DISCUSSION OF THE LOWER-TAN-COST BID

By S. G. Cohen, Engineer of Construction, Indiana State Highway Commission, Indianapolis

If Mr. O'Connor has accomplished nothing else, I am sure that he has made a successful case against the "lower-than-cost" bid. The construction industry itself has known over a period of years that the public was really not buying any bargain when public work was contracted at a price that constituted a loss to the contractor. However, both the law and public sentiment have in the past required that the work be awarded to the "lowest and best bid." Regardless of how low the bid was or how plainly the loss was apparent, if the low bidder was qualified by experience and financial ability to perform the work, the awarding official has had no alternative other than to award.

Such awards have usually left in their wake unpaid bills, dissatisfied and poorly paid laborers, delayed completion, and dissatisfaction in general. Bond protection has seldom meant prompt settlement. In fact, experience has shown that the best and most reliable assurance that the public has for prompt and most satisfactory construction is obtained through award to a reputable and competent contractor at a price that includes a legitimate profit, under average conditions.

The State of Indiana offers many examples of both pictures. We have plenty of very excellent projects that were completed well ahead of schedule to the mutual satisfaction of engineers, inspectors, contractors, and communities. Such jobs are the work of the reputable contractor and are seldom given their inception by a "lower-than-cost" bid.

On the other hand, I am told that not a single firm is now known in business that participated in the construction of State Road 52 between Indianapolis and Lafayette. The history of the road includes a record of low bids, long delays (not all the contractor's fault), financial debacles, unpaid bills, and damage suits. That highway was built for its utility and was not intended as an endurance test for either the public or the construction industry. I am quite sure that those low bids did not prove to be public bargains.

The National Recovery Act, however, has prepared a legal background and moulded a public sentiment that makes possible the outlawing of the "lower-than-cost" bid. I can well appreciate the sentiment of the representatives of the general contractors when they offered to subdue all other contentions if their code could include a clause to "prescribe bidding rules, requiring the inclusion in each bid of all direct and indirect costs, properly defined, etc." Such a bidding arrangement is, I believe, the cure of an ailment as old as the construction industry.
However, the development of a method for the awarding of public construction contracts that will reflect all the principles of the National Recovery Act and deal justly with both public and industry is truly a difficult matter. The A. G. C. group, which with Mr. O'Connor has been so tirelessly working, has given a lot of time and thought to this problem. I am sure they have not considered lightly the leading part the federal government has assigned them in the solution of this national crisis. Surely it is not necessary that I explain the fact that the construction industry is truly a medium for the distribution of the vast federal fund for relief and recovery. If we are to live up to the responsibilities assigned us, we will not develop a method for the allocation of public contracts that can in any way shake the public confidence.

It is my personal conviction that the average of the bids below the average bid is not a just approach to a minimum price for which a given project is to be awarded. For the contractor, the incentive to be low is gone, and without that incentive, the letting appears to me to become a drawing. When the contractor presents a carefully prepared bid to such a procedure, its consideration is certainly inconsistent. I will grant that this method is a fair one for the selection of a bid other than the low one, but I do not see that it can serve as a corrective measure in line with the principles involved. Further, in its application I can see where conditions will arise that will become very questionable to the public interest. I don't believe that the comparative values of the responsibilities and equities of the bidders can be measured by the average end area method.

Mr. O'Connor has stated that if it is reasonable to have the awarding body fix a maximum estimate, above which no award will be made, it is just as reasonable that by the same reasoning they shall have a minimum estimate, below which they will make no award. I can find no flaw in his logic. The engineer's estimate of the past was evidently designed by law to protect the public against awards that involved excessive profits. In the old order of things, it was not considered necessary to prevent industry from working at a loss if it so elected and bonded itself to do so. If our local laws can be modified to recognize the principle of the N.R.A. before-mentioned and if a legal status be established for minimum bids, I can see nothing impossible or impracticable about it.

I believe that the minimum estimate should be an estimate of cost only, so that any bid in excess of it should be deemed profitable. I will acknowledge that such a system would put the estimator "on the spot" but there is nothing unusual about that position for the public official. I believe that the maximum estimate has truly served us a just protection for the public's interest and I can now see no reason why the mini-
mum estimate would not serve as just as equitable protection of both the interests of public and industry.

In this discussion, thus far, I have deigned to both agree and disagree with the speaker, but have confined myself entirely to the discussion of ideas original with him. However, I would like to submit to the group one idea of my own origin, to give Mr. O'Connor and others the opportunity for some healthy cross-fire.

Referring again to the one clause that the contracting group have described as the one most desirable, and granting that it does become a part of the approved code, I quote, "It may prescribe bidding rules requiring the inclusion in each bid of all direct and indirect costs, properly defined, and method for administering such rules and the same, when approved by the administrator, shall apply to the respective sub-division proposing the rules."

When such a clause does become code and "all direct and indirect costs" are "properly defined," a uniform cost-accounting system truly becomes possible. The word "cost" can finally emerge from its hiding place and mean the same to all individuals.

I propose that a new form be developed that will include, for each important unit in the contract, all of the elements of "direct and indirect cost" based on their code definition, and that this form be made a part of every contract proposal. By this means, every bidder will be presented with the same elements of cost for consideration in the preparation of the bid. He will no longer be able to forget, and his conception of direct and indirect cost will be before the awarding official when his bid is being considered.

The awarding official, armed with the principles of the N.R.A. and of the code, can compare such calculations with those of the public estimator, can confer with the bidder where conference is necessary, and after due deliberation of such data, can intelligently award or reject.

It might well be contended that the elements of any individual bid are the trade secrets of the bidder, based on his own investment in past cost-accounting and on the development of judgment from his own experiences. True as that may be, such possessions are only a handicap when operated in a competitive market, not uniformly so equipped. Further, exposing the costs of one to another does not infer the right to use them. They are the measure of organization efficiency, and the fact that your organization developed certain costs under certain circumstances is no guarantee that mine will perform likewise. Consequently, I don't believe we have much of value to conceal, but I do believe that the general benefit to be gained will far exceed in value what the individual might lose.
Before I close, I want to add a few words on the subject of code enforcement. I do not believe that it is the function of the public official to act as the code policeman for every industry with which he comes in contact, nor do I believe that he has a right to interfere with the proper operation of any code. By this I mean that it is not the function of the public official to clothe himself with the authority of judge and jury and pass judgment on what shall constitute a code violation. It is my understanding that code authorities have been created for that purpose. I still retain enough "rugged individualism" to believe that any industry operating under code that permits itself to suffer from a known ailment can not mandate my services as a guardian. However, I do contend that it becomes the duty of the public official to recognize the positive action of code authority. Also, I further contend that cooperation should be extended in the form of reasonable delay whenever written notice is given that action of code authority has been requested in a specific instance.

In conclusion let me state that I can think of no matter pertaining to the construction industry that is of more importance than the considerations that we are discussing. They are worthy of the best minds and the best efforts that the personnel of the industry affords. And I know of no better setting for ideas and ideals of the construction industry to emanate from than the campus of Purdue University. Let your discussions be unconfined.

TESTS OF VARIOUS TYPES OF GUARD RAIL
By P. J. Freeman, Consulting Engineer, Pittsburgh Testing Laboratory, Pittsburgh, Pennsylvania

In the early days of horse-drawn vehicles, some thoughtful person placed long poles or rails at dangerous spots along the roadways and thus made the first highway guard rail.

The term "guard rail" is used by many engineers to mean any type of barrier which may be erected along the side of a road to prevent a vehicle from leaving the roadway. In a report made in 1931 by a committee of the American Road Builders Association, the term "guard rail" includes earth embankments, boulders, wooden posts, planking, logs, wire cable, woven wire, steel bars, reinforced concrete, and metal plates. The term "highway guard fence" is commonly applied to cable railing, but this term has less general application than guard rail.

Combinations of rails or planks were quite adequate for the protection of early users of automobiles, and no serious attempts were made to improve the construction of such guard