

Preface I

For some of us long-standing professional colleagues of Eng. Andriolo, earnestly committed to Civil Engineering's mission, it is a privilege and honor to be prefacing such a book. Amidst the fantastic developments that the world has witnessed in all technological fields during the past three decades, and that will expand exponentially, it is exhilarating to see, and signal, that age-old everybody-knows Civil Engineering also rises up to the podium.

RCC embodies an exemplary reminder that engineering is a challenge of creativity: and this book renders it fruitful down to every practical detail of design, construction, inspection, and performance, proven through thorough experience. In rejecting the "engine engineering", that prevails but numbs, and seeking the fertility of "ingenious engineering" the solution is found, as often can be, by straddling across the tracks of competing sub-disciplines. And the competing breakthrough stimulates both the conventional solutions, the compacted embankments and the concrete structures. The book concentrates on dams, but the subject really concerns a new material, for whatever optimized uses can be conjured, with even greater freedom than has been used.

For Brasil, Latin America, and the developing world, it is heartening to receive such contributions favouring shortcuts to development. Water resources properly harnessed is the ominous worldwide need. Conscious combinations of the optimized principles from such embankment dams as the CFRD and ECRD, and from such slimmer structures as the concrete gravity and buttress-shape dams, not only improve safety, logistics, economy and performance of the dams themselves, but, above all, greatly enhance layouts for handling the three hydraulic circuits (diversion, operational, and flood spilling).

The coverage of RCC in the book, historic, updated, and complete, is self-evident; so are the extensive references. Should one confess, on the contrary, to the fear that many a young colleague may take as definitive the book's literal teachings, presently recommended, rather than the stimulating examples portrayed, of research and development? There is much to be done yet, and always : the notorious example is given, regarding the innovative use of rock-flour fines, a very important regional solution for Brasil's geology.

Eng. Francisco R. Andriolo is, himself, an example to the younger colleagues entering our field of service to humanity. Curiosity and enthusiasm know no closed doors, no needs for formal sponsorships. Within the day-to-day obligations to bide by conventions, fertile investigative testing is produced by theoretical intuitions, and the generous cooperation of on-site engineers during construction, enthusiastically induced to cooperate in the development foreseeable.

Andriolo is deeply committed, and proven effective. He has produced previously, and now, remarkably. For additional books, further optimizing, we will bide our time eagerly. The stage is set for further optimizing, both design principles and zoned construction : one might but remember that earth-core impervious sections can be as narrow as 40% of a conventional concrete gravity section. It is the unfettered developing world, stimulated by crusaders like Andriolo, cooperating symphonically with other specialist colleagues, that will further open the vistas of Dam Engineering.

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