

1. Record Nr.	UNINA9911019540803321
Titolo	Dynamic behavior of concrete and seismic engineering // edited by Jacky Mazars, Alain Millard
Pubbl/distr/stampa	London, : ISTE Hoboken, NJ, : Wiley, 2009
ISBN	1-282-16535-6 9786612165351 0-470-61155-3 0-470-39421-8
Descrizione fisica	1 online resource (390 p.)
Collana	ISTE ; ; v.73
Altri autori (Persone)	MazarsJacky MillardAlain
Disciplina	624.1/762
Soggetti	Earthquake resistant design Structural dynamics Concrete - Plastic properties Buildings, Reinforced concrete - Earthquake effects
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	Dynamic Behavior of Concrete and Seismic Engineering; Table of Contents; Preface; Chapter 1. Dynamic Behavior of Concrete: Experimental Aspects; 1.1. Introduction; 1.1.1. Meaning of the word "dynamic"; 1.1.2. Reminders about dynamic experimentation; 1.1.3. Identifying the behavior of concrete under fast dynamic loadings; 1.2. Tests in which the transient rate has little influence; 1.2.1. Tests involving deviatoric behavior; 1.2.2. Tests with prevailing spherical behavior; 1.3. Tests with transient phase conditioned interpretations; 1.3.1. Tests involving mainly traction behavior 1.3.2. Tests implementing compression behavior1.4. Other tests; 1.4.1. Tests adaptable to an energetic approach; 1.4.2. Validation tests on structures requiring an inverse analysis; 1.5. Synthesis of the experimental data on concrete and associated materials; 1.5.1. Data on cement paste mortar and concrete; 1.5.2. Data available for reinforced concrete; 1.5.3. Data about fiber-reinforced concretes; 1.6. Conclusion;

1.7. Bibliography; Chapter 2. Dynamic Behavior of Concrete: Constitutive Models; 2.1. Dynamics of concrete structures; 2.1.1. Macroscopic phenomena; 2.1.2. Perforation; 2.1.3. Ejection of fragments; 2.1.4. Loading range; 2.1.5. Loading path; 2.2. Fast dynamics applied to concrete; 2.2.1. Impacts and waves; 2.2.2. Impact and shock polar curve; 2.2.3. Shock between two solids; 2.3. Scabbing; 2.4. Effect of a shock wave on the structure of materials; 2.5. Modeling types; 2.5.1. Behavior description theoretical frames; 2.5.2. Integrating sensitivity to the strain rate; 2.5.3. Elasto-plasticity and criteria; 2.5.4. Damage; 2.5.5. Notion of a state law; 2.5.6. Location limiter and time sensitivity; 2.6. Models; 2.6.1. Elasticity-based model; 2.6.2. Models based on the theory of plasticity; 2.6.3. Models based on damage mechanics; 2.6.4. Model coupling damage and plasticity; 2.6.5. Model coupling damage and mechanics of porous media; 2.6.6. Model deriving from a hydrodynamic approach; 2.6.7. Endochronic models; 2.6.8. Discrete element method; 2.7. Conclusion; 2.7.1. Main features of the models; 2.7.2. Contribution of distinct elements; 2.8. Bibliography; Chapter 3. Seismic Ground Motion; 3.1. Introduction; 3.2. Measuring seismic motions; 3.2.1. Differences between seismological and accelerometer networks; 3.2.2. Accelerometer networks; 3.2.3. Accelerometer data banks; 3.3. Quantitative characterization of seismic movements; 3.3.1. Time maximum values; 3.3.2. Spectral characterizations; 3.3.3. Features of hybrid characterizations; 3.3.4. Caveats regarding differential motions; 3.4. Factors affecting seismic motions; 3.4.1. Spectral signature of the seismic source; 3.4.2. Effects of propagation in the Earth's crust; 3.4.3. Site effects; 3.5. Conclusions; 3.6. Bibliography; Chapter 4. Soil Behavior: Dynamic Soil-Structure Interactions; Introduction; 4.1. Behavior of soils under seismic loading; 4.1.1. Influence of the nature of soils on seismic movements

Sommario/riassunto

While the static behavior of concrete has been the subject of numerous works, the same cannot be said for the dynamic behavior. This book sets out to remedy this situation: it begins by presenting the most frequently used experimental techniques in the study of the dynamic behavior of concrete, then continues by examining seismicity and seismic behavior, soil behavior, models of concrete structures subject to seismic activity, seismic calculation methods of structures, and paraseismic engineering.