

PREQUALIFICATION OF BIDDERS BENEFITS PUBLIC

By Thomas H. MacDonald
Chief of United States Bureau of Public Roads,
Department of Agriculture

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You have asked me this question: What constructive steps have been taken to improve conditions in the production of public works, with particular reference to the production of highways?

The apparent attitude of the public, so far as I have been able to understand it in years of public service, is to demand contractors and engineers who can satisfactorily complete public works contracts, within the specified period and at reasonable prices. We approach neither of these two desirable ends by talking in a general way and so this morning I will confine my remarks to a few specific propositions.

In the years of Federal Aid since I have been connected with the Bureau of Public Roads, we have had something over 18,000 projects, involving more than that number of separate contracts. Practically all of these contracts have been satisfactorily completed. There have been very few, proportionately, that were not satisfactorily completed in the end. We have paid out over \$800,000,000 for Federal Aid highways and bridges through the States; more than \$68,000,000 for forest highways; and \$11,000,000 for National Park highways, through the organization of the Bureau. With an expenditure totaling nearly a billion dollars, we feel that we know something about contractors and their methods. It is a pleasure to be able to say there prevails throughout our organization an appreciation of the work and of the service that the contractors have given to the production of public roads in the United States; and further, without the hearty cooperation, loyalty, and spirit of public service that the contracting industry has put into this business, we would not have been able to make the progress that we have.

So that on the whole, my message is one of gratification and congratulation to the contracting industry, including both the material and the equipment men, as we all have a great appreciation for the remarkable development of modern construction equipment which has taken place.

We receive each month from our districts, which cover all of the United States, a statement as to Federal Aid projects which are unsatisfactory - on which progress has not been such as to complete within the time limit. For the present fiscal year, the cumulative reports show that the reasons for unsatisfactory progress, as detailed by our engineers in the field, have been:

Labor shortage	0.5	per cent	
Materials	1.2	"	"
Inadequate equipment	8.2	"	"
Financial	1.1	"	"
Management	52.7	"	"
Weather	26.4	"	"
Construction difficulties	6.0	"	"
Cause not stated	2.6	"	"
Preliminary difficulties	0.3	"	"
Legal	1.0	"	"

As you see nearly 75 per cent of the reported reasons for unsatisfactory progress revolve around the two items of management and weather. One of these can be largely controlled, while no contractor can entirely eliminate some of the weather vicissitudes. In approaching the question, this report in summary perhaps does not absolutely accurately detail the real reasons for delay in completion of work, but we regard it as reliably indicative.

There are two or three different lines of endeavor we have been promoting which we feel are directed toward the elimination of some of the difficulties of management, and may extend to obviate some of the slowing down due to the weather causes. I refer, first of all, to this matter of prequalification of bidders.

As one of our engineers suggested, the right to bid on public works seems to be a matter that the public feels is an inherent right of citizenship, along with the right to vote; and that any public official who dares to take the stand that a contractor ought to be reasonably qualified to perform before he bids upon a contract, large or small, is in some way entering into and intrigue to stifle competition. There can be no competition of inefficiency and efficiency, or between inefficiencies, that is helpful to the public. The only competition that can be helpful to the public is the competition of efficiency. And in the forest road work, and in the National Park road work we have for three years prequalified the contractors. The details have been well reported at other meetings, and I do not intend to go into the subject at any length. But I give you the results of the last two years.

In 1928, we had 193 applications for prequalification blanks; and from that number qualified 189. The truly wholesome effect of this qualification of bidders seems to be that the man who is not financially qualified or properly equipped to conduct a contract comes to that realization when he quietly faces one of the prequalification blanks before he has put in a low bid. In the old days, as you know, the awakening came sometimes after making the low bid. Neither he nor the public official knew what to do about it, because after a low bid is once recorded in the minutes of the public body and repeated in the press, the public looks upon it as a nice juicy plum just within reach. If the public official takes it away by saying, "This man can't do the work at these prices - can't possibly do the work at these prices", the public mind at once is turned questioningly toward his veracity. So the public official in self protection hesitates to turn down the low bidder. Consequently, he is in a much better position if he never receives an unreasonably low bid than to have it entered on the record. There will always be those who feel, "Well, maybe we could have gotten satisfactory work at those prices," regardless of their impossibility.

So the important point to prequalification is that the man who would bid upon work faces the issue of responsibility before, and not after he has put in his bid. This seems to be all of the limitation of competition that is involved. In 1929 we had 276 applications for blanks, and qualified 262. In other words, in two years, only 18 applicants for prequalification were turned down; which was less than 4 per cent of the total number who applied.

With this record, I believe no one can truthfully say that prequalification limits competition. As I remarked before, there can be no competition that is of advantage to the public when inefficiency with inadequate equipment and inadequate financial resources is placed in competition with efficiency, adequate equipment and financial responsibility. The public would never benefit from competition of inefficiency with efficiency and the awarding of work to the inefficient contractor rather than the contractor who can and does satisfactorily perform his undertaking.

Better Competition Under Prequalification

After prequalifying contractors, we received in 1928, 470 bids - 1929, 393 bids. The average number of bidders at each letting in 1928, was 4.7, and in 1929, 5.4. In other words, five contractors bid for each job in each of the two years. There was

only one default in each of the two years. In 1926, the first year preceding prequalification, we had six defaults. It seems to me that on the basis of the facts as I have given them, we need no other arguments for prequalification. We have also pretty well exploded, with the prequalification experience, the idea that any contractor who can furnish a bond is a properly equipped contractor.

In common with many other public officials, I had reached the point several years ago of doubting whether we ought to continue to demand contractors' bonds. That is, we had come to the point where we were about ready to break away from the old established idea that the public should be protected by surety bonds, and to set up some other form of protection that would be less abused. There are today some conditions which are to be eliminated. May I say to you contractors assembled, that no contractor taking a Federal Aid contract has to take a bond from any particular company in any State in the Union. We occasionally get information that agents of bonding companies are trying to control contracts. They cannot control Federal Aid contracts in that way - if we know it. And I believe that the contractors ought to have enough backbone to pass the information along to us if any attempts of this kind are made.

Bureau of Contract Information

The best movement that has taken place to reinstate contractors' bonds to a favorable position in the minds of public officials is the establishment of the Bureau of Contract Information, under the general auspices of this organization. We will make progress by getting the facts, by the work that will be done through this Bureau, and I am very much pleased with the support that this work is receiving from those who are in the position to give contract information in detail.

It seems to me that with the facts which are collected and made available through this Bureau to the public official and others entitled to them, we will eliminate the inefficient contractor to a considerable extent and will help to stop some of the practices which very nearly destroyed public faith in contractors' bonds themselves. As I say, there are still some spots to be cleared up in that field, and I only hope that the contractors will, through their own bureau and in other ways, help to weed out practices that are bad.

For example, we have a suit pending against us right now, brought by a bonding company on some work conducted by the Bureau

of Public Roads in the days before pre-qualification. It was in the days when every contractor who could get a bond was a qualified contractor. We didn't want the contractor - he was not a real contractor, he had neither the equipment nor the financial backing to support the job. He was able to induce a poor fellow to go into partnership with him and supply some financial backing, and had a bond written by the company which is now suing the Government, through an agent whom it had expressly forbidden to write the bond. So, the bonding company, through the act of the agent, gave itself a contractor that it did not want, and gave the Bureau of Public Roads a contractor that we did not want. Nobody was pleased, unless it was the agent who got the commission on the bond, and as far as I know, he is the only one who made any money out of the deal.

And so, when I speak of bonding practices, I am not speaking of practices which may be ordered by the bonding companies themselves. There are bad practices which grow out of a failure to control the agents. The companies who issue bonds are responsible for their agents and must bring them under control. While there is no criticism of agents who earnestly pursue the business of writing bonds, we do not want these same agents engaging in the contracting field in attempts at political manipulations or otherwise blocking public officials in their efforts to conduct public lettings in a clean cut and wholly fair manner.

Studies in Construction Management

In the setting up of the management studies being conducted under Mr. Allen of the Bureau we have taken a step that will be helpful in establishing better relationships between the contractors and public officials and their engineers. The Bureau established these management studies with the idea of training young engineers to a greater understanding of the difficulties of production and the adequate methods by which to produce work to secure a supply of such men to feed our engineering organization. It has been a time honored custom, as you know, to start the engineer at the end of a transit and level, or pulling a chain, or over a drafting board. We have rather reversed this idea, and are starting our young engineers in the field, studying in cooperation with the contractors and the engineers in charge of the work the production of each part of the work in relation to the whole.

So we start our young engineers, each year, in the business of studying the production of roads and the contractual management. Referring back to these causes for inadequate progress on Federal aid projects, management is listed as bearing the burden for over half of the slow or unsatisfactory progress.

Each year we pick out from the colleges twenty or thirty young men and, in cooperation with contractors who are interested in studying their own organization, we place these young men on the job to study each operation; to study the equipment relative to the key equipment on possible production. For example, in concrete road production, the amount of concrete that the mixer can produce is considered the key to the plant production. We estimate the amount of concrete that can be put through the mixer with efficient management and against this measure the progress in all parts of the work.

Equipment Idle 40% of Time

Some of you know of the results but it may surprise some that in a very careful study of more than 100 concrete jobs, we found that the contractors' equipment, due to major delays, that is, delays above 15 minutes each, was idle 40 per cent of the time. This was due to major delays, and take account only of the time elapsing after the crew was on the job and equipment assembled and ready to work. We found further that the second class of delays, the minor delays, amounted to another 16 per cent of the time. So you see that today the bids really are necessarily based on somewhere around 50 per cent of the efficiency of the key equipment.

This does not mean that we are able to get 100 per cent production; so it is not fair to use such figures to say that the contracting industry is only 50 per cent efficient. For example, just to illustrate the matter of major losses on concrete road production.

Causes of Delay

Rain accounted for $9\frac{1}{2}$ per cent - this is an average for about 100 jobs, which varied all the way from inefficient jobs up to jobs that ran 90 per cent efficient, and wet subgrade, 8 per cent. You see, there is $17\frac{1}{2}$ per cent that probably could not be avoided. Lack of prepared subgrade - which could be avoided, 3 per cent; lack of materials, which could be avoided, $3\frac{1}{2}$ per cent; moving plant set-up $3\frac{1}{2}$ per cent; inadequate supply and faulty operation of hauling equipment, 3 per cent; mixer trouble, 2 per cent; lack of water at mixer, 2 per cent; loading plant trouble, $1\frac{1}{2}$ per cent; miscellaneous causes, 4 per cent; a total of 40 per cent, all exacting delays more than 15 minutes each in length. I am not going into that subject further. I am only giving you this as indicative of the policy which we are pursuing, of attempting to feed men into the engineering organization of the Bureau of Public Roads after a training on production.

You will find through my talk that there has been no attempt to say that the engineer is perfect and the contractor is always wrong. We knew that while there may in some cases exist a feeling, sometimes on one side and sometimes on the other, that the other side is one hundred per cent wrong, after all the causes of difficulties are probably about equally divided. For example, until we started these management studies, we had not appreciated - and I confess it with some chagrin - that we may design a road so that the contractor with proper equipment can produce efficiently, or we make it impossible for him to use his equipment - any given equipment, efficiently. That is, we may design the cuts and fills so that the length of hauls so vary from day to day, that the number of wagons necessary to keep the shovel busy one day may be too many or too few the next. The contractor then is bound to compromise, and to have his whole equipment operating something under its efficiency, due to poor design by the engineer.

Engineer Must Design for Efficiency

We cannot charge such results to the contractor if the engineer does not design the work so that the contractor can, with any given equipment, build efficiently. We have a long way to go in the engineering field to design with efficient production in view. All of these matters reach into important possibilities of reducing costs of public works production. Each of these - the prequalification of contractor; the eradication of the incompetent, inadequately supported contractor; better bonding practices that we are getting through the information supplied through the Bureau of Contract Information; the study by the engineers of their design for proper execution by the contractor; and the bringing of men into the engineering field who know the contractors' problems, sympathize with him, and can be helpful in solving them, are important advances toward better public service. These thoughts are expressed as the thoughts which we have with us all of the time in the conduct of this Federal Aid work. We appreciate that with the increase of \$50,000,000 in the Federal appropriation for this year, we must have the friendly and vigorous cooperation of many more contractors than we have had before. We hope for attractive prices, of course, but we want to get these prices attractive to the public through efficiency of production, and not through loss to the contractor, or by throwing the work back on the bonding companies to complete.