

Herald and Review

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Roads Need Engineers

By O. T. BANTON

Of The Herald and Review Staff
AN ACUTE SHORTAGE of engineers is the worst stumbling block faced by Illinois and most other states as they tackle their greatly expanded highway programs.

Passage by Congress in July of the bill to rebuild the 41,000-mile interstate road network at a cost of 27 billion dollars in the next 13 years will result in nearly doubling the highway construction programs in many of the states.

Illinois, which had 82 million dollars to spend on its state primary highways and federal aid county roads this calendar year, will have almost 60 millions additional in federal aid money for the fiscal year ending next June 30. Of this, \$52,825,000 will be for use on its interstate mileage.

In the 1958 fiscal year beginning next July 1, Illinois will have \$118,073,000 in federal aid money, of which \$80,153,000 will be for use on the interstate roads. When some 55 million dollars in construction money from state sources is added to this, the total will be about 173 millions, or more than double the amount being spent this year.

Yet the state is "losing ground" in its efforts to build up its staff of highway engineers, officials of the Illinois Division of Highways report.

Last summer Illinois had 1,038 civil engineers on its highway staff, and 1,213 technical employes. The latter include engineer aides, draftsmen and chemists.

The technicians are men with one to three years of college engineering training but who have not yet earned their bachelor's degree.

At Least 600 Needed

Ralph R. Bartelsmeyer, chief state highway engineer, estimates that Illinois needs at least 600 additional engineers—about a fourth of the reported national shortage of 2,300. It is impossible to hire anywhere near that number, particularly at the state's salary scales.

In the first six months of this year Illinois hired 131 new civil engineers, including 53 engineering aides. In the same period it lost 95 through resignations and military leave.

"That was a net gain of only 36, but in terms of engineering graduates we actually lost ground," William A. McCree, engineer of employe training and assignment for the highway division, said. "The picture hasn't improved in recent months.

"Civil engineering seniors at all of the engineering colleges near here are dated up for employment interviews through next May. I have a number of appointments for interviews, but not nearly enough.

"Our worst pinch is in young engineers with three and four years experience. They leave to take better paying jobs elsewhere, and until the Legislature takes action to raise salaries in their classifications, there is little we can do to hold them.

"We also are losing engineering aides, particularly those with some college training who are qualified after a few years experience to do much engineering work.

"Our top pay for these technicians is \$330 a month. We have moved nearly 60 of them up to the classification of Civil Engineer 1, at which grade we can pay up to \$400 a month."

Indirect Proselyting

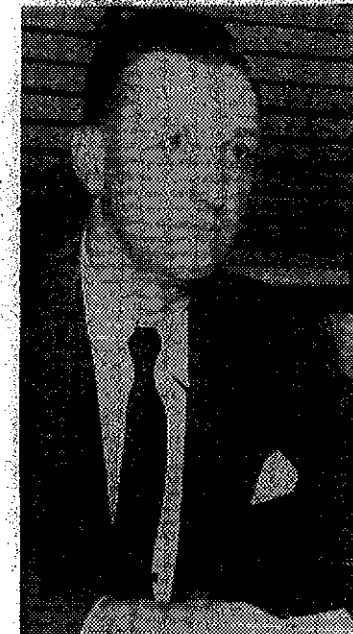
The College of Engineering at the University of Illinois has been doing what it can to help keep the highway division staffed. Ellis Danner, professor of highway engineering at the U of I, has frequent conferences with highway division leaders.

Considerable evidence of indirect proselyting has been found. Consulting engineer firms avoid making direct offers to young engineers on the state highway staff. But some of them tell the men that, if they were available, their firms would pay them certain salaries. The men resign and then apply for jobs with these firms, knowing that a position is awaiting them.

Some engineers are lured to other states by higher pay and

working conditions they regard as more desirable.

California ranks near the top, both in salary levels and working conditions, that make a career



ENGINEER BARTELSMEYER
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with that state's highway department attractive.

Wisconsin and Michigan are among other states having a reputation for keeping their highway operations free from "politics" and other interferences. Apparently few Illinois engineers are lost to Indiana, whose highway department has a bad reputation for being "politics-ridden."

Political Interference

In addition to relatively poor salary scales, Illinois is said to be beset by minor political interference in its highway building. In some instances engineers are unable to enforce requirements in construction specifications.

In a national survey conducted by the Highway Research Council in 1955 Illinois had the second worst record in holding its highway personnel.

Last year it had a net loss of 40 on its engineering staff. This was exceeded only by West Virginia, with a loss of 50.

Part of Illinois' highway per-

sonnel difficulties has been laid to Gov. Stratton.

When Stratton became governor in 1953 he discontinued a program of merit raises for highway engineers that had been in use for some time. Under it, engineers who were recommended for pay increases by their superiors received automatic annual pay increases until they had reached the maximum salaries for their classifications.

Authorization was given, however, for raising the beginning engineers' pay last Jan. 1 from \$365 to \$400 a month.

This has damaged morale in the classifications immediately above beginners. For new engineers now make nearly as much as men who have been on the staff a year or two and who feel that their experience should entitle them to more money.

Pay Scales

Present engineers' pay scale in the Illinois Highway Division are:

- Civil Eng. 1, \$4,800 a year maximum
- Civil Eng. 2, \$5,500
- Civil Eng. 3, \$6,600
- Civil Eng. 4, \$7,900
- Civil Eng. 5, \$9,420
- Civil Eng. 6, \$10,320
- Civil Eng. 7, \$11,760

Classification 7, includes the assistant chief engineer, the chiefs of the various bureaus in the division, and the top engineer in each of the 10 highway districts in the state.

The state chief highway engineer, at a maximum of \$17,000, is the only one in Classification 8.

The state maximums are mostly well below a minimum scale approved by the Illinois Society of Professional Engineers at its annual convention last June. These minimums are:

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- Civil Eng. 6 14,000
- Civil Eng. 7 20,000
- Civil Eng. 8 30,000

This scale is what the professional engineers' society would regard as ideal. In most classes it is above the minimums for any of the states.

It does indicate, however, that Illinois' highway engineer salaries are not attractive to the profession.

Only veterans in the highway division are not looking around for better jobs. They have reached levels on which they can live comfortably, and have built up seniority that will qualify them for pensions that are reasonably attractive.

Chief Engineer Bartelsmeyer has announced that he will have to turn to consulting engineer firms to handle part of the design work in the forthcoming road construction programs.

Will Legislature Act?

Under federal regulations, consulting engineers cannot be used by the states to supervise construction work on highway projects that are financed in part by federal aid money.

There will almost certainly be an effort to get the 1957 Illinois Legislature to authorize salary increases for the state's highway engineers.



SHORTAGE OF ENGINEERS MAY SLOW UP HIGHWAY CONSTRUCTION

Engineer Shortage to Force State To Farm Out New Road Designing

By O. T. BANTON

Counter Staff Correspondent

AN ACUTE SHORTAGE of engineers is the worst stumbling block faced by Illinois and most other states as they tackle their greatly expanded highway programs.

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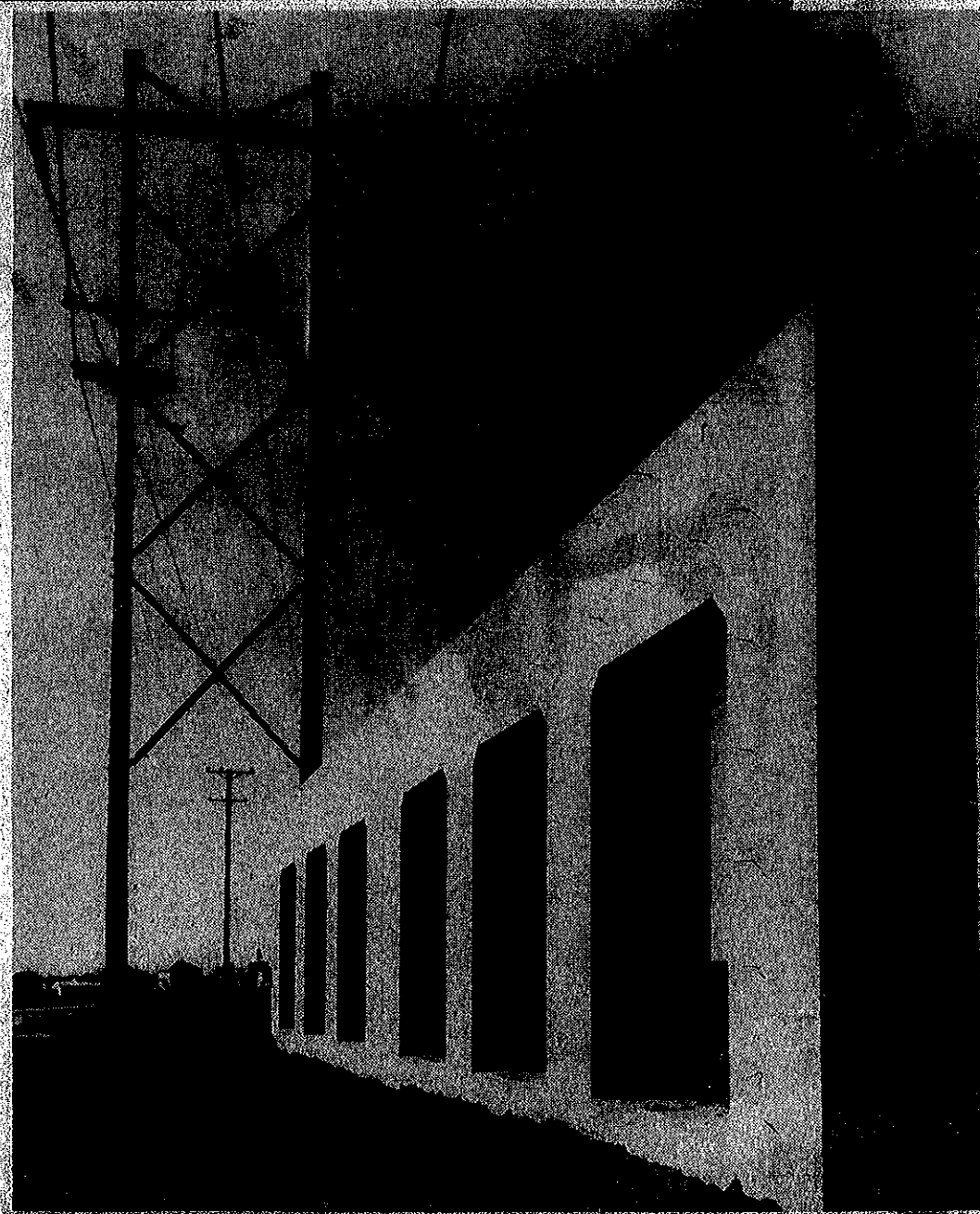
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This abutment will help support the new East-West Highway as it crosses IC tracks north of Champaign.

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firms, knowing that a position is awaiting them.

Political Interference

In addition to relatively poor salary scales, Illinois is said to be beset by minor political interference in its highway building. In some instances engineers are unable to enforce requirements in construction specifications. Contractors who are close friends with legislators and other political leaders are able to "laugh" at the engineers who seek to enforce some of the specifications requirements.

In a national survey conducted by the Highway Research Council in 1955, Illinois had the second worst record in holding its highway personnel.

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Part of Illinois' highway personnel difficulties has been laid to Gov. Stratton.

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Chief Engineer Bartelsmeyer has announced that he will have to turn to consulting engineer firms to handle part of the design work in the forthcoming road construction programs.

"We now have 1,085 engineers," Bartelsmeyer said. "The estimated number needed to handle our expanded program is 1,700."

This estimate would be affected by the number of technicians (with one to three years college engineering training or equivalent in experience) that can be employed and trained to do sub-professional engineering work.

"However, since it is apparent that we will not obtain a sufficient engineering force to handle the greatly expanded engineering operations on the Interstate highway system, we must depend more on consultants for supplementing the technical personnel of the division."

"It is estimated that it will be necessary to contract with consultants for about 30 per cent of the highway design program for 1957."

Will Legislature Act?

Under federal regulations, consulting engineers cannot be used by the states to supervise construction work on highway projects that are financed in part by

federal aid money.

This is on the theory that someone on the public payroll, or in a neutral position where he can protect the public interest, should supervise expenditure of the bulk of public funds.

With consulting firms sure to be called upon for much of the design work on the interstate roads, these firms are going to need more personnel. They will be able to offer pay scales that are above those on the engineering staffs of the states, and this will further aggravate personnel headaches of the state highway departments.

There will almost certainly be an effort to get the 1957 Illinois Legislature to authorize salary increases for the state's highway engineers.