Court of Appeals held that the plans of the completed grading contract on file in the city offices did not constitute a representation to bidders of the condition of the road bed and hence the paving contractor had to do this work of grading without extra compensation.

Let us, then, have definite contract units of work at unit payments clearly specified, and provide payment for any other work necessary which may arise either at the unit prices or, as is becoming popular, upon a percentage basis. This latter method seems a fair means of providing for extra work as hereinbefore defined but the contract must specify exactly what is to be considered the "cost" upon which the percentage is based, as there is great difference of opinion on the subject. For example, in one state, the statute provides for certain construction work at cost plus 15%. There being no provision against subletting, the actual work was done by subcontractors at a fixed price. The "cost," as sustained by the highest court, included the cost to the contractor for the work as agreed and paid to the subcontractor, the contractor's overhead expenses for supervision, engineering, office rent, etc. In this way the state actually paid 53⅓% on the actual cost of labor and materials at the job which is the popular conception of the word "cost" in percentage contracts. The rules of law applicable to percentage contracts are the same as those to the ordinary lump sum contracts. Under proper contract conditions with definite plans and specifications and with honest officials and contractors, contracts on the percentage basis of "cost of labor and materials at the job" would, in my opinion, give as wide scope for competitive bidding and should give better results in actual construction work. It should do away with many of the conflicts now common between the official, the engineer, or both, and the contractor. The tendency would also be to give closer competition between the large corporation with heavy overhead charges and the small concern with practically no such expenses. There would seem to be no question but what in the long run this would be less expensive to the municipality because it would tend to cut out the contracts with enormous profits and at the same time lessen the broken contracts because no contract should be given out for less than the defined "cost" price. This is merely a suggestion in passing, but I should like to see it given a fair trial.

Duties of the Engineer.—Under most of our road construction contracts the engineer takes his time-honored dual capacity of agent for the state or municipality and arbitrator between the contracting parties. It has been noted that if the contract provides that the engineer will make an estimate and issue a certificate he will often do so where he may refuse if such wording is not used. There is no question but what the engineer is given too much "discretion" under our present contracts. In road construction work there would seem to be no excuse for a lack of definite plans and specifications which of themselves should reduce the engineer's discretion to a minimum.

There always will be objections to the salaried or paid engineer of a state or municipality acting as an arbitrator without appeal as is the result accomplished by practically all state and municipal contracts. Upon the wording of such contracts some courts have even gone to the extent of holding the contractor but not the state or municipality bound by the engineer's decisions within the scope of his authority. Clearly such a result is unjust. In addition to this, state and municipal contracts are so replete with oppressive or "club" clauses for the engineer that a contractor knows he must take care of that official one way or another. It has been well said that no man should be placed in such a position where bribery and graft is often the easiest and cheapest solution of differences or disputes. Whether or not the engineer is an arbitrator depends upon the strict wording of the pertinent clauses of the contract. All such clauses will be strictly considered and no implied powers will be given the engineer. Where an engineer is made an arbitrator he must remember that he has greater powers than the judges on the bench, because he may intentionally decide contrary to the law and still have his judgment stand. On this account an engineer's decisions should be beyond reproach. The fact that in the exercise of his duties as arbitrator he cannot be held legally responsible for lack of skill, carelessness and even negligence should create an ambition to merit the honor bestowed. The engineer should never forget that he is, under present day clauses, taking the place of the court and that his action may close the door to either party to appeal from his decision. Professional honor and reputation often depends more upon the engineer's action in such matters than upon his pure engineering knowledge. However, the engineer must know that he cannot ordinarily deprive the contractor of his right to judicial construction of the contract after it has been performed so far as such construction involves matters of law. These considerations show us that the engineer holds under our present day construction contracts an almost impossible position for a human being. Would it not be better to relieve him of some of these onerous duties? Experience seems to show that better feeling, better work, and co-operation between the engineer and contractor may be secured by more precise, concise and definite plans and specifications, and the elimination of all unnecessary "discretion" and "arbitration without appeal" clauses respecting the engineer.

Construction of Contracts.—Since we cannot expect any sudden change in present road construction contracts, this paper would not be complete without a statement of some of the most general legal principles which should govern the actions of officials and engineers even if the contractor cannot sue or get a fair hearing for his side. Since all state and municipal contracts emanate from the contracting official the ordinary rule is that the contract provisions should be construed most strongly against the author. Especially is that so when such construction is necessary to save a contractor from fraud and injustice, or where, as in these contracts, one party is at the mercy of the other. The following instances where municipalities have been held responsible in damages on account of the actions and orders of officials and engineers should be known and avoided:—

(*a*) Mistakes in lines, grades, elevations, plans or specifications or directions whereby the contractor had either to do additional work or do over work already done.

(*b*) Requirement that the contractor do the work in a way not called for by the contract, entailing more expensive work than would customarily or otherwise be entailed.

(*c*) Requirement that the contractor do over work already done properly or repair or maintain the same unreasonably.

(*d*) Requirement that the contractor do work not within his contract as contract work.

(*e*) Refusal to permit contractor to perform work called for by his contract.

A substantial performance of a contract creates a situation where the contractor is entitled to his full con-