

## PUBLIC CONSTRUCTION CONTRACTS.

The special committee of the American Society of Engineering Contractors presented a report which contains a fund of suggestions concerning public construction contracts. The report, which was made by Mr. Wm. B. King, is not an exhaustive one, but serves well as a basis for further discussion among engineers and contractors. As appearing in the Journal of the society for March, it contains the following:—

1. Your committee thinks it impossible to submit a complete form to cover all phases of all engineering contracts, but a work of much value can be done by adopting some general principles and formulating them so that they may be made a part of substantially every contract.

2. Every condition of whatsoever character by which the parties are to be bound should be submitted to bidders as a part of the specifications on which they bid. The contract to be signed should be annexed to the specifications. In this way the bidder is not liable to be surprised by new conditions appearing in the contract submitted for his signature after his bid is made and accepted.

3. The greatest vice of contracts is uncertainty. In adopting any form of contract or specifications, every effort should be made to secure exactness of definition of the rights and duties of both parties.

4. Recognizing the impossibility of foreseeing every emergency, some authority must be devised for the termination of either unexpected physical conditions or unforeseen ambiguities in the contract.

5. The first requisite to this is promptness, so that work may proceed. This doubtless requires that all disputed questions shall be primarily settled by the engineer present on the work.

6. But, while the engineer is the best fitted person to reach a prompt decision, his relation to the owner unfits him for an impartial decision. There must, therefore, be some provision for an appeal to an impartial tribunal, and final settlement of all disputes by it.

7. Disputes should, as far as possible, be settled as the contract progresses, so that the parties can know how they stand. To this end, all matters of dispute should be reduced promptly to writing and all appeals from the engineer's decisions should be promptly taken.

8. Each party should assume full responsibility for his own share of the contract.

9. This involves the assumption by the owner of responsibility for the local conditions and for the borings or other explorations of the site. The contractor should bid on guaranteed local conditions, with an increase or reduction of price for variations from these. The locality belongs to the owner and the contractor should not be obliged to gamble on it.

10. The principle also requires that a contract should not both provide the exact details of construction and guarantee the result. If the contractor is to do the work according to exact plans furnished him by the owner, the owner should take the responsibility for the result. If the contractor guarantees the result, he should be free to adopt his own methods of construction.

11. The contractor, especially when bound by a time limit, should be given the utmost freedom as to the order and manner of doing the prescribed work.

12. Definite provision should be made for the assertion in writing of demands made by either party varying

from the normal contract price. The contractor should give prompt notice of a claim for extras and the owner of a claim for a decrease or for the assessment of damages.

13. Some rule should be prescribed for the owner's protection in case of delay on the contractor's part, either by a right to annul the contract, or to take over the work in whole or in part, or to deduct actual or liquidated damages. The subject is one of great difficulty and needs most careful consideration.

14. The contractor should be protected from loss by delay of the owner or the owner's other contractors and provision made for settling such losses, without suit, where possible.

15. What is the proper amount of retained percentages? What should be the maximum part of the contract price to be retained until final payment? Differences of opinion should be adjusted and a uniform rule adopted.

16. Material men insist that the contract bond should provide for payment for materials and labor. This leads to greater security to the material men and consequently lower prices. But it is an unnecessary cost to contractors to establish credit. This subject needs the views of both sides.

17. Some contractors and engineers maintain that the contract conditions should be as brief as possible. Your committee believes that all subjects which experience has shown may produce conflict should be definitely disposed of by the provisions fixed in the contract, even if this extends its length.

18. After every effort has been made to avoid all uncertainty in the contract and to settle disputes as they arise, some honest differences of opinion as to the rights of the parties may persist to the end of the contract. The final settlement of uncontested matters should be made without prejudice to the right of the contractor to recover disputed claims in the courts. It has, unfortunately, become too common to declare that on final payment the contractor shall sign a release of all claims arising out of the contract. This is a one-sided and dishonest provision. When payment is earned by a fulfilment of the contract, it ought not to be denied because the contractor believes that he is entitled to more, nor should he be forced by necessity to waive access to the courts to correct wrongs done him in the course of the contract.

Your committee might extend this discussion much farther, but believes that enough has been said to show the difficulties of the subject and the need of full consideration. Many forms of contracts have been drawn by various authorities. The standard forms of the Royal Institute of British Architects and of the American Institute of Architects have much to commend them. One general remark may be made in regard to nearly all such forms—that they have been generally prepared by persons representing owners, such as architects and engineers, and that, however fair their intention, the inevitable tendency has been to protect the owner's rights at the cost of the contractor's.

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Boiling an iron or steel article in a gallon of water to which has been added four ounces of phosphoric acid and an ounce of iron filings will give it a black, non-corroding coating.

Canada's waterpower is estimated at 16,600,000 horse-power, equal to an annual production of 367,000,000 tons of coal; only 1,016,521 horse-power has been developed.