

1. Record Nr.	UNINA9910138959403321
Autore	Maidl Bernhard
Titolo	Handbook of tunnel engineering II : basics and additional services for design and construction // Bernhard Maidl, Markus Thewes, Ulrich Maidl ; translated by David Sturge ; Sonja Frank, cover design
Pubbl/distr/stampa	Berlin, Germany : , : Ernst & Sohn, , 2014 ©2014
ISBN	3-433-60355-3 3-433-60353-7 3-433-60354-5
Descrizione fisica	1 online resource (460 p.)
Altri autori (Persone)	ThewesMarkus MaidlUlrich DavidSturge FrankSonja
Disciplina	624.193
Soggetti	Tunnels - Design and construction Tunneling
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Cover; Title Page; The authors; Foreword to the English edition; Foreword to the 3rd German edition; Foreword to the 2nd German edition; Foreword to the 1st German edition; Table of Contents; 1 General Principles for the Design of the Cross-section; 1.1 General; 1.2 Dependence on intended use; 1.2.1 Road tunnels; 1.2.2 Constructional measures for road safety in tunnels; 1.2.3 Rail tunnels; 1.2.4 Construction of rail tunnels; 1.2.5 Underground railway and underground tram tunnels; 1.2.6 Innovative transport systems; 1.2.7 Monorail with magnetic levitation, Transrapid, Metrorapid 1.2.8 Other underground works1.3 The influence of the ground; 1.4 Dependency on construction process; 2 Engineering geology aspects for design and classification; 2.1 General; 2.2 Origin, properties and categorisation of rocks; 2.2.1 General basics; 2.2.2 Categorisation of rocks; 2.2.3 Categorisation of soils; 2.3 Engineering geology and rock mechanics investigations; 2.3.1 Engineering geology investigations;

2.3.2 Rock mechanics investigations; 2.4 The ground and its classification; 2.4.1 Ground; 2.4.2 Classification of the rock mass; 2.4.2.1 General; 2.4.2.2 Basic system of classification 2.4.2.3 Q System (Quality System) 2.4.2.4 RMR System (Rock Mass Rating System); 2.4.2.5 Relationship between Q and RMR systems; 2.4.3 Standards, guidelines and recommendations; 2.4.3.1 Classification in Germany; 2.4.3.2 Classification in Switzerland ("Klassierung" according to the SIA standard); 2.4.3.3 Classification in Austria; 2.4.4 Example of a project-related classification according to DIN 18312 for the shotcrete process; 2.4.4.1 Procedure at the Oerlinghausen Tunnel; 2.4.4.2 Description of the tunnelling classes for the Oerlinghausen Tunnel; 2.5 Special features for tunnelling machines 2.5.1 General 2.5.2 Influences on the boring process; 2.5.3 Influences on the machine bracing; 2.5.4 Influences on the temporary support; 2.5.5 Classification for excavation and support; 2.5.5.1 General and objective for mechanised tunnelling; 2.5.5.2 Classification systems and investigation of suitability for tunnel boring machines; 2.5.6 Standards, guidelines and recommendations; 2.5.6.1 Classification in Germany; 2.5.6.2 Classification in Switzerland; 2.5.6.3 Classification in Austria; 2.5.7 New classification proposal; 3 Structural design verifications, structural analysis of tunnels 3.1 General 3.2 Ground pressure theories; 3.2.1 Historical development; 3.2.2 Primary and secondary stress states in the rock mass; 3.2.2.1 Primary stress state; 3.2.2.2 Secondary stress state; 3.3 General steps of model formation; 3.4 Analytical processes and their modelling; 3.4.1 Modelling of shallow tunnels in loose ground; 3.4.2 Modelling deep tunnels in loose ground; 3.4.3 Modelling tunnels in solid rock; 3.4.4 Bedded beam models; 3.5 Numerical methods; 3.5.1 Finite Difference Method (FDM); 3.5.2 Finite Element Method (FEM); 3.5.3 Boundary Element Method (BEM) 3.5.4 Combination of finite element and boundary element methods

Sommario/riassunto

This title presents additional services for the design and construction of tunnels, one of the most demanding challenges within engineering.