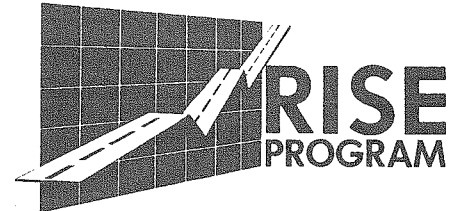


roads bridges transit technology news

Local Transportation Information Center
Iowa State University Engineering Extension Service

February 1986

RISE: Building a road to a better economy



A new program that will provide about \$28 million for road improvements each year is open for business, according to the Iowa Department of Transportation. The Revitalize Iowa's Sound Economy (RISE) Program was created by the 1985 Iowa Legislature to provide money for road projects that will promote economic development and create jobs.

The RISE Program is being funded with a percentage of the state fuel tax. More than \$20 million is expected to be available in the RISE fund this year, and more than \$28 million in future years. The legislature specified that 25 percent of the funds will be used on city streets, 25 percent on secondary roads, and 50 percent on primary roads.

However, the legislature left the allocations within those broad categories up to the DOT, which recently developed emergency rules for implementing RISE and distributing its funds. These rules are subject to comment and change before they are formally adopted by the department.

After consulting with two advisory groups, one composed of business leaders and the other representing local public officials, the DOT established the following categories for RISE projects:

- Immediate opportunity funding is reserved for cases when a city or county is negotiating with a developer or firm in an effort to get that group to locate or stay in the area, and a quick commitment of funding is critical to the decision. These projects are given top priority and receive immediate attention from the Transportation Commission.
- Competitive rating funding is available for projects that support local development but do not meet the criteria for immediate opportunity funding. These projects will be selected by the commission through a competitive rating process conducted semiannually. Consideration will be given to factors such as the "degree of certainty" that a RISE project will enhance economic activity, the number of jobs and investment to be created by the project, and economic development

The preparation of this newsletter was financed through the Technology Transfer (T2) Program. The program is a nationwide effort financed jointly by the Federal Highway Administration and individual State Departments of Transportation. Its purpose is to translate into understandable terms the latest state-of-the-art technologies in the areas of roads, bridges, and public transportation, to local and county highway and transportation personnel.

The Local Transportation Center at Iowa State University is sponsored by the Iowa Department of Transportation and provides information and counsel to the municipalities and counties in Iowa. This

newsletter is designed to keep you informed about new publications, techniques, and training opportunities that may be helpful to you and your community. Individuals wishing to receive future copies of this newsletter at no cost may send their requests to: John Moody, Local Transportation Information Center, Engineering Extension, Iowa State University, Ames, Iowa 50011.

- Regional development projects that are designed to improve access on a regional scale, such as between population centers and interstate highways, will be programmed annually by the DOT.

These categories are geared toward funding those projects most likely to create or retain jobs and income in the area, according to David Plazak, transportation planner for the DOT. "They're opportunity oriented, as opposed to need oriented," he said.

For further information on the RISE Program, contact the Office of Program Management, Iowa Department of Transportation, (515) 239-1145.

The opinions, findings, or recommendations expressed here are those of the Local Transportation Information Center and do not necessarily reflect the views of the Federal Highway Administration or the Iowa Department of Transportation.

ISU and Iowa DOT libraries are available for your use

When you are looking for detailed transportation information and your public library does not have the data you need, you may want to consider a trip to Ames. Both the Iowa DOT Library, located in the Administration Building at the state DOT headquarters, and the ISU Parks Library, located on the north side of the ISU campus, have extensive transportation holdings.

Materials available from these libraries have a wide range of uses, from technical reports by government agencies, to trade journals, to historical materials, that can provide an interesting perspective on today's transportation technology. There isn't enough space here to list the many transportation references held at the libraries, but the following are examples of what is available to you.

- Transportation Research Board publications, and highway research records
- ASCE transportation journals
- *Institute of Transportation Engineers Journal*
- Iowa State University Experimental Station and Engineering Research Institute reports
- Iowa DOT annual reports, and reports by other state DOTs
- The Code of Iowa, including territorial acts

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- AASHTO publications
- Foreign transportation journals
- National Technical Information Service abstracts
- Federal Highway Administration reports
- Iowa Highway Research reports
- Magazines and journals, contemporary and antiquated

You do not need a library card to check out materials from the Iowa DOT Library. Librarians there will ask that you leave a credit card or driver's license, which will be returned to you when you bring the publication back. Magazines and periodicals may be kept for two weeks and books for one month. The library is open from 7:00 a.m. to 5:00 p.m., Monday through Friday, but closed on state holidays. The library information number is (515) 239-1200.

The ISU Parks Library will issue you a library card permitting you to

check out books if you can demonstrate a need for the card and are able to return the books within two weeks. If you would like to have a library card, contact John McNee, assistant director for public services, Iowa State Library, Room 102B, Iowa State University, Ames, Iowa 50011 (515) 294-4716. You will need to give him your name, address, and social security number to be issued the card.

While ISU classes are in session, the library is open Monday-Thursday from 7:30 a.m. to midnight, Friday from 7:30 a.m. to 10:00 p.m., Saturday from 10:00 a.m. to 10:00 p.m., and Sunday from 12:30 p.m. to midnight. When classes are not in session the library is open from 8:00 a.m. to 5:00 p.m., Monday through Friday, and closed on Saturday and Sunday. The library is closed on university holidays. If in doubt about library hours, call (515) 294-4849.

If you are not able to make the trip to Ames and know the name of the publication you seek, ask your local librarian to locate and obtain it through the interlibrary loan system.

APWA Street and Highway Maintenance Manual, available for loan

Your Technology Transfer Center has two copies of the *APWA Street and Highway Maintenance Manual*. The center will lend the copies to interested agencies that want to look it over. After reviewing the book you may want to purchase the manual. A copy of the book also will be available for your perusal at the Technology Transfer exhibit at many

conferences. This reference contains excellent basic information for supervisors and administrators. The APWA has begun to offer intensive two-day workshops outlining the contents of the manual. The Technology Transfer Center will inform you when the training workshops are going to be held in the Midwest.



Transportation Info-Line

Call toll-free
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(in Iowa)
In Ames call
294-8815



U.S. Department
of Transportation
Federal Highway
Administration



tips from — the field —

Multidirectional sanding chute

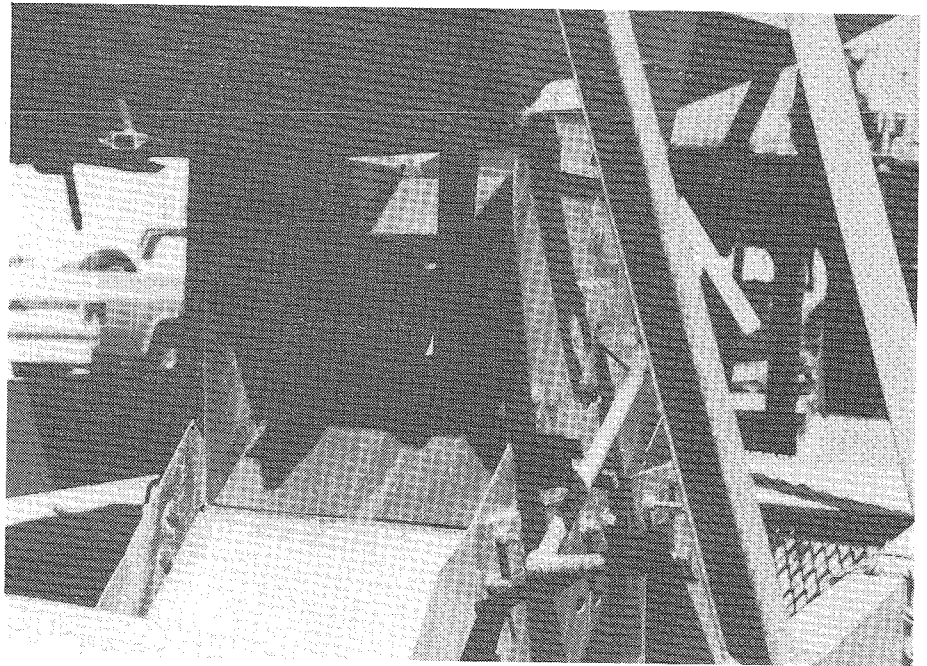
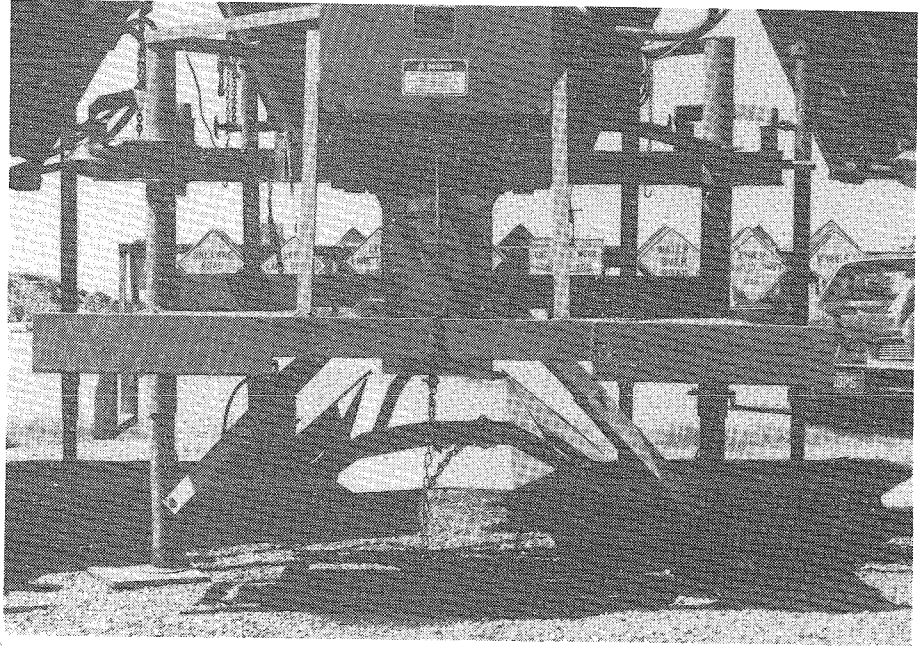
A multidirectional sanding chute has found popularity with the Iowa D.O.T. as an effective means to control the direction of the flow of material to the ground during a sanding operation.

A typical sanding chute is fitted with an internal movable plate that fits on a central vertical rod. Via a hand crank, this rectangular iron plate may be positioned to angle downwards to the left, downwards to the right, or to rest vertically. The left position closes off the right portion of the chute at the top, causing sand to slide down the plate and be dispersed on the left half of the road only. The right position does the opposite, closing off the left half of the chute and directing the drop material to the right side of the road. Putting the plate in the vertical position allows equal dispersion in all directions.

The multidirectional sanding chute has proven particularly beneficial in high wind situations, and for applying larger drops to the more heavily traveled strips of the road.

Credit for development of the sanding chute goes to Don Becker of the Iowa D.O.T.

For more information, contact John Moody, Local Transportation Information Center, Haber Road, Iowa State University, Ames, Iowa 50011, phone 1-800-262-8498.



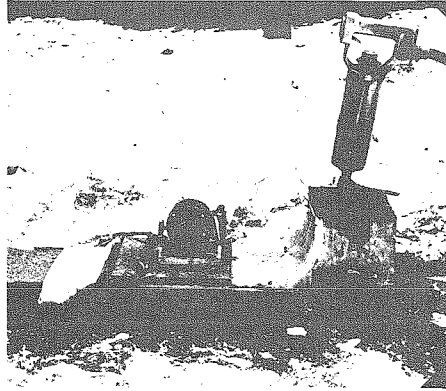
Iowa: Birthplace of paving technology that the whole world is riding on

Portland Cement concrete pavements are relatively new on the transportation scene. The first pavement in Iowa was placed in LeMars in 1904, and historical record indicates that it was only the second road of its type in the country. Other rural pavements began appearing in 1911. One feature common among all these early Portland Cement concrete pavements was the need for side forms, which were used both to carry the equipment and to hold the concrete as it set up. It was this need that spurred the creation of today's slip-form paving equipment.

In 1947 Jim Johnson, an Iowa State Highway Commission engineer, conceived the idea of a machine that could extrude concrete without needing fixed forms. A laboratory model of this idea pulled by a winch could extrude a slab of finished concrete 18 inches wide and 3 inches thick. Concrete slabs produced by a prototype built the next year were twice as wide and thick as those made by the first model.

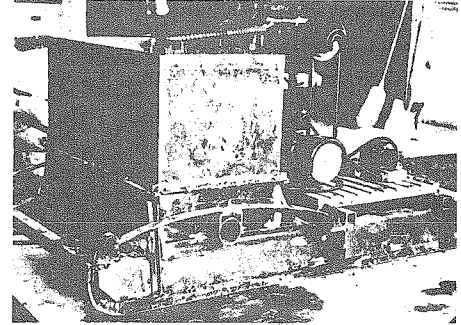
These successes led to the 1949 development of a motorized version of the machine. The world's first slip-form paving took place in O'Brien and Greene counties in Iowa. There, two 10-foot wide slabs were laid down 3 inches apart, leaving a gap that was then filled, resulting in a 20-foot wide road.

This development changed the road construction industry by drastically reducing the time and cost required to produce pavement. Use of Portland Cement concrete pavement proliferated after this breakthrough and continues today.

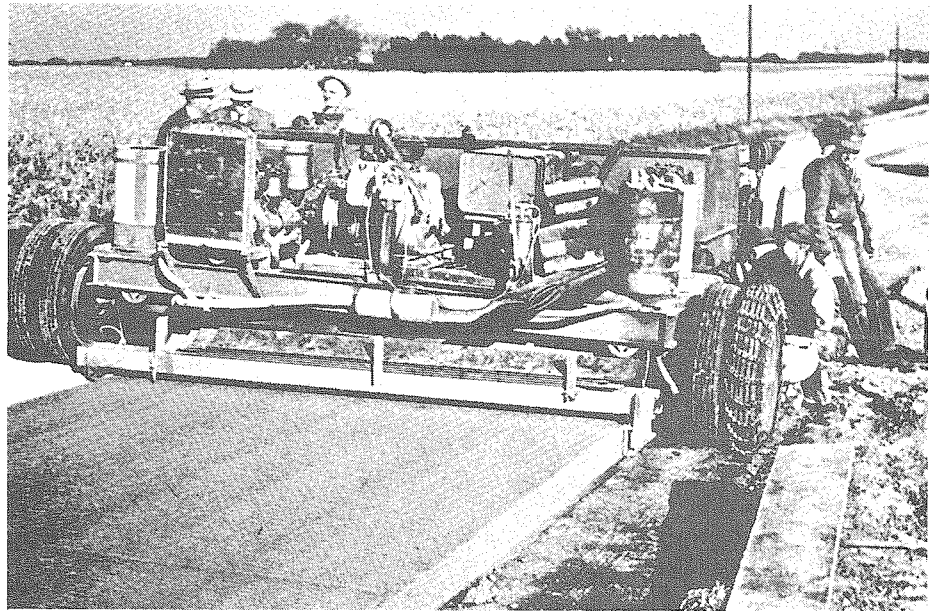


The first laboratory model (1947).

Jim Johnson and the other people who worked with him had the vision and innovative talent sufficient to revolutionize the paving industry. Today, most Portland Cement concrete pavements built in all parts of the world are produced through slip-form equipment that has as its precursor the primitive model built in Iowa in 1947.



Slightly larger model (1948).



Greene County workers building the first continuous miles of slip-form concrete roads in 1949.

Given retires from Iowa DOT

Robert H. Given, Iowa Department of Transportation's Highway Division director, has retired after more than 36 years with the department.

Given had served as Highway Division director since January 1983. Prior to that, he was deputy director of the department from July 1979 to January 1983. While serving as the

deputy director, Given also was the acting director of the Highway Division from July 1982 until January 1983.

Iowa Transportation Director Warren Dunham said, "Bob's blend of leadership, knowledge, and statesmanship have been a major factor in this department becoming a leader in

innovative highway achievements. While he has done a superb job of preparing the division for his successors, it is going to be a very difficult task to find someone who can keep the Highway Division moving forward the way Bob has done." No date for naming Given's successor has been set.

conference 1 2 3 calendar



APWA Construction Inspectors Workshop

February 5, Cedar Rapids

Experts in the field will provide extensive detail on the primary aspects of construction common in both municipal and rural public works systems.

Maintaining Granular Surfaced Roads

February 10, Waterloo

February 18, Ottumwa

February 24, Cedar Rapids

March 11, Ankeny

April 1, Mason City

Topics will include materials selection, blading operations, equipment, applications determination, operator practices, reducing potential for tort liability, traffic control, and on the job safety.

Annual Better Concrete Conference

February 11, ISU

Up-to-date information about the dynamic changes in the concrete industry.

31st Annual Asphalt

Paving Conference

February 20, ISU

Pertinent information on applications of asphalt for pavements and parking lots.

11th Annual ASCE

Geotechnical Conference

February 21, Des Moines

Current practices and the latest techniques in design and construction will be discussed.

Workshop on the Revised Highway Capacity Manual

March 12-14, Ames

The revised edition of the *Highway Capacity Manual* will be outlined in detail.

Pavement Evaluation Workshop

March 13, Ames

This practical workshop will provide current information on pavement upkeep and evaluation.

The Pedestrian Safety Problem, available from the Local Transportation Information Center; call 1-800-262-8498 to order a copy.

This August 1985 report by the Program Development Division of the Federal Highway Administration provides an overview of national characteristics of pedestrian accidents and fatalities. Included are analyses of current studies related to the types of accidents and to pedestrian exposure. Although results found here can't be applied to all geographic areas, they can be used to provide a perspective from which the pedestrian accident problem can be viewed.

Continuing Education classes offered by the Portland Cement Association at their suburban Chicago office.

Information concerning the content of or registration for the following classes can be obtained by contacting the Registrar, Educational Services Department, Portland Cement Association, 5420 Old Orchard, Skokie, Illinois 60077 (312) 966-6200.

"Basic Concrete and Related Field Practice," February 3-7.

The class will enhance the product

knowledge of ready-mix producers, contractors, and other concerned groups by demonstrating in laboratories various mixing and finishing practices and problems. The course will be presented with an emphasis on current construction practices. The fee for the class is \$900.

"Advanced Concrete Technology," February 17-21.

Designed for people with basic backgrounds in concrete, the class will cover concrete materials, curing requirements, and factors affecting concrete strength. The class includes laboratory testing of concrete strength in specific situations, and uses for aggregates and admixtures. The class is limited to 28 students, and its fee is \$900.

"Troubleshooting Concrete Field Problems," April 7-11.

Geared toward individuals responsible for handling problems in the field, the class will help participants identify and discuss problems concerning the durability, production, placement, and strength of concrete surfaces. Enrollment will be capped at 28, and the course fee is \$975.

33rd Annual APWA

Public Works Conference

April 3-4, Ames

Topics of current interest related to the technical and managerial aspects of public works will be discussed by consultants.

AASHTO's New Policy on Geometric Design of Highways and Streets

April 9, Davenport

AASHTO, the official geometric design criteria for all federal-aid projects, will be explained.

11th Annual Traffic Control and Safety Conference

May 8, Ames

Changes in highway traffic control and safety will be outlined at this conference.

Other Important Events

Iowa Concrete Paving Association Workshops

February 26-28, Des Moines

Asphalt Paving Association of Iowa, Asphalt Paving Workshop

March 6-7, Des Moines

Iowa State Association of Counties, Spring School of Instruction

March 19-22, Des Moines

APWA Mid American Conference and Equipment Exhibit

April 2-4, Kansas City

continued on back page

Control snow drifts with proper placement of snow fence

Most individuals have observed snow drifts. Many have noted the shape of the drifts that form due to different kinds of obstructions, and could predict where drifts might form. And people more closely involved in winter maintenance operations have even developed a special knowledge—some of it from reading, some of it from experience—that enables them to know where to place fences in order to create drifts in places where they won't be hazards, and that are in fact beneficial because they prevent other drifts from forming in heavily traveled areas.

When an obstruction occurs in the path of a wind blown snow, the wind speed may decrease and snow may be deposited there. Weeds in a fence line, bushes, and snow fences

will usually create drifts. Each obstruction has its own special drift-creating characteristics, and knowing this information can help anyone predict the shape of a drift by simply analyzing the object that created the drift.

Maximum drift accumulation will occur if the barrier has about 50 percent airspace and is raised above the ground. Also, for snow fences, there is a substantial difference between solid wood fencing and traditional fencing that has vertical slats of air space intervening between wood strips.

In diagram 1 below, the height of the snow fence is designated as "H." The shape of the maximum drift accumulation is related to "H."

In diagram 1 (solid fence) a drift could accumulate 1.3H, or 5.2 feet high and 10H or 40 feet downwind from the fence.

In diagram 2 the length of the drift for the same 4-foot snow fence (50 percent) would be 120 feet.

If the fence is raised above the ground (e.g. 12 inches) the probability of the maximum snow storage occurring is increased.

Snow fences should be at least 30H in length, and if breaks are needed in the fence lines, they should overlap 10H in order to ensure maximum drift accumulation.

Individuals responsible for controlling snow drifts can use these guidelines to place snow fences and to predict drifts from obstructions.

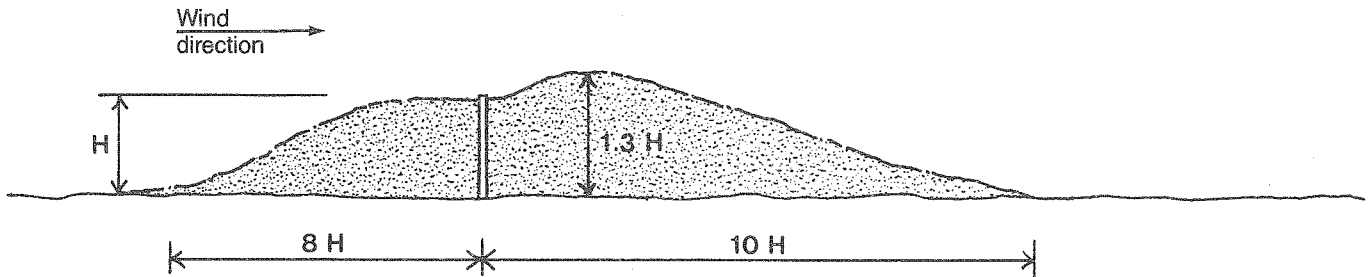


Diagram 1: Snowdrift from a solid fence.

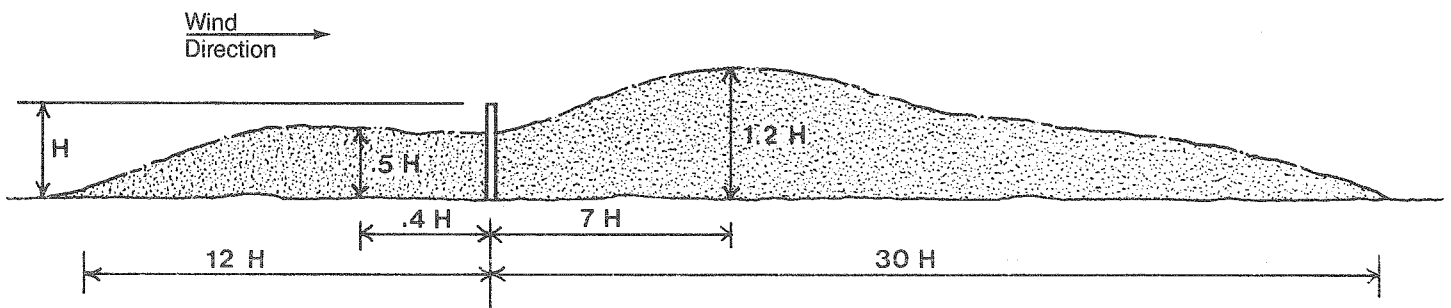


Diagram 2: Snowdrift from a porous fence. (Traditional slatted fence)

Power poles can be highway obstruction that lead to lawsuit liability

By R. L. Carstens, P.E., professor of civil engineering, ISU.

Case 1: A 1980 Chevrolet drove into a puddle that obscured a pothole during daylight on an uncurbed street in a large urban area. The car went out of control and crashed into a power pole, seriously injuring a passenger. The pole was 4.75 feet from the pavement edge.

Case 2: Just before midnight on a gravel road, a 1974 Chevrolet left the road on a turn and crashed into the backslope. The car spun so that its rear was suspended precariously on a power pole guy wire. Three teen-aged occupants were killed. The pole was 24 feet from the edge of the road.

Case 3: After failing to negotiate a T-Intersection a 1973 Plymouth traveled 154 feet straight ahead and struck a power pole. The driver was seriously injured.

Case 4: Just before 2 a.m., a 1971 Ford failed to negotiate a curve in an urban area and crashed broadside into a power pole. The pole was 17 feet from the edge of the pavement. One passenger was killed and the other two occupants were seriously hurt.

Case 5: A 1979 Volkswagen struck a power pole during the early morning as it left a straight county trunk road just outside an urban area boundary. The pole was 16 feet from the edge of the pavement. One of the three occupants was injured.

Lawsuits were filed following each of these accidents, and common among the suits were allegations of negligence stemming from an improperly placed power pole. Defendants in each case included a city or county, or both, as well as an electric utility, and both the public entities and utilities were imputed to be at fault. A city acquires this responsibility through its obligations to franchise electric utilities and to regulate their use of streets (Code of Iowa, Section 364.2). For a county, this responsibility arises from its

legal obligation to locate new lines and its right to remove obstructions (Sections 319.1 and 319.5).

There are relatively few authoritative guidelines for the location of power poles and their appurtenances. Various publications of the American Association of State Highway and Transportation Officials provide the following:

- Poles on and along rural highways should be located as close as practical to the right of way line. At a minimum, they should be located outside the clear zone. It is recommended that poles in urban areas be placed behind sidewalks, where feasible. (*A Guide for Accommodating Utilities Within the Highway Right of Way*, 1981).
- The clear-zone width referred to above is defined as:

Operating speed (MPH)	Clear zone (feet)
60	30
50	20
40	15

(*Guide for Selecting, Locating and Designing Traffic Barriers*, 1977).

- A minimum clearance of 1.5 feet between the curb face or shoulder and poles is specified for urban streets. (*A Policy on Geometric Design of Highways and Streets*, 1984).

The cases cited above are just a few examples of situations in which highway officials are being held accountable for the location of utility poles. This is occurring much more frequently than in the past. Public officials should recognize that in order to demonstrate "reasonable care," they may need to exercise their right to remove obstructions from highways.



The closest pole in the center was struck by an out of control auto.



The pole on the right was struck by an errant Volkswagen.



The errant auto ended up with the back end of the car on the guy wire.

Iowa DOT names winners of ninth annual awards for public transit excellence

Terry Meyer of the Heart of Iowa Regional Transit Association and Bob Bourne of the City of Ames have been honored as the Iowa DOT transit planners of the year. Meyer was given the award in the regional (rural) category and Bourne was acclaimed for his superiority in the small urban category.

The awards were based on current and past planning performance, taking into consideration such factors as quality of work, timeliness of completion, and implementation of planning projects. Sixteen regional and seven small urban planners were in the running for this year's awards.

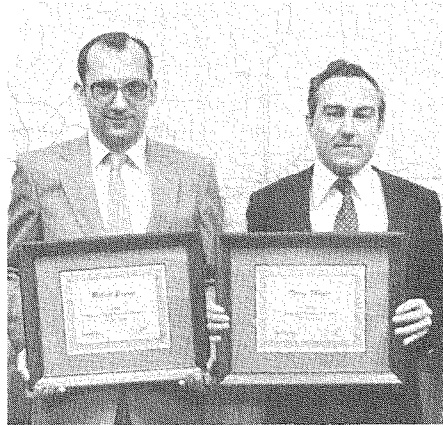
The cities of Fort Dodge and Bettendorf were doubly honored with DOT awards this year, as each was cited for having the "most improved" transit system in its category and each had an official named "manager of the year."

On the basis of increases in ridership and local support, and decreases in operating expenses and deficits, the Mid Iowa Development Association of Fort Dodge was

cited as the most improved regional transit system, while the Bettendorf Transit System was named most improved urban transit system.

Also, Margaret Lake, Bettendorf Transit System director, was named urban transit manager of the year; and Eileen Kelley, MIDAS transit administrator, was named regional transit manager of the year.

The DOT has given these awards annually since 1976.



Robert Bourne, City of Ames and Terry Meyer, Heart of Iowa Regional Transit Association received Transit Planners of the Year Awards.

Bosch prisms available from Illinois firm

Many of you have inquired where to purchase the Bosch prisms outlined in Tips from the Field packet mailed in September 1985. The prisms can be purchased from the Robert Bosch Corp., 2800 South 25th Avenue, Bradview, Illinois 50153, telephone (312) 865-6425.

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Iowa State Board of Engineering Examiners Tests
April 11-12, Ames and Iowa City

Iowa Engineering Society
Annual Meeting
April 24-26, Waterloo

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