

October 1992

Fences help keep snow off the road

By Kim Shelquist
Editorial Assistant

Higher than expected snow fall amounts can quickly put local agencies' budgets in the red, but well placed snow fences can help keep snow removal costs under control.

Blowing and drifting snow is one of the biggest problems faced by road

maintenance departments. Not only does it make driving more hazardous, but a particularly bad winter can send local agencies scrambling for the funds necessary to keep the roads safe. Properly placed snow fences can help. Snow fences control drifting and improve visibility by storing snow in areas off the roadway. Keeping snow off the roadway helps keep the snow removal budget under control and makes traveling safer by reducing drifting and improving visibility.

Maintenance people concerned with keeping snow from drifting onto roads have two important decisions to make. The first is what type of fence to put up and the second is how far from the road that fence must be to prevent drifting on the road. How these questions are answered will determine where the drifting snow accumulates.

Snow fences can either be temporary or permanent and also either a solid surface or with openings (porous) making up a percent of its surface. Solid fences often are permanent structures and are not usually used in drift control practices. Commonly, snow fences in Iowa are temporary and are porous. In the past, these fences were made of wooden

Inside pages



**Better ready
than not,
here comes ...**

Winter!

- 2** Snow Plow Rodeo results and pictures.
- 3** Forecasting service localizes predictions.
- 5** State requires ethanol in government vehicles.

In memory

Robert A. DeWys, P.E., Scott County Engineer since 1979, died last September at the age of 51. His participation in engineering associations and his help to the Iowa Transportation Center will be missed.

Besides serving as a county engineer, DeWys was active at both state and national levels for several organizations. He was the chairperson for the NACE 95 committee, was transportation representative to the American Roadbuilders Association, and was a district representative to the executive board of the Iowa County Engineers Association.

slats. Although slat fences are still common, snow fences made of plastic are becoming popular because their light weight makes them easy to store, carry, and set up.

The percentage of openings a porous fence has over its surface is im-

continued on page 5

Snow Plow Rodeo draws 18 teams

The snows may come and the winds may blow, but city and county maintenance forces are ready for this year's snowstorms as demonstrated at the Third Annual APWA Snow Plow Rodeo held in Des Moines September 30.

Both city and county crews competed in the rodeo. This year's event drew 18 teams, including three county teams. Contestants came from across the state and as far away as Des Moines County and Bettendorf. Several cities sent two teams to compete.

This year's contest consisted of a written test, spotting safety defects, and a five-event driving course. The driving course simulated situations commonly found while clearing streets, such as backing into an alley, negotiating serpentine curves, driving through narrow clearances, avoiding parked cars, and stopping the plow at a precise location. Contestants competed in teams of two and combined their abilities in the 300-point competition. The participating cities were divided into two classes according to their vehicle wheel base dimensions.

The City of Bettendorf, entering the rodeo for the first time, won the Class I, short wheel base category (130-

150 inches). Cedar Falls' team two was second and Ankeny finished third. The City of Clive team two was the Class II winner. Second place was Mills County and West Des Moines team two was third.

Public works directors and one county engineer competed in a "celebrity" driving contest. Mills County Engineer Jim Ebmeier won.

The contest did identify some areas of change in the type and size of vehicles being used in snow removal. In some cases it restricted participation in this year's event. The APWA Snow Plow Rodeo planning committee needs input on how it can continue to improve the event in the future. If you have ideas or suggestions contact Neil Guess, Newton City Engineer, or Jim Cable at Iowa State University.



Class I winners Rich Speidel (left) and Earl Walker of Bettendorf.



Class II winners Steve Pringle (left) and Ron Creclus of Clive.

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Director — Tom Maze; Assistant Director — Jan Graham; Safety Circuit Rider — Ed Bigelow; Communication Specialist — Larry Mendenhall; Program Coordinator — BarBara Holden; Library Coordinator — Stan Ring; Account Clerk — Diane Love; Secretary — Margaret Hammer; Editorial Assistant — Kim Shelquist

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



Iowa Transportation Center

Localized forecasts aid local agencies

With the information provided by a localized weather forecast cities and counties are able to plan for winter storms and much more.

Such services are designed to alert local agencies to weather that might affect road conditions in their jurisdictions. Advance information such as this allows local agencies to tailor their resources to the storm. For example, if only a small portion of a county will receive a significant amount of snow it doesn't need to have all of its snow plows in operation. Or if only a small amount of snow is going to fall overnight and the next day's temperature is supposed to reach 60 degrees, then the agency can choose to simply let the snow melt.

These forecasts are much more specific than general forecasts heard on TV and radio. A service such as the Freese-Notis Weather Service in Des Moines typically provides customers with information such as when a storm will begin and end in their area, how much and what type of precipitation to expect, and the temperature and winds both during and after the storm. The service also informs subscribers of conditions that will exist after the storm in order to determine how quickly snow or ice will melt. They also get immediate

updates if a storm should suddenly change its direction.

Charles Notis says that some customers subscribe to the service year-round, although many only use it during the snow fighting season, usu-

necessary preparation of equipment.

Marshall County's service sends it a daily weather report via fax and has instructions on who should be notified of forecast changes after office hours. That information is then used

to determine how the weather will affect local road conditions.

Fichtner adds that although snow and ice are common problems in the winter, the most valuable information the county receives is the anticipated wind speed and direction. Wind is a big factor in deciding when and where plows should begin, according to Fichtner. For example, there is little point in plowing a road which will drift shut soon after the plow passes.

Mike Klapp of the Des Moines City

Engineers Office uses the information for snow removal planning and also much more. His office subscribes to the forecasting service year-round. The City of Des Moines uses the information to plan construction projects such as street paving and to determine the best times to place sod and seed roadside areas. The weather also affects surveying crews and independent contractors working for the city. In

Are you ready for winter?

1. Check fluid levels, belts, and hoses for vehicles used to clear roads.
2. Do a "walk-around" inspection of the vehicle including all lights, tires, radios, fire extinguishers, and first aid kits.
3. Check supplies of salt, sand, and calcium chloride. Check with neighboring agencies for the possibilities of ordering these supplies in bulk.
4. Go over routes with drivers. Make sure each driver is familiar with any routes they may be assigned. Go over priority routes.
5. Review snow removal policy. Remind public of snow removal policies and when they go into effect.
6. Review safety procedures related to snow removal.

Thanks to Williard Wray of the Clive Public Works Department for help in preparing this list.

ally from October 15th to April 15th. During those months customers receive a daily forecast of weather conditions affecting their area that will be up-dated should the forecast change.

Marshall County Engineer Royce Fichtner notes the county has been using a weather forecasting service for almost 10 years and says he feels it pays for itself. By knowing when and where bad weather will occur the county can cut the expense of un-

continued on page 8

Planning critical for networking

Installing a computer network is a big decision for any local agency. The idea of a network is easily understood but installing the actual system requires careful study to determine which options in hardware and software are the best for the agency. This month's *Microtechnology* is the first of a three-part series exploring some network issues.

First of all, does a local agency even need a network? In some cases, no. A network, usually referred to as a LAN or local area network, allows information and resources to be shared quickly and easily. But if a work group is small there are alternative ways to share files and resources like printers, plotters, and modems. These alternatives are easier to use and much less expensive than networking. In fact, many local agencies are already using a computer network. It's called SneakerNet. A user who wants to share a file with a co-worker simply copies the file to a floppy disk and runs it over (hence the name SneakerNet) to the co-worker.

Users may also share files by simply cabling their computers together and using file transfer programs such as Laplink and Fastlink. These are often used to transfer files from a portable to a desktop computer, but can be used between desktop computers just as well. Printers can be shared easily with a switch box and print queue software. These are valid alternatives that don't require an above-average amount of computer knowledge or a large budget.

The efficiency of these alternatives decreases as the size of the group increases. When a work group reaches the size where productivity suffers it may be time to consider net-

Microtechnology

By Larry Mendenhall
Editor, *Technology News*

working. Networks are designed to handle frequent exchanges of data and, if designed correctly, will accommodate additional growth.

After a local agency decides to network it must first consider what it wants the network to do. So the first two steps are assessing and planning. Assessing identifies the goals networking should meet for the local agency. Planning involves the specifics that are needed to reach those goals. Both assessing and planning should be an ongoing part of the networking process. Assessment and planning involve a lot of work, but could mean the difference between success and disaster.

Staff members who will be using the network are the best ones to consult during the assessment process.

Once the network is installed, they are the ones that will tell the network administrator what is working and what isn't. In the end, it will be the users that will determine the success of the network. Involving them at the start will go a long way to ensure the success of the network.

Once needs have been assessed, local agencies should make an inventory of hardware and software they already have. The next step is to start asking questions. Those questions may include:

- What information and resources need to be shared?
- How much staff time is spent us-

ing word processors? Spreadsheets? Other programs?

- How much time and training will everyone need to learn how to use the network?
- How far apart are the computers that should go on the network?
- How will this affect staff members and how they do their jobs?

The last question shouldn't be ignored. Chances are that networking will have a significant impact on members of the work group. As much as possible, try to make the transition to networking as smooth as possible. Take time out for training sessions to help make people comfortable with using the network.

Networking requires a lot of thought just to decide whether it would be worth the investment in time and money. After that has been accomplished, local agencies must decide between different network configurations. The next *Microtechnology* column will discuss network topologies and cabling.

SMS upgrade available soon

The latest version, 3.4, of the Federal Highway Administration's Sign Management Software Program is expected to be available by the end of November.

The new version will enable local agencies to perform life-cycle cost studies on their inventory.

Registered users of the software will be notified when the new version is available. For further information call Ed Bigelow at 515/294-6384.

Drift length easily calculated

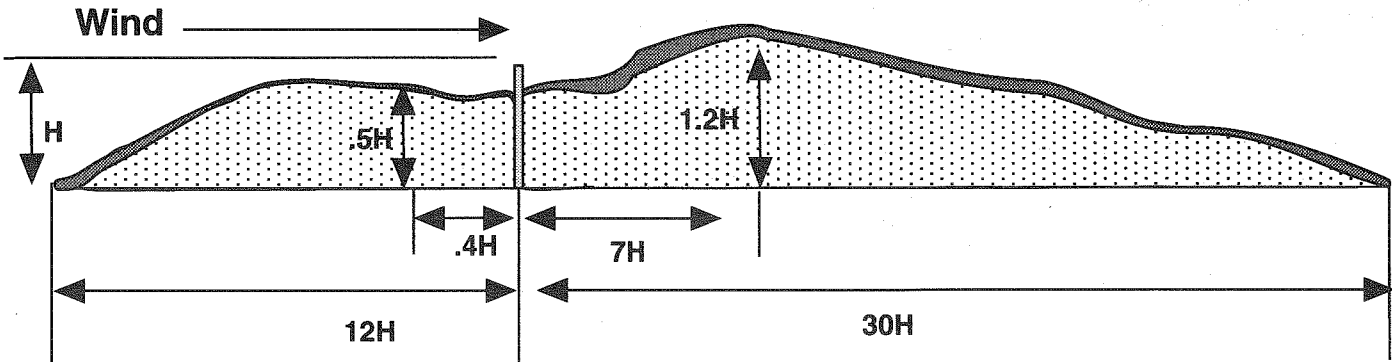


Figure 1 Given a standard four-foot high slat snow fence, the drift formed will have dimensions similar to the drift in the diagram.

portant. This is referred to as the porosity of the fence. Research done at Iowa State University shows that 50 percent porosity creates an optimum area for snow to accumulate. A fence's porosity is something that must be considered when deciding where to put the fence. A fence with less than 50 percent porosity reduces the area where the drifting snow will be stored. That is, the drift is considerably smaller.

Maintenance staff can determine how far to place snow fences from the road by a simple formula. The length of a drift may reach as far as 30 times the height of a porous fence. For example, a four-foot high fence with 50 percent porosity needs 120 feet to hold the maximum amount of snow. Drifting could very well occur on the road if the fence is placed closer than that distance to the road, depending on just how much closer to the road the fence is

placed and the severity of the storm. This simple formula assumes that the terrain is relatively level and that there are no surrounding trees or buildings.

Drift control can be incorporated when designing the street or highway. Ditch slopes can be altered — ideally when new roads are under

continued on page 6

Local agencies see no problem meeting ethanol requirement

By Kim Shelquist
Editorial Assistant

Local agencies expect little or no problems when the mandatory use of fuel containing 10 percent ethanol (gasohol) in all government-owned vehicles begins January 1, 1993.

Senate File 545, Sections 21 and 22 requires state and local governmental agencies to use a reformulated fuel in their vehicles. It is the first time any such requirement has been made into law. The only exception is

for vehicles which use fuels other than the standard unleaded fuel. An example would be diesel-powered vehicles such as snow plows, motor graders, and other heavy equipment. The law is designed to make use of local products while at the same time encourage the use of cleaner burning fuels.

Tom Maze, Director of the Iowa Transportation Center, explains that current, popular reformulated fuels are those fuels that contain an oxygenate. Oxygenates add oxygen to

the fuel and lower the harmful emissions released when the fuel is burned. Because it is an oxygenate, ethanol helps to reduce harmful emissions, most notably carbon monoxide. Ethanol is a popular oxygenate in the Midwest.

Vada Granthan, Program Planner for the Iowa Department of Natural Resources, doesn't anticipate any problems for local agencies when the law takes effect next year. He believes

continued on page 6

Tips From The Field

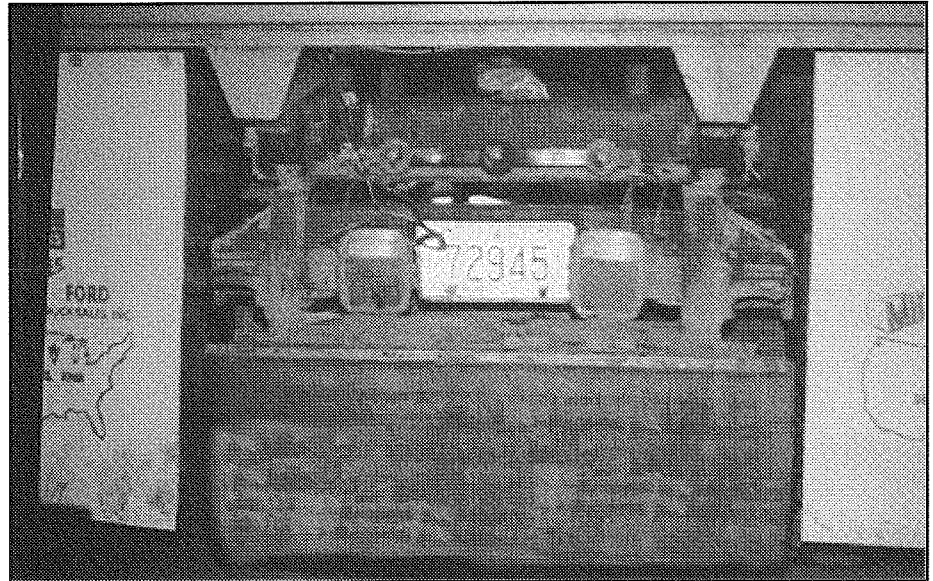
Belt and flaps fight salt corrosion

The same material that melts snow and ice off streets and highways can also corrode parts of the sander. A simple solution that protects the sander comes from Willard Wray, the Public Works Director for the City of Clive.

Wray's department uses a section of conveyor belt and mud flaps to protect trucks equipped with rear-end sanders from the corrosive effects of sand and salt.

A section of conveyor belt is installed across the width of the back end of the truck. The belt and mud flaps protect the undercarriage, the brake system, and the spoke area of the wheels.

For more information contact Willard Wray, City of Clive Public Works Director, 8505 Harbach Blvd., Clive, Iowa, 50053 515/223-6230.



This arrangement of mud flaps and an old section of conveyor belt helps keep salt and sand from taking a bite out of the City of Clive's rear-end sanders.

Ethanol required continued from page 5

ethanol is plentiful and available at most retail filling stations.

Mary Whitcomb, Marketing Assistant for the Iowa Corn Promotion Board, admits ethanol can lead to minor problems in some cars. These problems occur most often in high mileage, older cars that have accumulated a large build-up of sediment in the fuel tank. According to Whitcomb the ethanol, because it is corrosive, loosens this "gunk" causing it to clog the fuel filter. By changing the fuel filter once or twice this problem can be solved and result in a cleaner fuel system.

The new law also requires agencies to display a bumper sticker on each vehicle which indicates the use of ethanol by that vehicle. Stickers are available from the Iowa Prison Industry. For more information call Jill Iben or Tammy Wood at 1/800-332-7922.

A booklet entitled "Alternative Fuels: What You Need To Know" is available from the Iowa Transportation Center and describes the advantages and disadvantages of several alternative fuels. To learn more about the ethanol legislation, contact Grantham at 515/281-8094.

Drifting continued from page 5

construction or during extensive rehabilitation of existing roads – to help keep the roadway clear. Ditch slopes of 4:1 or 6:1 are gradual enough that snow simply keeps moving across the road and does not drift. Steeper slopes act as barriers causing blowing snow to drop which results in drifts forming on the roads.

Many aids are available that provide detailed explanations for calculating drift size and placement of snow fences. Two such aids are a book and a videotape from the Strategic Highway Research Program. Contact Stan Ring at 515/294-9481 to obtain these helpful guides.

For More Information

The videotapes and publications listed in this column are available on a loan basis by contacting Stan Ring, Iowa State University, Iowa Transportation Center, 194 Town Engineering, Ames, Iowa 50011 or by calling 515/294-9481 Monday, Wednesday, and Friday mornings.

Safety Restoration-Snow Removal Guidelines identifies, describes, and ranks hazardous situations and conditions that exist during a snow plowing operation. **Running time: 26:00; Request #276 V**

Iowa's Coordination Pledge is designed to be shown to community groups to promote discussion regarding the use of transit. **Running time: 17:34; Request #280 V**

Potholes: Causes, Cures and Prevention describes how potholes develop and how to patch them. A program for training personnel to recognize problems and how to prevent future potholes is explained. **Running time: 12:00; Request #275V**

Chain Saw Safety demonstrates how to safely use a chain saw. In-

cluded with the tape is an employee self-training manual. **Running time: 45:00; Request #281 V**

Better Inductive Loop Detectors provides an overview of the state-of-the-art procedures for loop detector installations. **Running time: 16:00; Request #241 V**

Facts on Welding Inspection is devoted to the fatigue, fracture, and faults of welds and advances in testing welds. **Running time: 100:00; Request #223 V**

Professional Flagging is a training videotape covering basic principles, procedures, and specific applications emphasizing the importance of the flagger and their professionalism. **Running time: 38:00; Request #209 V**

Evaluation of Recycled Rubber in Asphaltic Concrete is a report on the Iowa Highway Research Board Reports on the use of crumb rubber from discarded tires in asphalt cement used in binder and surface courses.

Report 833 is 31 pages and is on a Plymouth County project.

Report 834 is 50 pages and is on a Dubuque County project. Loan copies only, or call the Iowa D.O.T. research department at 515/239-1447 for a copy.

Asphalt Paving Design Guide presents basic guidelines for designing asphalt pavements. A loan copy is available. **Request #823**

Sign Fabrication, Installation, and Maintenance-Innovative Practices is produced by the FHWA and describes 27 innovative procedures and devices to facilitate highway sign fabrication, installation, and maintenance. **Request #830**

Traffic Signal Retiming was produced by the Iowa Transportation Center and deals with traffic signal retiming in five Iowa cities to improve energy efficiency. **Request #827**

Mission Oriented Dust Control gives the results a field study to measure dust from improved roads. The quantity spread over adjacent land at varying distances from the roadway was measured for 1,100 vehicle passes. A loan copy is available. **Request #787**

Publication order form

To obtain the materials listed from the ITC, return this form to the Iowa Transportation Center, Iowa State University, 194 Town Engineering, Ames, IA, 50011-3233.

	Title	Index No.	No. of Copies
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Please send a complete listing of all publications from your office.

Please send a complete listing of all audio visual materials available.

Weather service

continued from page 3

fact, the service can help determine if contractors should be allowed time extensions without fear of a penalty which would normally be charged when work is not completed on the specified date.

Both Klapp and Fichtner say that by using a service to anticipate weather conditions they are better able to plan work schedules, and that makes for a more efficient operation. Knowing more precisely when and where a storm will hit helps local agencies expend their resources more efficiently.

And justice for all

Appointment, promotion, admission, and programs of extension at Iowa State University are administered to all without regard to race, color, creed, sex, national origin, disability, or age. Call the Affirmative Action Office at 515/294-7612 to report discrimination.

Conference Calendar

Traffic Safety: Using Your New Roadside Design Guide November 12 – Council Bluffs This one-day workshop is planned for transportation professionals who design and construct city and county streets and highways. Contact Carole Seifert 515/294-1400.

Vehicle Fleet Management November 10, Waterloo; November 18, Harlan This one-day workshop is intended for city and county vehicle fleet management personnel and is suitable for lead mechanics, shop supervisors, equipment supervisors, and managers. Contact Carole Seifert 515/294-1400.

ASCE Transportation Conference November 12, Scheman, Iowa State University The America Society of Civil Engineers – Iowa Section cosponsor this annual conference to address engineering topics related to transportation systems. Contact Janet Gardner 515/294-5366.

Iowa DOT Specifications Update Conference December 1, Scheman, Iowa State University Contractors and consultants will have the opportunity to view recent changes in Iowa DOT specifications. Contact Janet Gardner 515/294-5366.

46th Annual Iowa County Engineers Conference December 8 – 10, Scheman, Iowa State University Informative continuing education courses conducted during this conference are planned specifically for county engineers and technicians. Contact Connie Middleton 515/294-6229.

Transportation Research Board 72nd Annual Meeting January 10-14, 1993, Washington D.C. The Transportation Research Board's annual meeting is a chance for transportation-involved people to exchange transportation information and research findings. Call 202/334-2934 or 202/334-2362 to register.

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Iowa Transportation Center
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