

The First Four Years of the Ohio Highway Training Program

S. O. LINZELL

Director

Ohio Department of Highways
Columbus, Ohio

Since 1948, training programs for engineer graduates have been becoming more and more popular with many highway departments of this country. I do not know whether we have ever stopped to analyze why we have training programs. One thought is that the highway departments are imitating big business, whose ivory hunters have sold engineer graduates on their engineering organizations and the opportunities by way of a training program to go to top management. Another thought is maybe the highway departments are supplying tinsel and stage decoration to cover up the bare and crude backgrounds of their organization, and to have the trainee overlook the low salaries, the slow promotions, the political insecurity and the red tape of government jobs.

However, we started the training program as a last resort to secure engineer graduates to replace the men who left our service for higher paying positions in industry. The real purpose of a training program is to provide a transition from a theoretical engineering education to the realistic application of the study and learning. To be facetious, we might say it provides the transition from the ivied halls of learning to the ivied backslopes of a well-dressed highway project.

SELECTION

The selection of the trainee is one of the important aspects of a training program. In Ohio, we have tried to pick men from the various strata of the graduating classes. I mean by this that our department would not gain if we only selected men from the upper tenth, or the middle, or the lower tenth. We need and do select men from each stratum in the scholarship scale. Our experience has shown us that the men in the upper tenth of the class as a rule, are prima donnas, are difficult to keep satisfied with the slow and steady type of promotion provided in public service, and consequently do not stay

with us as long as the men from the middle and lower third of the class. The men in the lower strata of the class are the slow to learn, usually, but develop to be the workhorses of the organization.

We prefer men who have worked during vacations or prior to entering engineering college, with highways or contractors. We know these men understand the type of work they are entering and as a rule stay with us longer. Although engineering students as a rule do not have much time to participate in extra-curricular activities, we give this side of his education consideration in selecting our trainees. It has been said that the majority of the engineering graduates do not confine themselves to pure engineering 15 years after graduation, but that they are in allied fields such as administration or supervision of other engineers. With this thought in mind, we look for men who will become part of the team and later on be able to direct the activities of other engineers and represent the department in the discussions and agreements for joint projects with officials and engineers of other governmental units.

In Ohio we have nine engineering colleges from which to select men, but we feel that the more schools from which the men are selected the more the department and members of the training program can gain. In the last four years we have had graduates from fifty-five different engineering schools in the program. These schools range from Maine in the East to Colorado in the West; North Dakota on the North to Florida in the South.

However, we also accept non-graduates in our training program, basing the criteria for entrance to the training program on the decision of the Ohio State Board of Registration for Professional Engineers and Surveyors as to the applicant having sufficient experience and education for taking the two-day written Engineer-in-Training examination. The number of new men needed each year depends upon the current and immediate future program of the Department and the turn-over due to resignations and men leaving for military service. Due to Ohio's expanding construction program, our limit of new men now engaged each year depends on the number we can successfully recruit and supervise.

TRAINING PROGRAM

In Ohio we have a four-year training program. This is due to the Ohio Civil Service specifications requiring a professional engineer license for any appointment as civil engineer in the department. The Ohio registration laws require eight years experience to become a registered engineer of which not more than four years in engineering

college may be counted. This leaves four years before the engineer graduate can receive his first promotional classification change.

We first started with a schedule assigning set training time in each of the eight different phases of highway engineering covering a three-year period. The fourth year was reserved for over-runs in time in any particular phase. We found that the trainees thought the program was a failure when they were not rotated to another phase after the published length of training time. It took some persuasion to show the boys that a training program cannot be operated as a university, where a course can be planned and ended at the end of a semester or quarter. As all the work in our program is production work, we have found it very inefficient to rotate a man before the completion of an assignment such as project inspector or acting chief for the development of a set of plans. We have also found that the men are not being rotated to the different phases as frequently as they should.

Another point of view of conducting a training program would be to require a definite time for rotation from one assignment to another with two week's advanced notification to the trainee as to what and where the next assignment would be and to his supervisor that a new man, or no one, would be assigned to take the place of the rotated trainee. During the past few years the administration has been placed in the position of having two week's or less notice that a trainee was leaving via the resignation or military leave route, so this method would be no novelty to the immediate supervisor. We have found that a flexible schedule is best for both the department and the trainee in that the men can be assigned where the needs are the greatest for production, and also that some trainees require less time than others to become proficient in a given type of operation. We do not intend to make perfectionists in each phase of highway engineering during the short time a man is in the training program. We are really aiming to try out the new men in the various phases of the work so that we can eventually assign the qualified man for a phase in which he likes the work.

PROGRAM WEAKNESSES

During the four years we have been developing the Ohio Highway Training Program, we have noticed many weaknesses. One of them is the conflict between proper training and production. At present in Ohio the governor is elected every two years, and the highway director and staff are subject to change every two years. Consequently, the engineer and occupants of legislative positions are more

worried about immediate production than long range training that will benefit the department in the years to come.

It happens that the present administration has been continuous for over four years and will have at least two more years to run. I believe that if back in 1949 these men knew that they would be in authority until 1955 we would have had a little more emphasis on the training earlier in the program which would have given us better production at the present time. We also find that certain trainees are far superior to some of the older engineers, thus they are performing the same tasks at a lower rate of pay. This leads to dissatisfaction and often resignation on the part of the trainee. On the other hand, when the trainees receive their professional licenses and we are able to promote them, we have had older men resign because the graduates from the training program received the same salary rating in a much shorter period of time than the older men.

We are still experimenting and trying new ideas in our program to achieve both production and training.

POSSIBLE IMPROVEMENTS

The last thing I wish to discuss are possible improvements in the Ohio Program which may or may not be applicable to other training programs. The training schedule should be kept flexible with a minimum, normal and maximum amount of time to be spent in each phase of the work. Being excused from one or more phases of the work must be on the basis of having sufficient satisfactory previous experience. One engineer should be appointed in each division and bureau to act as an assistant supervisor and give the program a more personal touch. We could follow the example of the colleges and appoint a young man to act as advisor and expeditor. In a well organized university the ratio of the administration and instructional force to the students is one to ten.

In addition to working in the various phases of highway engineering, the trainee should pursue a prescribed course in reading to augment his training. This reading should be in new text books and in the various highway engineering research papers and current engineering magazines.

We also recommend that the trainees become active in the local chapters of their technical societies and professional engineering societies. A young man entering a new community can help himself, and render good public relations between the public and his employer, by becoming active in these societies and also in church and civic clubs.