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1. Monitoring of Large Structures and Assessment of their Safety IABSE Colloquium, Bergamo, October 14 – 16, 1987

Introduction

The Colloquium, organized by the Italian National Group of IABSE in cooperation with ISMES was related to the Venice 1983 IABSE Symposium on «Strengtening of Building Structures: Diagnosis and Therapy», to the Washington 1982 IABSE Symposium on «Maintenance, Repair and Rehabilitation of Bridges» and to some aspects of the IABSE Symposium on «Safety and Quality Assurance of Civil Engineering Structures», held in Tokyo in September 1986.

The purpose of the Colloquium was to let specialists involved in monitoring and testing of large structures have an opportunity to meet and exchange ripe experiences aimed to appraise structural serviceability and safety.

Participation was restricted to a limited number of invited specialists concerned with engineering fields related to the Colloquium themes. 68 participants from 13 countries attended the Colloquium.

The Scientific Committee for the Colloqium consisted of 13 Members from 6 Countries, chaired by Prof. Guido Oberti, Italy.

Technical Programme

The construction of large structures (bridges, viaducts, concrete dams, tall buildings, tunnels, offshore platforms, etc.) has greatly increased in recent years, due to the development of new design and analysis methods, the aid of mathematic and physical models and the application of new construction methods and improved materials. Moreover, many existing ancient structures (old bridges and dams, churches, monuments, etc.) require accurate investigation of their actual conditions.

The Colloquium focused on recent developments and applications of monitoring and testing methods, equipment and systems to assess service conditions and safety of ancient and modern structures subjected to static and dynamic loading.

The contributions for Session 1 – co-chaired by Dr. Hans Pfohl (Federal Republic of Germany) and Prof. Leo Finzi (Italy) – delt with Monitoring and Testing of historically important Monuments, Bridges and Marine Structures, but also proposed general remarks about Structural Diagnosis, Structural Identification, Planning of Monitoring Activities and the role of these activities for gaining a better knowledge of the structural behaviour.

The papers for Session 2 – chaired by Prof. Renaud Favre (Switzerland) and Prof. Giorgio Macchi (Italy) involved interesting works on Dams, Bridges, Structural Frames, Power Plant Structures, Offshore Platforms and some advanced measuring techniques.

The presentations for Session 3 – chaired by Dr. Dewayne Misterek (U.S.A.) and Prof. Michele Fanelli (Italy) – approached the theme of «Interpretative Models and Decision Making» from the viewpoint of engineering problems related to Monumental Buildings, Bridges, Offshore Platforms and Underground Railways.

Conclusions

The Colloqium theme was found to be very interesting. With reference to common problems, the selection of invited Authors made possible the exchange of experiences among specialists from different engineering areas, which usually have their own separate conferences and meeting opportunities.

This wide range of exchange of experiences and know-how was the first goal reached by the Colloqium; in fact, it may be considered a good start point for the transfer of technology and new methods from the most advanced areas of structural monitoring to the others.

To propose again in the near future further IABSE meetings about «Monitoring Problems» was therefore recognized as an important need.

The second goal attained by the Colloquium concerned written contributions and discussions were dealing more with a general approach to monitoring criteria and data managing/processing than with technical details of instrumentation and equipment.

The Colloquium format was successful and the time available for both oral presentations and discussions was suitable.

Finally a wish was expressed that IABSE (especially through its Working Commissions) will more and more consider in the future the increasing development of monitoring techniques for monuments and historical buildings. The Bergamo Colloquium has shown a positive trend of applications in this engineering area.

The Colloquium Report was distributed in Bergamo to the attending Participants, and may be obtained at the IABSE Secretariat.

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