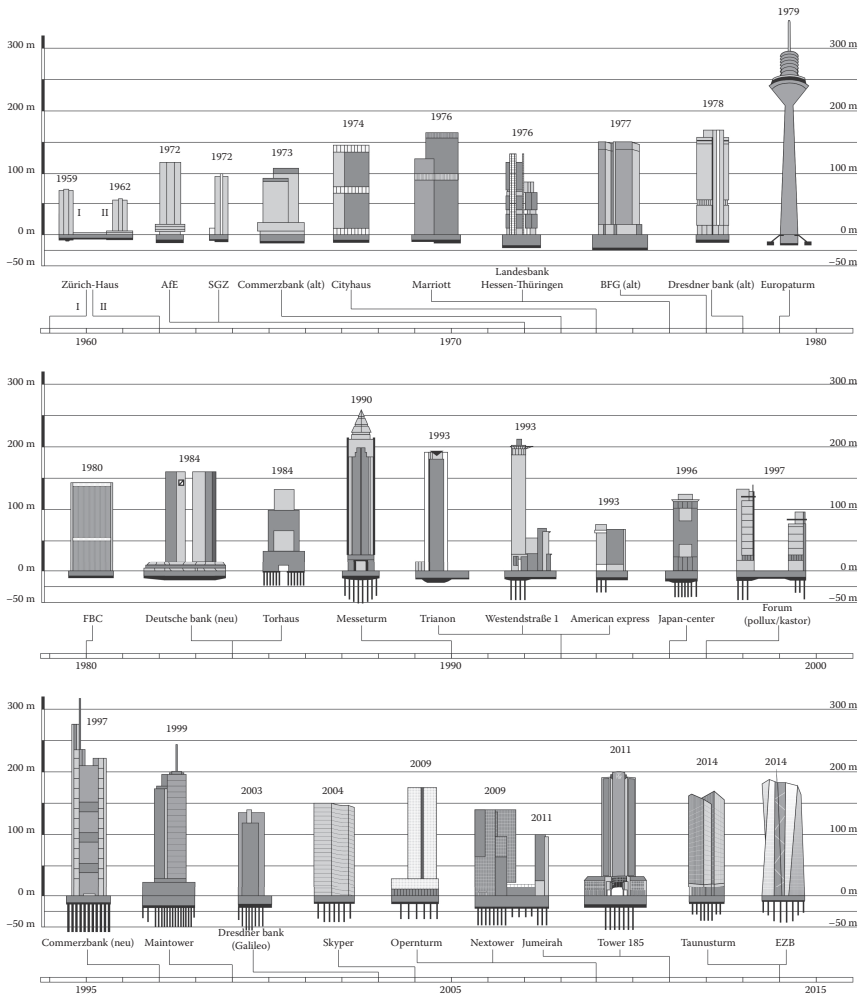


Figure 1.1 Development of high-rise buildings in Frankfurt am Main, Germany.