Engineering Forum

Discussion to "No way out" by Dr. H. Wittfoht
(see IABSE Bulletin B-26/83)
sent in by Mr. G. Plümer

"With pleasure I read about the initiation of the "Engineering Forum" which adds one more interesting facet to IABSE's fine publications, and I shall gladly respond to your call.

Let me start with the note just below your own on page 9 of the Bulletin B-26/83. I heartily agree with your vice-chairman's opinion that the decision (17 U 82/80 of the Superior Court at Frankfurt/Main) is a misjudgement. The owner was asking for a defect-free structure, but of a type which, due to its very nature, and in spite of total compliance with all rules and regulations, a priori can never be built without fault. The contractor therefore had only two ways to choose from: either to select his own method, and incorporate all possible (even future) costs in his bid price, in order to be adequately remunerated, or — refrain from the job.

However, I differ from Mr. Wittfoht's point of view in the two following issues: Firstly one should not lump together reinforced and prestressed concrete, since they behave differently. Secondly cracks in reinforced concrete *should possibly,* cracks in prestressed concrete *must definitely* be avoided by all means, because in the latter they are fatally dangerous.

Which loads me to the other item I am seriously concerned about: Too many renowned and excellent people spend too much time on developing or refining methods of prestressed concrete constructions which are not — and probably never will be — capable of yielding defect-free (that is crackless) prestressed concrete, instead of devoting their efforts to new flawless systems. Was not prestressing meant to relieve us of cracks in concrete once for all?"

Günther Plümer, Waiblingen,
Federal Republic of Germany

Comment by Mr. B. Wex,
Chairman of the Technical Committee of IABSE

I am delighted to welcome Mr. Plümer's contribution to the topic raised by Dr. Wittfoht although in my opinion Mr. Plümer's arguments are directed to a particular question rather than a matter of principle. Nonetheless we want this Engineering Forum to be a lively feature and I feel sure my responses to Mr. Plümer will not terminate the discussion of this particular matter or affairs related to it.

Dr. Wittfoht's point was — can the Contractor legally be forced to cover repair costs in the case where he designed and built the structure following strictly all codes and regulations? The Court's decision was "Yes he can" and even worse, the Client is not forced to pay for additional measures taken to adjust apparent deficiencies in codes and regulations. But then again he can oblige the Contractor...?

This is not just a story related to cracks in a bridge. It is a fundamental question to be answered no matter what material or form of construction is used. The first alternative proposed by Mr. Plümer in the last sentence of his 2nd paragraph, namely to incorporate (and charge for) additional material, would be unsuccessful in the long term. If the contract award was on minimum price alone, only a Contractor leaving out precautionary (as opposed to statutory) material would be appointed as his price presumably would be lowest. Therefore in the case of the bridges in question the Client would presumably suffer cracks in all similar structures. Mr. Plümer's second choice — refrain from tendering for such work — might in the long run produce a more rational reaction from the Authorities — but only if all contractors adopted the same policy.

The situation in the Federal Republic of Germany is particularly interesting to me, an Englishman. In FRG, construction is operated very much on "the design and build" basis, i. e the Contractor is responsible for both design and construction. On the other hand in the U.K. design is usually done by a Consulting Engineer, the construction contract being awarded on a competitive bidding basis. I rather think under English law, a Consulting Engineer who has produced a design in accordance with extensive and up-to-date codes might not have to pay for remedying design defects arising from direct obedience to those codes. However, he might well have to pay for failures arising from design matter over which the codes fail to say anything. It is quite sure that under the English system the Contractor would not have to pay for rectification for failures in service since he is in no way responsible for the design.

For a structure, say a bridge, supplied on a design and build basis in the U.K. I think the Contractor would have similar responsibilities in relation to the rectification of design defects as described for the Consulting engineer in my previous paragraph.

I must emphasize the above views are my opinions and not based on legal judgements. If I seem to paint a picture of sweet legal reason in U.K. I should say that Consulting Engineers and Architects are very unhappy with our laws in relation to construction responsibility. The designer's liability for defects can go on for ever, and can include the

cost of remedial work necessitated by faults arising from bad workmanship on the part of the Contractor if the latter has gone out of business. The British Group of IABSE is so concerned over the situation as it affects engineers in U.K. that it will be holding a small colloquium at Cambridge in 1984 to discuss the matter of professional responsibility. This colloquium might well be the forerunner of an international event on liability for defects in design and construction if the question proves to be of sufficient interest.

Regarding Mr. Plümer's views upon reinforced and pre-stressed concrete, I think these also are questions which can produce very lengthy debate and perhaps should be discussed in the appropriate committees rather than here. Indeed, since the time of Freyssinet opinions have changed considerably and for various reasons the trend is towards partial pre-stressing."

Bernard Wex,
London, UK

1. Activity Report, August 1982 — August 1983
Rapport d'activité, août 1982 — août 1983
Tätigkeitsbericht, August 1982 — August 1983

Committee Meetings

Executive Committee
Washington, DC, September 6/7, 1982

Technical Committee
Washington, DC, September 6/7, 1982
Paris, March 17, 1983

Permanent Committee
Washington, DC, September 8, 1982

Liaison Committee
Bruxelles, November 5, 1982

Technical Meetings

— IABSE Workshop
Tokyo, August 31 —
September 1, 1982
"Health and Safety in Construction"

— IABSE Symposium
Washington, DC,
September 9-10, 1982
"Maintenance, Repair and Rehabilitation of Bridges"

— IABSE Colloquium
Bergamo, October 6-8, 1982
"Informatics in Structural Engineering"

— IABSE Colloquium
Copenhagen, May 30 —
June 2, 1983
"Ship Collision with Bridges and Offshore Structures"

— IABSE Workshop
Rigi, June 8-10, 1983
"Quality Assurance within the Building Process"

Réunions

Comité Exécutif
Washington, DC, 6/7 septembre 1982

Comité Technique
Washington, DC, 6/7 septembre 1982
Paris, 17 mars 1983

Comité Permanent
Washington, DC, 8 septembre 1982

Comité de Liaison
Bruxelles, 5 novembre 1982

Manifestations

— Workshop AIPC
Tokyo, 31 août —
1er septembre 1982
"Santé et sécurité dans la construction"

— Colloque AIPC
Washington, DC,
9-10 septembre 1982
"Entretien, réparation et modification des ponts"

— Séminaire AIPC
Bergame, 6-8 octobre 1982
"Informatique et constructions de génie civil"

— Séminaire AIPC
Copenhague, 30 mai —
2 juin 1983
"Collisions de bateaux avec des ponts et des constructions en mer"

— Workshop AIPC
Rigi, 8-10 juin 1983
"Quality Assurance within the Building Process"

Kommissionssitzungen

Vorstand
Washington, DC, 6./7. September 1982

Technische Kommission
Washington, DC, 6./7. September 1982
Paris, 17. März 1983

Ständiger Ausschuss
Washington, DC, 8. September 1982

Comité de Liaison
Brüssel, 5. November 1982

Technische Veranstaltungen

— IVBH Workshop
Tokio, 31. August —
1. September 1982
"Gesundheit und Sicherheit im Bauwesen"

— IVBH Symposium
Washington, DC,
9.-10. September 1982
"Unterhaltung, Instandsetzung und Sanierung von Brücken"

— IVBH Kolloquium
Bergamo, 6.-8. Oktober 1982
"Informatik im konstruktiven Ingenieurbau"

— IVBH Kolloquium
Kopenhagen, 30. Mai —
2. Juni 1983
"Kollision von Schiffen mit Brücken und Offshore-Bauten"

— IVBH Workshop
Rigi, 8.-10. Juni 1983
"Quality Assurance within the Building Process"