The role of the Swiss Association of Engineers and Architects (SIA) in the development of prestressed concrete

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Connecting link between authorities, the Federal Institutes of Technology and the construction world

An enduring, positive influence of a professional association on the development of structures depends not only on the engineers' training and know-how, but also to a great extent on the political traditions of the country.

Our highly *decentralized, direct democracy* delegates a minimum of tasks to government and administration. In comparison to other countries this still holds today, in spite of the changes in the last decades. The influence of our entire population on politics has therefore remained strong and lively and large groups take part in the problems of our economy. To be sure, no political tradition exists without drawbacks; in our country e.g. the possibility of delaying urgent decisions considerably, even maliciously.

The *advantages*, however, proven by our lasting political and economical stability, predominate by far. They help to constitute a solid basis for the improvement of the quality of life for everybody. Consequently it is also viewed as a matter of course, that private organisations undertake demanding and permanent tasks in the field of applied research.

For over 100 years, our SIA has been taking care of the *Swiss Standard Specifications* and the *coordination in the construction disciplines*. In this rôle we consider ourselves to be the actual *connecting link between authorities*, the *federal institutes of technology*, the *consulting practice* and the *construction industry*.

Responsible instance for the standard structural specifications

Results of basic research, whether in the theory of structures or in material technology, can rarely be put directly to use for the planning and construction process. It becomes an ever more demanding task to incorporate these results into concentrated guidelines, into actual "rules of the art of building". Keeping these *Standard Specifications* up to date is a job that calls for a permanent but flexible organisation.

The essential work is done by our best experts in the corresponding *commissions*. Only the basic papers are paid for, not the actual work in the commissions. Over 800 engineers and architects, comprising 10% of all members of the association, work in one form or another entirely without compensation. The collaboration of professors, top government officials, consultants and contractors is felt to be valuable, and by many, to be a considerable enrichment, and not just in a technical sense alone.

We distinguish between different levels of compulsion in the Standards: *recommendations*, *guidelines* and *actual Standard Specifications*. A special procedure regulates hearings and approval. Certain Standards get declared as legally binding by the government or the federal railways; this applies in particular to the rules pertaining to the safety of structures and to all engineered construction. They are a basis for contracts and make it possible, even in litigation, to interpret the level of construction technology.

Whereas the *commissions* are specifically entrusted with *working out and renewing* the Standards, *the office of the General Secretary* is responsible for coordination and for seeing through the *administrative* end, while the *central instances* are responsible for the *approval*. The *dissemination into the construction industry*, as part of *continuing education*, is the concern of the *specialised groups*, (Cf. organisation diagram). The new texts are presented at conferences or courses. At the international level, our specialised groups strive for the mutual exchange of information. The specialised Group for Bridge and Structural Engineering (FBH) traditionally represents the structural engineers at the international congresses, particularly for prestressed concrete as well.

The place of prestressed concrete in the standards

Thus the SIA has a very direct influence on the development of structures, and bears a corresponding responsibility. We can keep a clear conscience in doing so only because of the fact that the consensus of the Standards is worked out by the leading experts themselves and enjoys the broad support of government, education and industry.

The above applies particularly to prestressed concrete as well. The competent faculty members of the Swiss Federal Institute, responsible and professionally qualified top-level government officials, consultants and chief bridge engineers as well as specialists from the field of tendon manufacture work closely together.

As an outgrowth of the standards for *concrete and reinforced-concrete structures*, the regulations regarding prestressed concrete were successively integrated and in the course of development, supplemented with *guidelines for light-weight concrete and for partial prestressing*. In the meantime, the point of view has prevailed that in the last analysis, all intermediate fields regarding the degree of prestressing and the composition of the concrete should be regarded as a whole. For this reason, work on *integrated Standards* has been taken up in Switzerland recently.

At the same time, a broader safety philosophy is being developed which should be used as a "blanket Standard" for all structural materials.

Fundamentals on the designing of standards

Up to now it has always been our principle to draw up the Standards in such a way that the texts are neither kept too brief nor expanded too greatly at length. Standards as a guideline for construction should always be addressed to *the competent professional as a concentrated aid* and not to the layman as an instruction manual. In spite of the development of ever more complex structures and combinations of the most varied structural materials, we do not wish to restrict unduly the field of the structural designer's own responsibility. His work should not wither just because petty bureaucratic regulations stand in the way of every development.

We will gladly go to bat for this point of view, even in the European theatre, convinced that we are thereby rendering good service to the further development of prestressed concrete.

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