the benefit of our communities. If we recognize that the needs of our communities are not properly served by strictly refusing to order extras, and that to order extras a contractor must be paid, generally at no competitive unit figure, it is not hard to see that sometimes their use may become a means of raising our costs of construction. In fact we know that in certain branches of construction where competition is keen and jobs are being let at unit prices that do not permit of a profit to the contractor, his sole hope of profit is based on extras. Our plans and specifications to promote economy must be complete and accurate to eliminate extras so far as possible.

In the construction industry as elsewhere we have men of high calibre, honest, true, skillful, and responsible. This type is an asset to our communities. Only through the tactics exercised by such men is true economy of construction ever to be realized. If our plans and specifications are loose and incomplete, allow substitution, short weight, slovenliness, and other forms of price cutting, our action in their preparation is a direct blow at the worthy contractor, whom we should foster and encourage, and allows an opening for the unscrupulous. The lower price which we might obtain from the unworthy contractor is invariably offset many times over by the cheapened product of his creation. It is our duty to protect our communities against this type of economy.

The dishonest, cunning, and careless contractor with his apparently lower prices should have no opportunity to exercise his accomplishments; and the only way to see that this is the case is to make it impossible for him to work his tricks. Open competition by worthy contractors on a definite, accurate, and complete plan is the ideal toward which we should constantly strive. This ideal is sometimes within reach, but my experience of nearly fifteen years as an engineer has never yet quite yielded the apple.

HANDLING INSPECTION ON COUNTY ROADS

By Adolphus Cameron, Rush County Surveyor

In order that an inspector may be most efficient, he must be able to read, understand, and interpret the plans and specifications correctly. He must necessarily be intelligent and honest. But before the inspector can be expected to assume his responsibility as such, plans must be made plain and specifications must be written in intelligent, clear, definite, and complete form with no details lacking. Even before desirable plans and specifications can be prepared, the engineer should have every possible detail of construction clearly in his own mind.
The engineer should go over the plans and specifications with the inspector in a general way before the construction starts. I usually go into the minute details with him as they develop. I find this practice very helpful to the inspector. As time progresses he is growing more familiar with his new work. I say new work, for this generally his first and last job as inspector, as there are always a number of petty politicians awaiting their turn for some appointment. I do not expect the superintendent to grasp the whole situation down to the last detail by reading and studying plans and specifications before construction begins. As the work progresses he grows more interested (or should) and is being educated and qualified for his duties. But his proficiency is usually cut short by completion of the construction of the one job to which he was assigned before his graduation. Now that he has shown his desire to improve his ability to protect the public interest, he has likely lost his usefulness for the purpose for which he was originally appointed (a political or a selfish purpose), and, therefore, has lost rather than gained by his honest effort and willingness to do the right thing.

To be able to handle inspection successfully, the engineer's and inspector's views and purposes must be of one accord. Each must gain the confidence of the other, and of the contractor as well. To accomplish this, they must convince everyone concerned of their sincerity and honesty of purpose. To be sincere you must live sincerely. To be able to handle inspection successfully, the engineer especially should know human nature thoroughly.

If they are able to understand each other thoroughly, then the engineer's responsibility will be lighter and co-operation easier.

**Selecting an Inspector**

The definition of "inspect" is "to examine closely or look into minutely." An inspector is one who makes an examination. In reference to the construction of a county road, the inspector is the superintendent or overseer. He should be responsible to the engineer, should report daily to the engineering department whether the nature of the work and the material used in the execution of the contract fills the requirements according to plans and specifications.

Under our present practice the inspector secures his position by appointment through the board of county commissioners, and it usually makes little difference whether he has had any previous experience or not. Generally the reasons why a man is appointed to fill the position (in our county at least) regardless of his qualifications are that he heads the petition, that he is in need of the compensation for such service, that he is a friend or relative of one or more of the commissioners, or that he is a great political worker in the particular
district or township where he resides. Numerous other rea-
sons may be given.

Each inspector has traits of character and disposition dif-
ferent from those of others; hence, if the county surveyor is
not a good student of human nature, he must necessarily spend
time and money to get acquainted, if he gets acquainted with
him at all.

If a qualified inspector were selected from the county sur-
veyor's office force, economy could be practiced from the start,
for the engineer and inspector would understand each other
and have similar views regarding the work. Under the pres-
ent practice the inspector may be ignorant and incapable of
reading and understanding plans and specifications; he may
be willful or headstrong and hence not open to conviction; he
may be dishonest; or he may be a political manipulator. The
latter type of inspector has been my greatest obstacle, as I
happen to represent the political party in the minority in my
county. Like conditions may exist in other counties.

All of the fault and lack of co-operation does not lie with
the inspector. The commissioners themselves are often to
blame. Do they always make the appointment to guard the
public interest, or for their personal or political interest?
Every public officer should be a public servant. After election
each officer should ever keep in mind that his first duty is con-
scientiously to serve the people rather than a political party
or selfish interests. At no time in public work should he favor
an individual or group of individuals at the expense of other
taxpayers. By such action he may betray a public trust for
which he was elected and which he has pledged himself to
fulfill.

In many cases, lack of co-operation between the county sur-
veyor and the inspector as they are now appointed by county
commissioners is present.

I recall different times when the county surveyor was not
consulted by the commissioners at the time when inspectors
were appointed. Of course such consultation is not specified
by law, but lack of co-operation at the time of appointment
may result in much discord and prove expensive to the tax-
payers.

If the surveyor had the power to appoint an inspector, pref-
errably one of his experienced and qualified men or his deputy,
as a superintendent of construction, the taxpayers would profit
materially. The result of our present system may be noticed
in the expensive maintenance of those highways constructed
and accepted by the commissioners under incompetent inspec-
tion.

The county surveyor is a constitutional officer without any
well defined field of action—a qualified officer to act as directed
by others. No other county officer is so circumscribed. The
surveyor is, by statute, only the servant of the commissioners
or private individuals. Prior to 1911 there was nothing in the law to prevent the commissioners employing an outside engineer to handle county work. In that year a law was enacted giving to the surveyor, if competent, the legal county work. More recent legislation has placed him on a salary. By logical inference the legal status of the surveyor by rights should put him at the head of all county public work in which taxation figures or the public is concerned.

Every separate county officer should have assigned to him the exclusive conduct of all affairs properly connected with his office, thereby preventing duplication of duty and mixed responsibility. If such work requires assistance, then such county officers should be legalized to employ deputies properly to perform the service for which the taxpayers pay and to which the public is entitled. A divided responsibility is dangerous and costly.

But the most costly, most neglected, and sometimes most poorly handled county affairs involve roads and drains. Miles of each are rendered useless every year because “orphaned” by divided responsibility.

You may ask, “Will a surveyor in exclusive charge make matters better?” Yes, for what is a man’s exclusive business is rarely neglected. At least responsibility could be located, and the people are not slow to correct a grievance when once they find the cause.

SURFACE-TREATED GRAVEL AND RETREAD ROAD WORK

By Kenneth Sparks, Grant County Highway Superintendent

Indiana is proud of her system of gravel and macadamized roads developed during the past generation until they are the envy of our neighboring states. These roads have served the traffic they were called upon to bear. With such a large mileage of these improved highways, traffic seldom finds it necessary to use mud roads. We have almost forgotten what mud roads are in Grant County. Our system of gravel roads has expanded until today we have over 900 miles. Almost all of the roads in our county are improved with stone, gravel, or some higher type of surfacing.

The taxpayers provided the money to build these roads and we are proud of them. Maintenance under horse and buggy traffic was simple and economical. We added a little new gravel occasionally and we honed the surface smooth with a horse drag or grader so that it was pleasant to travel. The road was entirely satisfactory and the maintenance cost was modest. Our highway problem seemed to be solved.