

owner's. Unit prices and specifications should be more definite. The question of custom between contractor and owner should be eliminated. The contractor should have better data on which to base his bid. There has been a growing custom not to pay as much attention to the contract as to customary settlements. I believe that much better results would be obtained if the contractors would insist on the contract and specifications being followed, and if conditions should arise when the intent of the contract would be materially affected by having a definite understanding as to price and conditions before going ahead.

Progress Dependent Upon Incentive

Under past conditions work has been suddenly authorized with no time given either the engineer or the contractor to determine costs or make intelligent bids. A much smaller margin between the estimate and the actual cost of work would result if these conditions could be known. The risk of the contractor would be much smaller, and the owner would have more definite knowledge of what his work would cost.

An agreed price, varying with the percentage, has many good points when the work is simple and conditions are such as to permit of it, but it could not be used very well on railroad work, for instance, unless the conditions were properly determined beforehand; and right here is where the owner or contractor can greatly improve present methods by determining unforeseen conditions.

By the percentage method the contractor has few financial troubles to overcome, no particular inducements except pride to introduce new methods or tools, no sleepless nights to figure out some new scheme for the next day, no surplus energy to exert in himself or employees. The employee, knowing that his superior is not in financial troubles, does not exert himself unnecessarily. The contractor does not, perhaps, try new methods or new tools, as he may think he has no right to risk a failure. On the other hand, the unit price men must take the risk, and bend all their energy to make it successful.

My point is this: That these necessities of the unit price men have produced a personal result that could not otherwise have been acquired, and that as soon as the incentive is eliminated, progress will slow down, if it does not actually retrograde.

There is no question but what there are men doing percentage work that are just as competent and perhaps just as energetic as the unit price men, but I claim that it is because of the state of the art and its personnel, and due to previous efforts of the unit price men.

The main objections to the unit price methods are that in instances contractors make too much money, and that the percentage method will eliminate that danger.

Frequently, a large profit is due to the fact that a contract was taken on a high market and the work done as the market fell. If the reverse condition obtained, there would have been a loss and no comment made.

Unit Prices Decreasing

It has seemed to me the best way to determine the amount of money made by contractors is to consider the work done here in the Northwest for the last forty years, and then to determine the wealth of the various men who have been engaged in that business during that time, and who have not made their money elsewhere. While it is true, perhaps, that in individual cases owners have to pay larger sums than by a percentage method, I do not think it is generally true.

It seems to me that the great results of the unit price method is the fact that during the last forty years, under normal conditions, unit prices have decreased in the face of rising values of labor and material, and have produced a class of men who, when the emergency came, were able to accomplish things that did not seem possible. If you give up the unit price or competitive methods, it is going to result in one of two things: You are going to have a lot of superintendents, or else you are going to have only a few

great, big contractors. In pioneer work sometimes a lot of money has been made. I have seen that in offering work and asking for proposals a number would look it over and make their bids, but some fellow would know the conditions better than the other, and know how to save a lot of money and time by knowledge of those facts. However, he would go in and make a good big bid, and the owner would accept it, and the consequence be that he would make a lot of money.

There is, of course, the social side to consider. Will labor, as a rule, be better compensated or its welfare enhanced by either method? Personally, I do not think so, as welfare is a matter for legislation, and compensation must be determined either by the market or by legislation.

There is a growing disposition all over the country to eliminate competition, but it seems to me that the better results will be obtained only where competition produces waste, but not where it is a creator of new methods, inventions and energy.

FINANCING OF HIGHWAY IMPROVEMENTS*

Maintenance from Motor Fees—Direct Appropriations and Special Assessments—Bond Issues Becoming Popular

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THERE are eight distinct sources of road revenues. These are: (1) Personal taxes paid in labor and by an arbitrary annual fee, known as a poll tax; (2) direct property taxes; (3) proceeds of registration and license fees on motor vehicles; (4) direct appropriations from general treasuries; (5) special assessments on property in road improvement districts and against property abutting and contiguous to a designated road; (6) sale of bonds; (7) appropriation by the National government; (8) collection of tolls, and (9) miscellaneous sources, such as sales of lands, profits from state industries, taxes on corporations, sale of permits, etc.

It may appear from the foregoing that the public road reaches all of the possible sources of taxation, and, theoretically, this is true, but, practically, the general trend of road finance is toward a reliance upon direct property taxes, motor vehicles revenues, sale of bonds and Federal appropriations. The other sources are incidental and quite local in their application.

Statute Labor Sometimes Suitable

The labor tax has been ridiculed and condemned at every good roads meeting during the past decade. It is unquestionably an inefficient and wasteful method, both of paying taxes and building and repairing the road, but it is probably the lesser of evils in localities where a large proportion of the population holds little or no property, is thoroughly accustomed to manual labor as tenants of farms and plantations, and can only be reached effectively for the performance of civic duties through the imposition of a tax upon their manual rather than financial capacity. I should consider, therefore, that it might be desirable to consider the retention of some form of statute labor tax where the local conditions are such as I have described.

The direct property tax for road purposes probably will always be necessary, both as a source of revenue and as a means of reaching all beneficiaries of road improvement, but many reforms and improvements are necessary before this method of finance can be held to really serve its purpose equitably. It is well known that the ratio of taxable to actual value varies not only among the states and provinces in a wide degree, but in many of the states there is a wide variation among the several counties. Manifestly, if a state or provincial tax be levied for road purposes and

*Address before State Highway Officials.