

# roads bridges transit technology news

Local Transportation Information Center  
Iowa State University Engineering Extension Service

July 1986

## **"Right-to-know rules" clarify the risky business of managing hazardous chemicals**

Employers, employees, and community citizens should now have access to information on safely avoiding hazardous chemical risks. The Hazardous Chemicals Risk Right-to-know Act took effect May 25, 1986, with jurisdiction in the Iowa Bureau of Labor. By that date, employers were to have implemented their written Hazard Communication Program covering the three parts of the law: employee right-to-know, community right-to-know, and emergency response right-to-know.

The law was formed under the urgency of the Federal government, according to Barbara Mallon, employee safety officer for the Iowa Department of Transportation. "The Federal government intervened in 1983, because employers were negligent in informing their employees of hazardous chemical risks within the workplace."

However, the lack of information for citizens on chemical hazards has not been entirely the fault of the employer. Mallon said, "We're learning about negative effects of chemicals on our bodies, and the environment, and research is providing new information every day." With this in mind, the federal and state governments decided to take action.

### **Worker right-to-know**

This portion of the law specifies that employees must be made aware of the provisions of the law and receive training about material safety data

sheets, container labels, and product hazards. Material safety data sheets contain written or printed information on such details of the hazardous chemical as follows: the identity and its ingredients, the physical and chemical characteristics, its physical and health hazards, the primary route of entry, the permissible exposure limit, any applicable precautions for safe handling and use, control measures, and applicable emergency and first-aid practices.

The written program, which was due May 25, 1986, was required to include a list of the hazardous chemicals employees use and detailed methods the employer will use to inform employees and contractors of the hazards of routine tasks as well as special assignments. Training

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The preparation of this newsletter was financed through the Technology Transfer (T2) Program. The T2 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 T2 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

## **Underground storage tanks must be reported**

Leakage from underground fuel tanks is a serious problem in Iowa. In many cases, thousands of gallons of petroleum products have seeped down to the water table and spread along its surface. More than 80 such incidents have been investigated by the Iowa Department of Water, Air and Waste Management (WAWM) during the past two years.

The leaks usually went undetected until fumes were noticed in nearby basements, wells, or sewer systems. In some cases, the fumes reached explosive levels resulting in the evacuation of homes, businesses, and schools.

According to Pete Hamlin of WAWM, "Contamination has affected the water supplies of eight communities. Four of them have had to stop using certain wells."

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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.

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.

## Underground tanks continued

"We first became aware of this as a serious problem in 1980," says Hamlin. He attributes the epidemic of leaks to the fact that many underground steel storage tanks were installed during the 1950s, and the steel tanks have a life span of about 30 years.

To remedy the problem, the Iowa law requires as of May 1, 1986, that anyone who owns or operates an underground storage tank used for petroleum products or hazardous substances must notify WAWM of the tank's location, size, age, type, and contents.

Gas stations, convenience stores, industries, auto dealerships, farm cooperatives, vehicle maintenance garages, schools, and hospitals are just some of the places that commonly have underground storage tanks. A tank is considered to be underground if 10 percent of its capacity (including associated piping) is below the surface of the ground.

"Even tanks that were taken out of service as long ago as January 1, 1974, must be reported if they are still in the ground. The fact that an out-of-use tank was filled with such things as sand, dirt, or cement does not exempt the owner from the reporting requirement," says Bill Bandurski of the Iowa Department of Water, Air and Waste Management.

Owners or operators of underground storage tanks must submit a completed notification form (WAWM form 148), along with a fee of \$5 per tank to WAWM. The reporting forms can be obtained by calling (515) 281-8692, or writing Iowa Department of Water, Air and Waste Management, Henry A. Wallace Building, 900 East Grand, Des Moines, Iowa 50319.

### And justice for all

Appointment, promotion, admission, and programs of University Extension at Iowa State University are administered equally 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.

## Innovative Iowa to host the first major "fast track" concrete project

The drivers of U.S. 71 in Buena Vista County won't need to detour from their route for long when the road is repaired this summer. If all goes as planned, the revolutionary "fast track" concrete overlay will be placed on U.S. 71 and open to traffic the next day.

Plans for the seven-mile project include a 4-inch bonded Portland cement concrete overlay with a 2-foot, tied, full depth widening on each side of the existing 49-year-old, 20-foot wide concrete paving. It will be constructed one 12-foot lane at a time, with two way local traffic using the adjacent lane and detour lane at all times. Test sections of accelerated set concrete will be expected to attain adequate strength to permit opening to traffic in less than 12 hours.

Iowa has been an early adapter of new and innovative transportation technology. Examples of Iowa's leadership in technology transfer include development of the first slip form pavement process, use of bonded Portland cement concrete overlays, concrete pavement restoration, and bridge deck overlay.

To demonstrate the new fast track concrete process, two one-day open houses will be held on Friday, July 11, and Monday, July 14, near Storm Lake, Iowa. This open house, which

is part of a project that began June 1, will commence September 1. The purpose of this project is to research the development of concrete mixes and specialized equipment.

The open house, sponsored by the Iowa Department of Transportation in cooperation with the Federal Highway Administration, Iowa Concrete Paving Association, American Concrete Pavement Association, Portland Cement Association, and Central Paving Corporation, will begin each day at 8:30 a.m. in the Schaller Chapel on Buena Vista College campus, with a morning program of Iowa's experience with fast track concrete, and lunch, followed by a project site visitation/demonstration, (participants will be transported to the project site by bus).

The early registration fee (prior to July) will be \$30.00, which includes coffee, lunch, and program materials. The price at the door will be \$40.00. For project safety, it will be required for all participants to wear hard hats and safety vests at the project site. They can be purchased at the site for \$10.

Additional airport, motel, and driving direction information is available from the Iowa Concrete Paving Association, 8325 Douglas, Suite 38, Des Moines, Iowa 50322, or by calling (515) 278-0606.

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*Technology News* is published by the Local Transportation Information Center  
Engineering Extension Service  
Haber Road  
Iowa State University  
Ames, Iowa 50011  
1-800-262-8498 (intrastate)  
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Civil Engineering Extension

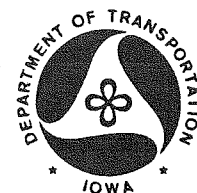
### Transportation Info-Line

Call toll-free  
1-800-262-8498  
(in Iowa)  
In Ames call  
294-8815



U.S. Department  
of Transportation

Federal Highway  
Administration



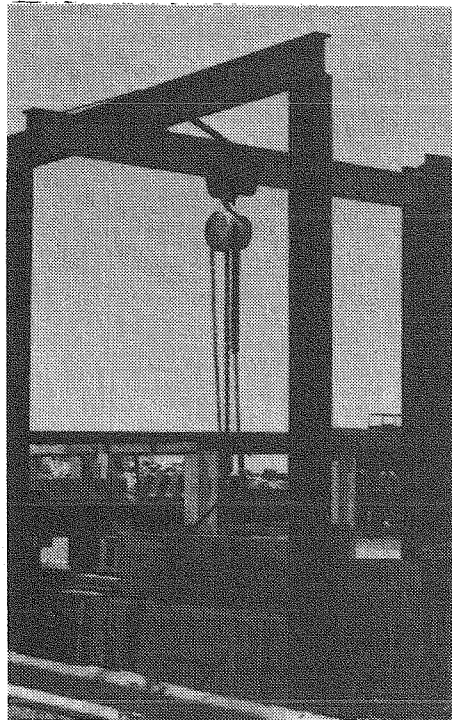
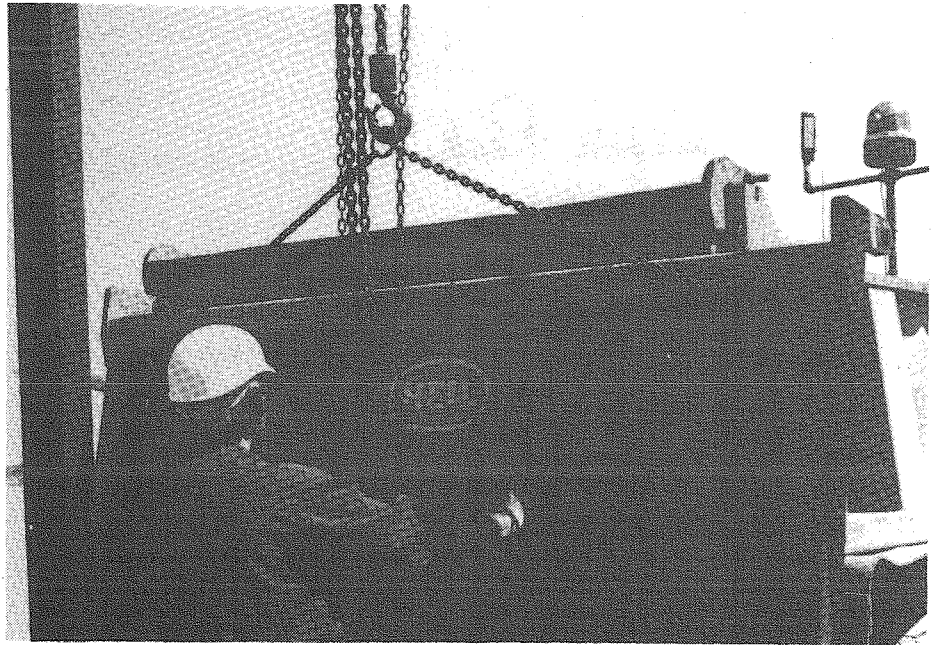
# tips from — the field —

The tailgate rack is a hoist developed by personnel at the Iowa Department of Transportation to assist with the removal of tailgates from the dump boxes on maintenance trucks. Due to the size and weight of these tailgates, removing and replacing them was, in the past, an awkward, time consuming, and somewhat hazardous operation.

With the tailgate rack, however, the process can now be done quickly and safely. The rack takes the form of an inverted-L, with braces to the sides for support. A pulley mounted on a set of rollers rides across the overhead beam of the structure.

To use the hoist, the truck is backed into position beneath this overhead arm, and the hoist is pulled out to align vertically with the tailgate of the truck. A hook on a chain is lowered and attached to the tailgate. A chain controlling the hoist is then pulled, and the tailgate is lifted into the air. When it reaches a point clear of the truck, the tailgate can be rolled on the pulley back down the arm of the rack and lowered to a storage area on the other end.

For additional information, contact John Moody, Local Transportation Information Center, Haber Road, Iowa State University, Ames, Iowa 50011 or phone 515/294-3424.



## Right-to-know continued

must be provided at the time of initial assignment and whenever a new hazardous product is introduced into the workplace.

## Community right-to-know

Under this portion, the employer is required to provide information about products used to anyone from the public who requests it. Because the public has a right to be informed about the presence of hazardous chemicals in the community, records such as an inventory of products and their material safety data sheets must be available for inspection during normal working hours. The program went into effect July 1, 1986.

## Public safety/emergency response right-to-know

Third, following emergency response right-to-know requirements, employers must notify local fire departments alerting them to the products used and stored at work sites. Each work location will submit to the local fire

department a list of hazardous chemicals that are consistently generated by, used by, stored at, or transported from a work facility. In addition, material safety data sheets information must accompany each product on the list.

Local fire department and facility personnel were to have met to collaborate on appropriate response in dealing with an emergency of the listed hazardous chemicals. A fire department contact form has to be completed, signed, and on file with the Iowa DOT Human Resource Bureau by November 1, 1986.

The law also specifies signing requirements and conditions for buildings containing significant amounts of hazardous chemicals.

"It is interesting that the law, in three parts, applies to the rights of workers and also to community citizens," said Mallon. "City organizations, for instance, are very visible and should be extra cautious to keep their

constituents as well as their employees informed of chemical use."

The Iowa Legislature adopted the Federal government's provisions in spring of 1984, after they had been introduced the previous autumn. Employers were aware, for more than a year before the deadline date of May 25, 1986, that they would be required to submit a formal, written program of how they would implement this law.

For more information on how to implement or effectively use this law, contact the Iowa Bureau of Labor, 307 East 7th Street, Des Moines, Iowa 50319 or call (515) 281-3606.

To assist groups in giving an overview of the new law, the Local Transportation Information Center has available for loan a 10 minute videotape and manual developed by the Iowa DOT. This videotape is not intended to satisfy training requirements, rather it will give an overview of the law.

## A material safety data sheet for unleaded gasoline.

**COOP** **FARMLAND INDUSTRIES, INC.** **007-007200**  
24 HOUR  
EMERGENCY TELEPHONE  
Refined Fuels DIVISION  
P.O. BOX 7305  
KANSAS CITY, MO. 64116  
FARMLAND — 316-251-4000  
CHEMTREC — 1-800-424-9300

**MATERIAL SAFETY DATA SHEET**  
# 00002

PRODUCT NAME — Unleaded Gasoline & Premium Unleaded Gasoline

**SECTION 1 — PRODUCT IDENTIFICATION**  
COMMON NAME — Unleaded Gasoline & Premium Unleaded Gasoline  
CHEMICAL NAME — Light Petroleum Distillate-Motor Fuel UN 1203 CAS # 8006-61-9  
CHEMICAL FORMULA — NA CHEMICAL FAMILY — Hydrocarbon

**SECTION 2 — HAZARDOUS COMPONENTS**

INGREDIENTS	PERCENTAGES	PEL (OSHA)	TLV (ACGIH)	OTHER
Gasoline Unleaded	> 95		300 ppm	STEL 500ppm

Hazard Index: Health - 1  
Flammability - 3  
Reactivity - 0

**SECTION 3 — PHYSICAL DATA**  
BOILING POINT 80°F @ 760 mmHg  
SPECIFIC GRAVITY (H<sub>2</sub>O = 1.0) 0.72  
VAPOR PRESSURE 400 mmHg @ 68°F  
PERCENT VOLATILES 100  
VAPOR DENSITY (AIR = 1.0) 4  
SOLUBLE IN WATER YES  NO   
EVAPORATION RATE (ETHER = 1.0) Slower than ether  
APPEARANCE AND ODOR — Reddish golden brown liquid with not unpleasant odor.

**SECTION 4 — FIRE AND EXPLOSION DATA**  
FLASH POINT TCC - 40°F  
AUTO IGNITION TEMP 853°F  
FLAMMABLE LIMITS IN AIR LOWER 1.4 UPPER 7.6  
EXTINGUISHING MEDIA — Foam, Fog or Water Spray, Dry Chemical CO<sub>2</sub>

SPECIAL FIRE FIGHTING PROCEDURES — Cool containers with water and remove from fire exposure. Wear self-contained pressure demand breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS — Highly volatile. Vapors may travel along the ground to a source of ignition (pilot light, heater, electric motor) or source some distance away. Containers, drums (even empty) can explode when heat (welding, cutting, etc.) is applied.

**SECTION 5 — HEALTH HAZARD DATA**

EFFECTS OF OVER EXPOSURE  
ACUTE — Nasal irritation, dizziness, weakness, nausea, headache, possible unconsciousness & asphyxiation. Ingestion can cause nausea, vomiting and diarrhea.  
CHRONIC — see Section 9 "other comments"

BODY PARTS — Eyes and skin can be irritated. Prolonged skin contact can cause dermatitis.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE — Illnesses involving the respiratory system.

IS MATERIAL A CARCINOGEN OR POTENTIAL CARCINOGEN? YES  NO  Suspected See Section 9 "other"

FIH-6642 (08/85)

### HEALTH HAZARD DATA (Continued)

EMERGENCY AND FIRST AID PROCEDURES — Remove contaminated clothing. Wash exposed skin area with soap and water. Eyes should be flushed with large amounts of water. If breathed, remove victim to fresh air. If breathing has stopped, give artificial respiration, keep warm and get medical attention. If material is swallowed, do not induce vomiting. Keep warm and get medical attention.

### SECTION 6 — REACTIVITY

STABLE YES  NO  — CONDITIONS TO AVOID —

INCOMPATIBILITY (MATERIALS TO AVOID) — Strong oxidizing agents.

HAZARDOUS DECOMPOSITION PRODUCTS — Carbon dioxide and carbon monoxide.

HAZARDOUS POLYMERIZATION YES  NO  — CONDITIONS TO AVOID —

### SECTION 7 — SPILL OR LEAK PROCEDURES

STEPS TO TAKE IF MATERIAL IS RELEASED OR SPILLED — Eliminate all sources of ignition. Small spills can be picked up with absorbent material. Dike area of large spill to prevent run-off to sewers, streams, etc. Exclude persons not wearing protective equipment. Pump liquid to salvage vessel. Remaining liquid may be taken up with sand, clay, earth or other absorbent and placed into containers.

WASTE DISPOSAL PROCEDURES — Large spill waste destroy by incineration. Contaminated absorbent may be deposited in landfill per local, state and federal regulations.

### SECTION 8 — PROTECTIVE EQUIPMENT TO BE USED

RESPIRATORY EQUIPMENT — NIOSH/MSHA approved air supplied respirator or self-contained pressure demand breathing apparatus.

EYE PROTECTION — Chemical splash goggles are preferred. Other safety glasses are permitted.

PROTECTIVE CLOTHING — Resistant neoprene or nitrile rubber gloves.

VENTILATION REQUIREMENTS — Sufficient mechanical ventilation to maintain exposure below TLV.

OTHER (Safety Showers, Eyewash Stations, etc.) —

### SECTION 9 — SPECIAL PRECAUTIONS AND COMMENTS

HANDLING AND STORAGE — Should not be used as a cleaning agent. Small quantities must be stored in approved containers. Drums should be properly grounded and bonding applied when transferring between containers. Empty gasoline containers can retain product residue and can explode with application of heat.

OTHER — The Atlantic Richfield Company filed a TSCA 8(E) notice with EPA on 12-9-81. API sponsored chronic inhalation study of unleaded gasoline vapors showed adverse health effects in certain laboratory test animals. The significance of this study in relation to human health is currently being evaluated.

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DATE September, 1985

# conference 1 2 3 calendar

American Public Works Association  
Iowa Chapter  
Annual Meeting  
Okoboji  
August 13-15

American Public Works Association  
Conference and Equipment Congress  
New Orleans  
September 20-25

Iowa Traffic Control and Safety  
Association  
Annual Conference  
Ames Starlite Village  
September 11-12

American Society of Civil Engineers  
Iowa Section Annual Meeting  
September 12-13

League of Iowa Municipalities  
Des Moines  
September 24-26

## Schedule of Events

Managerial Tools for Transit  
Management Workshop  
Indiana University, Bloomington  
July 20-25, 1986

Contemporary transit issues and advanced management techniques. Program includes a mixture of transit specific topics, such as road supervision, performance indicators, and motivating operators, and generic management skills such as time management, personal productivity, and stress management.

Rural/Specialized Transit  
Management Workshop  
Milwaukee, Wisconsin  
October 13-17, 1986

Offers general training in personnel selection and employee motivation, operations performance evaluation, management planning, driver training and public relations.

Advanced Topics for the Rural/  
Specialized Transit Manager  
Milwaukee, Wisconsin  
October 27-31, 1986

Training topics include stress management, vehicle and operations safety, specific vehicle selection and maintenance skills, and marketing.

## Test your tort liability wisdom

by R.L. Carstens, professor of civil engineering

Your knowledge concerning tort liability questions can be assessed by your answers to the following three true or false questions. Correct answers are given on page 7 of this issue.

1. The decision to use a traffic control device must always be on the basis of an engineering study.

True  False

2. The *Manual on Uniform Traffic Control Devices (MUTCD)* sets forth minimum standards.

True  False

3. Ball-bank indicator test runs are used to determine the maximum safe speed for a curve.

True  False

## Stan Ring receives excellence in extension award

ISU Technology Transfer Center's own Dr. Stanley Ring was honored for his many endeavors, as a recipient of the first Burlington Northern Foundation Faculty Achievement Award for excellence in extension. The Burlington grant was provided to Iowa State to recognize significant and meritorious achievements in teaching, research, and extension. The recipients received a certificate and \$1,500 honorarium at the general faculty meeting on May 13.

Dr. Ring, program manager for the Technology Transfer Center, professor of civil engineering, and program leader for Civil Engineering Extension (CEE), has been a member of the ISU faculty since 1967. He received his B.S. in civil engineering in 1950, his M.S. in 1962, and Ph.D. in 1973 from ISU. His areas of specialization are highway planning and design, transportation engineering, and Engineering Extension Service continuing education courses.

Owen Osborne, director of Engineering Extension Service praised Dr. Ring as, "... an exceptional individual, truly deserving of recognition for his significant extension contributions to Iowa State University, his profession, and the people of Iowa." Dr. Ring has led Civil Engineering Extension for the past 12 years, a period that has shown great growth. For instance, last year under his direction, 67 conferences, seminars, and workshops offered by civil engineering extension attracted more than 5,000 public works officials.

Dr. Ring has also been recognized for his achievements by Iowa State University Extension, American Public Works Association, Iowa Engineering Society, Iowa County Engineers Association, Iowa Traffic Control and Safety Association, and the Society of Land Surveyors in Iowa.

## Know your D.O.T.

This is the second in a series of articles to better acquaint *Technology News* readers with field representatives from the Department of Transportation's Highway Division. This issue introduces field engineers from Districts 3 and 4 and some highlights of their major projects.

### District 3 projects

A seven-mile paving project is planned for U.S. 71 in Buena Vista County from the junction of Iowa 3 to just south of the junction with Iowa 10. This is a research project and is designed for a minimum amount of traffic interference with a detour in effect for through traffic. The road will be paved one half at a time using a newly-designed mix of Portland cement concrete that will allow early use of the new surface for the movement of local traffic.

Also, a Portland cement concrete patching project will occur on I-29 just south of Sioux City. The project will involve the installation of approximately 40 miles of longitudinal subdrains in Woodbury, Monona, and Harrison Counties. Twelve two-lane miles of intermittent asphaltic concrete overlay will supplement a comparable amount of overlay work done in 1985.

Another project involving a ¾-mile segment of U.S. 30 in Dunlap of Harrison County will remove and replace the center 24 feet of surfacing on several blocks leaving the widening portions undisturbed.

### District 4 projects

In Pottawattamie County, a Portland cement concrete inlay project, which is eight miles long, commenced in late April. At a cost of \$3,583,720, the 11-inch pavement inlay project includes the west-bound lanes of I-80 from the I-680 junction to the Shelby interchange. The existing pavement is to be removed, crushed, and used as granular sub-base material and the shoulders will be surfaced with asphaltic concrete 2½ to 3 inches thick. The median ditch will be partially filled to produce 6:1 foreslopes.

The contractor on the project is the Central Paving Corporation of Indianola, Iowa. The Shelby and Minden interchanges will remain operational and activity will be staged to provide for minimum traffic interference. The project should be completed in early October.

Also planned for District 4 is an asphaltic concrete widening and resurfacing project on Iowa 2 extending across Ringgold County for more than 22 miles. The road will be widened two feet on each side and the project includes longitudinal subdrains in selected locations. The shoulders will be surfaced with stabilized, crushed rock. Similar work is intended to extend about 5 miles into Decatur County of District 5.

On Iowa 2 in Fremont County, a reconstruction project costing \$3,207,915 was scheduled to begin in early April, but has been delayed because of excessive rain in the area. The project that begins near Fremont County Road No. L-31 extends approximately 1.3 miles easterly to I-29 then continues easterly approximately 0.5 miles through the Burlington Northern Railroad bridge. Included in the project is the replacement of the bridge over the Burlington Northern Railroad. Godperson-Smith is the contractor for this project, that connects on its west end, to a 1.7 mile section constructed in 1985; the latter section terminates approximately 1.3 miles west of the I-29 junction. The 1.7 mile section will be paved by the Fred Carlson Company of Decorah.

There will be one two-lane section added with the east terminus of the resulting four-lane section being just east of the I-29 junction. The road will connect with another four-lane section being paved this year. The total length when completed will be slightly more than three miles. Under Godperson-Smith, contractor, the project should be done in late October.

In Shelby County on U.S. 59, an eight-mile project will begin two miles south of Harlan and end about six miles north of there. The southern two miles of the project will employ a process known as "crack and seat," which involves breaking the existing pavement, leaving it in place, and then rolling it with heavy equipment. The compacted surface will then receive a 4½ inch asphaltic concrete overlay.

The remaining six miles will have normal three-inch asphaltic concrete overlay and longitudinal subdrains will be included in selected locations. Letting for the project was May 13.

The accompanying map illustrates the geographical areas and various offices of each district.

### District 3 engineers

Sioux City, 712-276-1451  
Jim Bump, P.E., district engineer  
Harry W. Nelson, P.E., district maintenance engineer  
Thomas E. De Witte, P.E., district construction engineer  
Clyde Leonard, P.E., district materials engineer  
Richard Storm, P.E., local systems engineer  
Rich Michaelis, P.E., district transportation planner

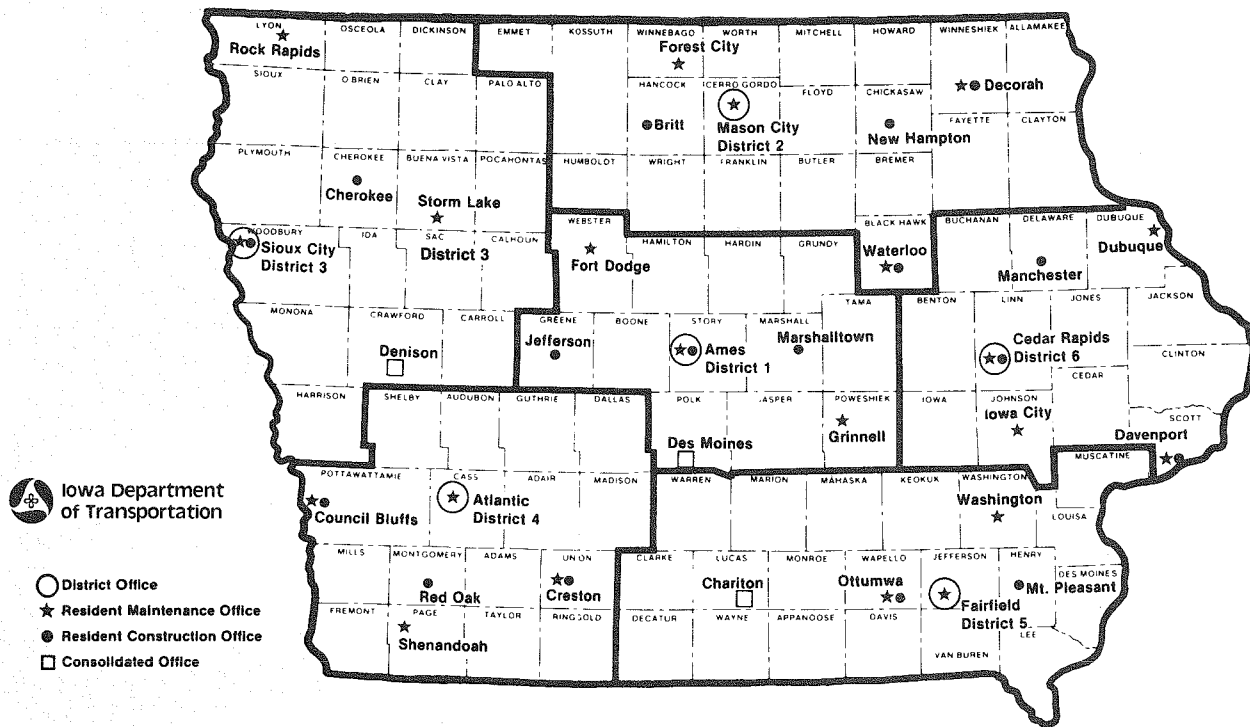
### Resident construction engineers

Jerry Arn, P.E.  
Denison, 712-263-5628  
  
Richard Bolton, P.E.  
Sioux City, 712-239-1367

### Resident maintenance engineers

Cecil L. Sutliff, P.E.  
Sioux City, 712-239-2113  
  
Jerry Arn, P.E.  
Denison, 712-263-5628  
  
Clyde Bartel, P.E.  
Storm Lake, 712-732-4514  
  
Patrick H. Waters, P.E.  
Rock Rapids, 712-472-2315





### District 4 engineers

Atlantic, 712-243-3355

Van Snyder, P.E., district engineer  
 Charles E. Clemens, P.E., district maintenance engineer  
 James E. Klein, P.E., district construction engineer  
 John T. Pearson, P.E., local systems engineer  
 C. Bruce Claggett, P.E., district transportation planner

### Resident construction engineers

William E. Cook  
 Council Bluffs, 712-366-0568

Harvey H. Olson, P.E.  
 Creston, 515-782-4518

William G. Burgan, P.E.  
 Red Oak, 712-623-4951

### Resident maintenance engineers

James R. Whetstone, P.E.  
 Council Bluffs, 712-366-0438

George W. Heaberlin, P.E.  
 Shenandoah, 712-246-4610

Don Shaw, P.E.  
 Creston, 515-782-4310

Keith Norris, P.E.  
 Atlantic, 712-243-1510

## Answers to tort liability questions

The three questions on page 5 of this issue are among those most commonly asked of witnesses representing a highway agency by plaintiff's attorneys in legal proceedings against a public entity growing out of a traffic accident. Their intent is to elicit answers that can be used to impeach subsequent testimony by the same witness or others in order to demonstrate negligence by the highway agency. Correct answers are as follows:

1. True. Most witnesses answer this question correctly. This provision, in Section IA-4 of the *MUTCD*, specifies that the selection of traffic control devices must be made by qualified engineers. Engineering studies vary widely in the extent to which they are documented. Although a competent engineering study can be made without written documentation, the evidentiary value in a legal proceeding is much enhanced if a study has been thoroughly documented.

2. False. Most witnesses answer this question incorrectly. The intent of the *MUTCD* is to spell out provisions covering the application of traffic control devices and set forth standards for their design. Although section 6A-2 states that part VI

prescribes minimum standards for the application of devices for work areas, the intent of the *MUTCD* in general is stated in the Introduction as being responsive to a need for high uniform standards.

3. False. Most witnesses answer this question incorrectly. Ball-bank indicators are used to help establish a recommended speed for a curve. Travel at this speed will be comfortable and will be safe for virtually all surface conditions. Lawyers like to speak of a maximum safe speed, something vastly different. By implication, a vehicle attempting to traverse a curve at a speed 0.1 mph greater than the maximum safe speed will go out of control and run off the road. Obviously, this speed will not be established by test runs. However, the writer uses a rather conservative method of calculating maximum safe speeds. On curves with radii up to 450 feet and dry pavement conditions, this will always be at least 50 percent greater than a recommended speed that was based on a 10-degree ball-bank indicator reading.

## Experimental asphaltic concrete overlay

In August, the City of Des Moines will place an experimental asphaltic concrete overlay containing an ice-resistant additive. This European-developed additive is marketed under the name Verglimit™. Verglimit™ is a chemical multicomponent deicer that is added to the surface course of an asphalt overlay. The most common addition level is 5 to 6 percent by weight.

Verglimit™ is added to the asphaltic concrete at the asphalt plant where it is uniformly distributed through the mix. This allows continued exposure of particles to the atmosphere, and as the finished surface wears under traffic the exposed particles dissolve by attracting and absorbing moisture from the air. This solution on the roadway surface will make it difficult for the snow or ice to stick. After a winter storm, and as the humidity decreases, water in the solution evaporates, leaving the additive in the pore for the next storm.

The 1,500-foot long, 1-inch thick, overlay will be placed on Euclid Avenue from 2nd Avenue to Columbia Street. This street is a 50 foot wide urban section that carries about 19,000 vehicles per day. Approximately 400 tons of hot mix asphalt surface course will be required to complete the overlay. The overlay will contain 6 percent additive by weight, or approximately 23.5 tons of Verglimit™. Special mixing and rolling concerns are required.

The Iowa Highway Research Board has approved this overlay as a research project and will be funding for the Verglimit™ additive. This project should provide information regarding the effectiveness of ice-retardant additives and operational procedures for placing and maintaining asphalt overlays containing these additives.

## Humphrey named highway director

Robert L. Humphrey has been selected as Iowa Department of Transportation Highway Division director and chief engineer, replacing Robert H. Given who retired at the end of December.

Humphrey, who was DOT district engineer for the 12-county central

area, has been with the state for 29 years. Prior to being named district engineer in July 1980, he has held DOT positions that included traffic survey engineer, assistant highway planning surveys engineer, urban transportation planner, and director of the Office of Project Planning.

## "Spill" video for those "First on the Scene"

"First on the Scene," a new videotape training program for first responders to a hazardous materials incident, is now available from the Chemical Manufacturers Association.

The new training program is a part of the National Chemical Response and Information Center's lending library of audiovisual programs. "First on the Scene" was prepared to help first responders to survive, to avoid injury, and to obtain assistance.

The videotape program is 31 minutes long and stresses five key points:

- How to approach the scene,
- How to identify the material,
- How to stabilize the incident scene,
- Where to obtain help to handle the problem, and
- Site entry.

The five key points are demonstrated by using two scenarios involving hazardous materials—one involves a tank truck, the other a van trailer carrying a mixed load of packaged materials.

Copies of the training program can be borrowed or purchased from the Chemical Manufacturers Association, 2501 M St., N.W., Washington, D.C. 20037. There are no restrictions on reproducing the videotape. The program is available for \$25 in ¾-inch format or for \$15 in VHS and Beta formats.



engineering extension service  
iowa state university, ames, iowa 50011

Patty Campbell  
Technology Transfer Newsletter  
Address correction requested.

Route to:

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Address correction requested.  
Include entire mailing label.