

ter relations and understandings. Contractors know that friendships are cemented in play. We should know that play is sometimes costly and that few engineers can afford a great outlay along these lines. The contractor or materialman, being usually the more prosperous, is inclined to foot the bill. All this can be with the best of motives. We can any of us see that since the contractor is more prosperous, it is perfectly natural for him, with his more expensive tastes, to take his young friend along with him and foot the bill, which in moderation may be perfectly proper. Nevertheless, for the young engineer to throw aside all restraint and allow himself pastimes he can not afford, and at the expense of others, soon places him under obligation. This predicament can be most destructive to his good intentions of conducting himself in his official capacities in an unbiased and aboveboard manner. Such a predicament can and often has defeated the young engineer in meeting his obligations, both to the public and to the contractor. Such a predicament can haze his mind and otherwise unfit him for his duties.

As a useful creed for the engineer I have copied one which applies to him equally well in his relations to contractor and public; one which I found in the "Monad" when I was a young fellow in the army. I keep it handy to freshen my memory.

"The honesty which is unswerving,
The truthfulness which abhors a lie,
The helpfulness which lightens the burdens of life,
The human sympathy which gladdens aching hearts,
The honor which scorns to take a mean advantage,
The courage which always dares to do right, and
The courtesy of kindness."

WHAT CONSTITUTES AN ADEQUATE RIGHT OF WAY WIDTH FOR COUNTY ROADS?

By George R. Harvey,
Hendricks County Surveyor

I do not believe that it is possible properly to construct a county road on 30 feet of right of way. Of course I realize that certain laws have been passed by the legislature and are now in force which have influenced the adoption of the 30-foot right of way by some of the counties. The road supervisors' law permits counties to take over township roads of a minimum width of 30 feet. In some counties the county commissioners are opposed to the idea of requiring the owners of abutting land to set their fences beyond this limit. In fact,

this law, where it was intended to fix a minimum, has had the effect of establishing a maximum right of way.

Another thing that has influenced the adoption of this width is the fact that in many cases petitions filed for the improvement of roads attempt to limit the width to 30 feet. I have known of cases where owners of abutting land refused to sign a petition unless this width was stipulated.

However, the law as laid down by the supreme court gives the viewers the right to fix the width of the road in question, and if any of our counties are handicapped in this respect by the decisions of local courts and are desirous of getting away from the 30-foot right of way, I think they would be justified in spending enough money to get a decision from the higher courts on this question.

The plans for the improvement should be completed before attempting to fix the right of way width, and in order to get a clear idea of the width required, the plans should include accurate cross-sections at intervals not exceeding one hundred feet and at all grade crossings.

If we adopt a subgrade width of 24 feet, which in my opinion should be the minimum on any road, and if we construct the flow line of our side ditches at an elevation 24 inches below the subgrade at the center line, and if we use a $1\frac{1}{2}$ to 1 back slope on the cuts and fills (which is also good practice), it will require a 38-foot right of way for our cross-sections where the adjacent land is level with the finished subgrade at the center line. For every foot of cut an additional 3 feet of right of way will be required for the back slope. A 4-foot cut would, therefore, require a width of 50 feet on which to construct the road to accommodate the cross-sections at this point.

Now, if we establish a fixed right of way width of 40 feet in the viewer's report, we are limited under the law to that width. If the road is built according to the plans and specifications, at all points where the cross-sections require more than 40 feet we must encroach on private property in order to comply with them. Unless the owner of the abutting land is generous enough to set his fence beyond the established limit of the road the contractor can not build the road according to the plans.

Therefore, I am of the opinion that in establishing a county road, the cross-sections should be carefully considered and the right of way made of sufficient width to include the back slope of all cuts and fills.

Two Methods

Now, there are two ways in which this may be done. One method is to adopt a uniform width throughout the entire length of the road, in which case the width of the road would

be equal to the maximum cross-section. This practice can safely be followed in localities where the road is comparatively level and there are no excessive cuts or fills. But in hilly country where it is sometimes necessary to make deep cuts, this method is impracticable. In some cases as much as 100 feet of right of way would be required on which to construct a cut or fill.

In my opinion, the best practice in these localities would be to establish a right of way of varying widths which will include the cross-section at all points.

I think the last method is the one used by the state in acquiring right of way. However, the state requires a minimum of 60 feet on federal aid roads, which allows for cuts up to 4 feet and fills up to about 6 feet without having to increase the minimum width. This method is really a combination of the other two and is perhaps the best practice.

If we assume that a 24-foot subgrade is the minimum requirement for any type of county road, and that with this width it requires at least 38 feet for the construction of side ditches and back slopes on level ground, I should say that in no case should any part of a county road be established less than 40 feet wide.

In establishing some of the roads in Hendricks County we have used the following wording in our viewer's report:

"The right of way shall everywhere be at least forty feet wide, except on fills and in cuts where the same shall be extended to include the slope thereof as shown by the plans and cross-sections for said road, which plans and cross-sections are made a part of this report and incorporated herein by reference thereto."

This method of establishing width has been passed on and has been approved by several well known attorneys who have examined our bond transcripts. Whether it would stand the test in court I can not say, but so far we have had success with it.

There are many other things which influence the width of rights of way, among them being increased subgrade widths; increased widths of metal surface or pavement; density of traffic, requiring wider shoulders for parking; and provision for space upon which public utilities may erect pole lines.

Future development may sometimes play a part in thickly settled communities, but as most of our right of way trouble occurs in the smaller counties, I think we would be safe in saying that an adequate right of way width on county roads lies somewhat between 40 and 50 feet, except in extreme cases.