

roads bridges transit technology news

Local Transportation Information Center
Iowa State University Engineering Extension Service

May 1986

Mandatory seatbelt law effective July 1

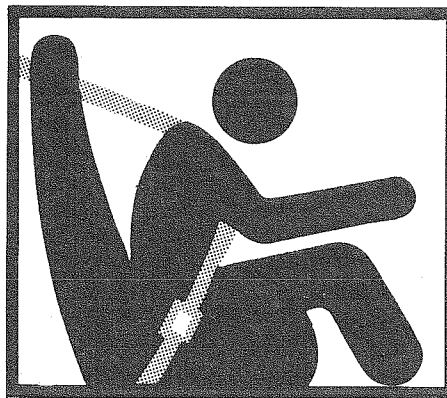
Last year, 472 Iowans were killed in traffic accidents. This year an estimated 150 lives will be saved, and 3,000 injuries eliminated when Iowa adopts the mandatory safety belt law, according to Sergeant Frank Fisher of the Iowa State Patrol. Governor Terry Branstad signed the bill on February 20, 1986, and the law will go into effect on July 1.

For the first six months after enactment of the law, the violating driver will be given a warning. Then, on January 1, 1987, the law will take full effect and drivers and front-seat passengers will be fined \$10, plus court costs, if they are not wearing their belts. The violation will be placed on the offender's driving record but not classified as a moving violation.

State governments are adopting mandatory safety belt laws because on July 11, 1984, U.S. Department of Transportation Secretary Elizabeth H. Dole issued a rule requiring the phase-in of automatic restraints in passenger vehicles manufactured after September 1, 1986. The ruling also called for the installation of restraint systems by the 1990 model year unless two-thirds of the population is covered by seatbelt use laws by April 1, 1989.

Safety belts are being required for two major reasons: to prevent a "second" collision, a person colliding with the interior surface of the car, and to keep the person inside the vehicle upon impact. For instance, a "second" collision, where the unbelted passenger hits the

windshield or other interior surface of the car at 30 miles per hour, has the same impact as falling off a three-story building. Also, an unbelted passenger is much more likely to be thrown from the vehicle where the chances of being killed are 25 times as great.



During a typical 75-year lifespan you:

- Will experience a traffic crash.
- Have a 50 percent chance of suffering a disabling injury.
- Have 1 chance in 50 of becoming a fatality.

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

Furthermore, during a typical 75-year lifespan, an American is apt to be involved in an auto accident, according to a study by The University of Michigan's Transportation Research Institute. If involved in a traffic crash, a person faces a 1-in-50 chance of becoming a fatality and a 50 percent probability of suffering a disabling injury.

Yet, with such strong statistical evidence, only 14 percent of all vehicle passengers in the U.S. (18 percent of drivers in Iowa) buckle up regularly. Most people seem to believe that vehicle accidents only "happen to someone else." Gus Horn, safety program planner for the Iowa Department of Transportation, said that it is precisely this attitude that kills and injures Iowans, destroying lives and families. Even though the chance of death or injury from an accident would be reduced by nearly 50 percent if people wore seat belts, people don't take the time to do so.

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.

Mandatory seatbelt legislation like that adopted in Iowa has been successful in more than 30 other countries around the world. Australia was the pioneer in adopting such a law in 1972 and belt-wearing in that country is now nearly 80 percent. As a result, it is estimated that vehicle collision deaths have been reduced by 20 percent and serious injuries by 30 percent. Great Britain is the most recent country to adopt the law on January 31, 1983, and belt use has already jumped to 95 percent resulting in 23 percent fewer fatalities and 26 percent fewer serious injuries.

Sources

Governor's Highway Safety Office
Iowa Department of Transportation,
Driver and Safety Improvement
Motor Vehicle Manufacturers Association of the United States, Inc.
Traffic Safety Now, Inc.

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In Ames call
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U.S. Department of Transportation
Federal Highway Administration



Follow the winding road to court

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

The Manual on Uniform Traffic Control Devices (MUTCD) states that "... the winding road sign is intended for use where there are three or more turns or curves . . . separated by tangent distances of less than 600 feet." The exact distance between closely-spaced curves frequently becomes a matter at issue when winding road signs are in use. Thus, persons responsible for sign installation should be aware of the implications of use of this particular sign.

Two recent court cases exemplify this problem. In each case, litigation resulted when a vehicle was traveling too fast to successfully negotiate a curve to the right, and ran off the road so that some vehicle occupants were seriously injured.

Case number one occurred in Iowa. A vehicle encountered a winding road sign, successfully negotiated five curves, then ran off the road on the sixth curve, a 12-degree curve about 0.8 mile from the winding road sign. The road for 840 feet approaching the curve was relatively straight, but included a deflection of about 2 degrees half way between two successive curves. Hence, there was no tangent distance of 600 feet or more. Following a jury trial, the county having jurisdiction was caused to pay a five-figure judgment to the plaintiff.

Case number two resulted from an accident in another state. In this case there were 1.2 miles between the winding road sign and the curve

on which an accident occurred, the eighth curve following the sign. A relatively straight section, 684-foot long, preceded the 30-degree curve in question. However, a deflection of about 4 degrees in the alignment of the road occurred 380 feet past the preceding curve, so again the condition of a 600-foot tangent did not exist. This case is still being litigated.

Surveying texts define a tangent as a straight line connecting circular curves and tangent to them. Whether a deflection of a few degrees introduced into a relatively straight section means that there are two short tangents or not is a matter best debated by attorneys. For the person responsible for sign installation, the most important question is whether, in a specific situation, the warning offered motorists by a winding road sign is sufficient. If not, and if its use would not be confusing, an additional sign may be used. Perhaps the best advice was offered by the FHWA in the *Federal Register*, Volume 47, Number 24, page 240, on February 4, 1982, as follows: "... if an engineering study as recommended in the MUTCD is made before a traffic control device is installed, the fact that guidance information is included in the MUTCD does not restrict the use of good judgment since it is still the responsibility of the person putting up the sign to assure its correctness." Good judgment will usually, but not always, suggest use of only the winding road sign preceding a number of closely-spaced curves.

tips from — the field —

Manhole cover lifter

This handy tool was developed by Larry Phillips, design specialist for the City of Des Moines Public Works Department, to efficiently replace the old crowbar method of lifting manhole covers. The tool has two grippers that hook into the grooves of a manhole and, when the handle is pulled, are drawn together to lift the cover.

The lifter is constructed of 1-inch tubular material spanning the diameter of a manhole cover, as the diagram indicates, and equipped with strap iron hooks that grip the cover when the longer member is lifted. This allows the manhole cover to be lifted without the fear of a strained back, broken fingernails, or pinched fingers.

The tool is said to be especially useful in the removal of the newer, leak-proof manhole covers. Utility Equipment Company of Des Moines currently manufactures and sells the manhole cover lifters.

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

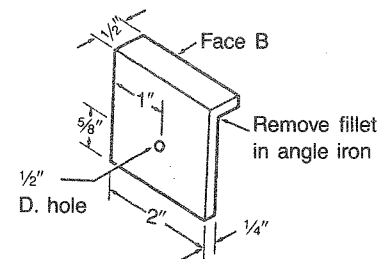
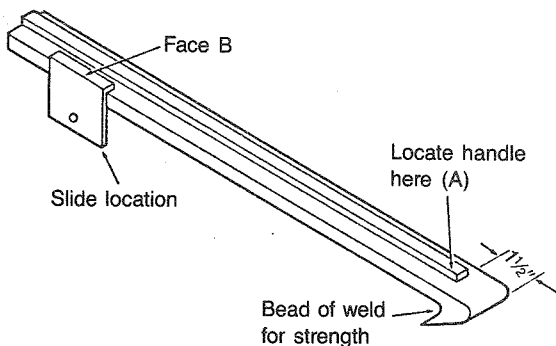


Procedure

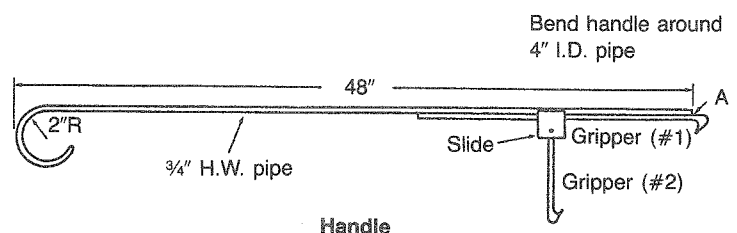
1. Bend nose @ 60° angle
2. Taper nose to aid in slot engagement
3. Locate Handle on long Gripper 1½" from end and weld along side of handle
4. On short Gripper locate and weld ½" I.D. pipe × 1½" long on end opposite angle bend
5. Fasten together with ½" × 2¾" bolt thru slide (#1) short gripper (pipe end) and slide (#2) weld nut on bolt
6. (Optional) Add wheels (3½" φ) with ½" rod extending inside of handle and set screw located on top of handle
Wheels are 3" apart @ axle

Gripper

1½" × ½" flat iron
Make one 19¼" long (#1)
Make one 13¼" long (#2)



Slide
(make 2)



Iowa provides H.E.L.P. against drunk drivers

The Iowa State Patrol has developed a program for concerned citizens to help keep drunk drivers off the road, making conditions safer for all motorists. The program is entitled H.E.L.P. (Highway Emergency Long-distance Phone) and provides a way for people to call in and direct state troopers to dangerous drivers.

Under the new system, a person may call 1-800-525-5555 or via Channel 9 on citizens band (CB) radio to quickly direct a state trooper to the site of a drunk driver. Upon receipt of the call, the trooper will need to know the driver's location, direction of travel, vehicle description, license plate number, and the abnormal driving behavior.

To spot a drunk driver, the state patrol suggests looking for erratic driving behavior, accelerating or braking rapidly, inconsistent speed (including too slow), weaving, frequent lane changing, wide turns, passing with unsafe clearance, and straddling the center line.

Some concerned citizens may want to remedy the situation by themselves, but the state patrol strongly advises to phone a trooper. The Iowa State Patrol also advises against attempting to stop the vehicle, attempting to detain the vehicle, attempting to follow if the vehicle exceeds the speed limit or attempting to follow too closely, disregarding other traffic and traffic signals, becoming distracted from normal safe driving actions, and attempting to assist in the apprehension of the suspected drunk driver.

The Iowa State Patrol has adopted H.E.L.P. in an attempt to control the grim statistics of drunk driving. For example, 25,000 Americans die and 1.5 million are injured by drunk drivers each year. Not only lives are lost, but also wages, productivity, and medical expenses—\$24 billion is spent yearly to pay for the costs of drunk driving.

In Iowa alone more than half of all highway fatalities are caused by drunk drivers.

These and other sad statistics have additionally persuaded Iowa government officials to pass tougher legislation against drunk driving. For instance, a first offense of drunk driving is considered a serious misdemeanor and punishable by up to one year in jail, or by a fine from \$500 to \$1,000, or both. A minimum 48-hour confinement is mandatory.

To be considered legally drunk in Iowa, one must have a blood alcohol count (BAC) of 0.10 percent or more. Drivers in Iowa must consent to a chemical test of the blood, breath, or urine under the implied consent law.

For a typical 160-pound person, that means consuming five drinks containing one ounce of 80-proof alcohol in one hour on an empty stomach to reach the 0.10 percent threshold of legal intoxication. More than four-fifths of all fatal crashes involve drivers with BACs of more than 0.10 percent.

As people drink, their reflexes and judgment are affected so that the likelihood of being in an automobile accident increases significantly. A driver with a BAC of 0.10 percent, for example, is six times as likely to have an accident as a sober driver. At 0.15 percent the likelihood of an accident is 25 times as great and at 0.20 percent is a frightful 100 times as great.

In Iowa, if a driver is determined legally drunk (a BAC of 0.10 percent or more) for a second time, it is considered an aggravated misdemeanor, and is punishable by up to two years in prison or a fine from \$750 to \$5,000, or both. A minimum seven days confinement is mandatory.

A third offense is a Class D felony, and punishable by imprisonment up to five years, a fine from \$750 to \$7,500, or both. Any convictions of driving under the influence (OWI) within the last six years count in determining whether the offense charged is second, or third.

In addition, citizens charged with OWI will have their licenses revoked for 180 days for the first offense, and 365 days if they have had one or more related revocations in the last six years. The length of revocation increases significantly if the driver refuses to submit to a chemical test, and a \$100 civil penalty is assessed for any drunk driving-related revocation.

When you spot a drunk driver call 1-800-525-5555 or Channel 9 with a CB.



Be prepared to tell the trooper:

- The driver's location,
- Direction of travel,
- Description of the vehicle,
- License plate number, and
- The observed abnormal driving behavior.

Sources

AAA Iowa Public Affairs Department.
Allstate Insurance Companies.
Governor's Highway Safety Office.

conference 1 2 3 calendar

for more information



Safety Features for Local Roads and Streets Workshop
May 7, Scheman Building, ISU

Iowa Traffic Control (ITCSA) Meeting
May 8, Scheman Building, ISU

American Public Works Association (APWA) Tri-State Meeting
June 9-11, Bloomington, Illinois

American Public Works Association (APWA) Iowa Chapter Annual Meeting
August 13-14, Okoboji, Iowa

Urban Drainage Systems
August 20-22, Scheman Building, ISU

American Public Works Association (APWA) National Meeting and Equipment Congress
September 20-25, New Orleans, Louisiana

League of Iowa Municipalities Annual Meeting
September 24-26, Des Moines, Iowa

The following publications can be obtained by contacting the Local Transportation Information Center.

Traffic Engineering Services for Small Political Jurisdictions

This report describes several ways in which smaller jurisdictions, less than 50,000 population, can obtain traffic engineering services. Some of the more beneficial and productive methods for obtaining these needed services are to increase emphasis on training programs for in-house staff, to increase the use of in-house traffic engineering technicians, and to use regional or "circuit" traffic engineers who serve a number of jurisdictions on a part-time or as-needed basis.

A copy of the report, FHWA-RD-IP-77-6, may be obtained from the ISU Technology Transfer Center. Additional information about the findings of this report may be obtained from Mr. Howard H. Bissell, Traffic Safety Research Division, HSR-30, 6300 Georgetown Pike, McLean, Virginia 22101, phone (703) 285-2428.

Transportation Resource Management for Rural Elected Officials

This 472-page notebook, developed for elected officials, provides an overview of techniques to increase the productivity and reduce or control the costs of local descriptions of the major transportation resource management techniques, and illustrative case studies that demonstrate the actual application of selected techniques by rural communities. It should be of greatest use to mayors of small towns, and boards of supervisors for rural counties.

Single copies of this handbook are available to state and local officials at no charge. Send a self-addressed mailing label to the Technology Sharing Program (I-30REO), Office of the Assistant Secretary for Governmental Affairs, U.S. Department of Transporta-

tion, Washington, D.C. 20590. Please note the report's title and document number, DOT-I-85-29, when ordering.

Improvements and New Concepts for Traffic Control in Work Zones

Volume four of FHWA/RD-85/034-037, "Speed Control in Work Zones" presents the results of a study to develop effective methods of slowing traffic to an acceptable speed in work zones. Volume four contains a summary of the other three volumes, and may be obtained by contacting FHWA, RD and T Center-HRD11, 6300 Georgetown Pike, McLean, Virginia 22101-2296.

Investigation of Warning Signs for Median Crossovers

This article written by Tillion Worsley, Charles Dare, Richard Schwab, and Samuel Tignor for *Public Roads*, volume 49, number 4, March 1986, describes the result of a study of advanced warning median crossover signs. The study then recommends a specific sign.

Copies of the journal may be obtained from the FHWA, or copies of the article can be obtained by contacting John Moody, Local Transportation Center, Haber Road, Iowa State University, Ames, Iowa 50011, phone 1-800-262-8498.

Intersection Channelization Design Guide

Timothy Neuman, Jack Leisch, and associates wrote this report for the *NCHRP Report, #279*, November 1985. Highway designers will find this report of special interest as it is the first guide specifically devoted to channelization since 1962. It is based on a comprehensive review of current practices and represents the state-of-the-art. Numerous illustrated examples are included as well as design criteria and procedures.

Copies of the report may be obtained from John Moody whose address is previously listed.

RISE program gives lift to Iowa's economy

The Iowa Department of Transportation is assisting economic growth in Iowa with its Revitalize Iowa's Sound Economy program (RISE). It has now provided nearly \$4 million in funding, and nearly 1,400 jobs for Iowans by sponsoring 10 road improvement projects. The program, established by the 1985 Iowa Legislature and funded by a percentage of the state fuel tax, provides money for road projects that will promote economic development and help create jobs.

There are three funding categories to which prospective recipients can apply: immediate opportunity projects, local development projects, and regional development projects. Twenty-eight applications have been submitted for the immediate opportunity category, 56 for local development, and 2 for regional development funding.

In the immediate opportunity category, the largest project funded (\$1.38 million) will assist in the development of a new 600-job, Rockwell-Collins global navigation system electronics plant located near Coralville. The next largest allocation, approved in March, went to a mixed-development project in Clive that will create at least 322 jobs. RISE will fund more than \$1 million of the \$2.4 million project.

The first three RISE applications were approved in December. Cedar Rapids will receive \$200,000 for a 60-job project; 32 jobs will be cre-



ated with \$25,000 in aid approved for a Mt. Pleasant project; and Panora will receive \$223,000 for a project assisting 80 jobs.

In January, the Transportation Commission awarded Mahaska County and the city of Oskaloosa \$376,400 in funding for a project that will assist in creating 60 manufacturing jobs. Osage and Mitchell counties were allocated \$375,000 in funds for a 55-job, manufacturing-related project.

In February, a Mason City project was awarded \$308,800 to help in creating 70 jobs. In New Hampton, 75 jobs will be assisted with \$35,360 provided through RISE, also awarded in February.

An Orange City project was the most recent to receive immediate-opportunity funding from the program, with \$72,800 being allocated and assisting in the employment of 25 people.

The D.O.T. has also received applications from the remaining two project categories, local and regional development. Local development projects to receive aid were announced beginning April 1 with 14 Iowa cities awarded a total of \$6.5 million in loans and grants. Criteria for programming regional development projects are still being developed.

The ISU technology transfer center celebrates its third birthday

In just three years, Iowa State University's Technology Transfer Center (T2) has reached literally thousands of Iowans through its workshops and conferences, newsletters, and consultative services. The center observed its third anniversary January 28.

In those three years, nearly 4,000 people have attended different workshops developed by the center and more than 14 issues (50,000) of *Technology News* have been mailed to local public works employees. The newsletter "reaches people in the trenches," making information available on "how to do things better," according to Stan Ring, project manager and ISU civil engineering professor.

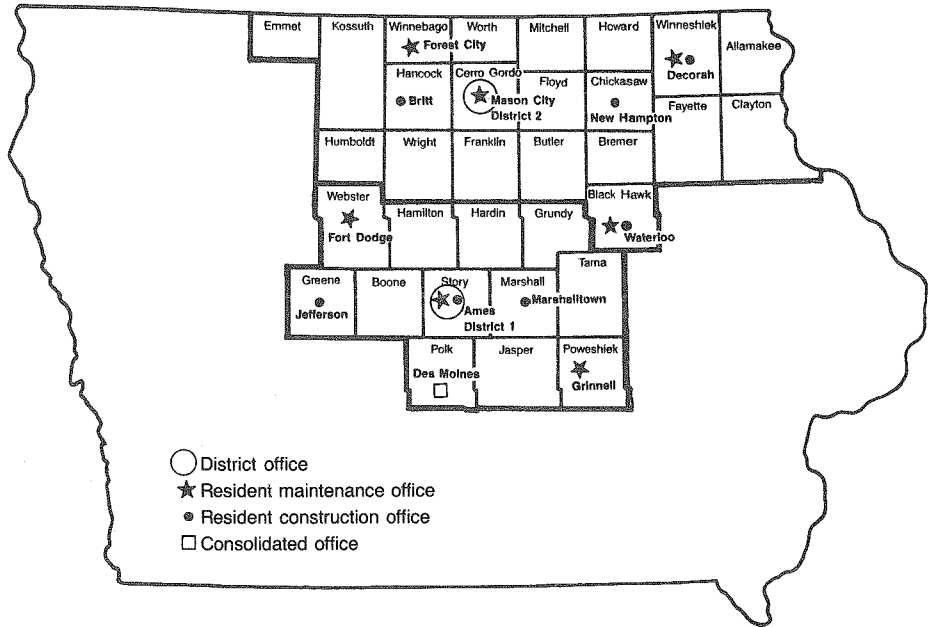
The center also helps sponsor and publicize workshops and conferences educating from 20 to 100 local transportation people per event. ISU civil engineering students are encouraged to attend as well. "We have trained many people in better ways to do things," said Ring. "There's a lot of high-level technology from national sources which needs to be transmitted."

The center provides personal advice to transportation workers by having a city engineer on staff to speak with people who need specific questions answered.

The ISU Technology Transfer Center, which is 100 percent federally funded, is gaining credibility in its third year, according to Ring. "People know what we're doing now. Most people look for, recognize, and wait for our information."

Know your D.O.T.

This is a series of articles to better acquaint *Technology News* readers with field representatives from the Department of Transportation's Highway Division. This article, introducing field representatives from district one and two, first appeared in the March issue. We regret, however, that we inadvertently omitted some officials and titles. The accompanying map illustrates the geographical areas and various offices of each district.



District one engineers

Ames, 515-239-1635

Bob Humphrey, P.E., district engineer
 Rodolfo Laudencia, P.E., district maintenance engineer
 Kenneth M. Meeks, P.E., district construction engineer
 Richard F. Mumm, P.E., district materials engineer
 Ben Klaus, P.E., local systems engineer
 Gene Mills, P.E., district transportation planner

Resident construction engineers

Ronald L. DeBok, P.E.
 Jefferson, 515-386-8166

Thomas R. Jacobson, P.E.
 Ames, 515-233-1033

John E. Peters, Jr., P.E.
 Marshalltown, 515-752-4657

Consolidated resident construction/maintenance engineer

Paul J. McGuffin, P.E.
 Des Moines, 515-262-5692

Resident maintenance engineers

Robert E. Choate, P.E.
 Grinnell, 515-236-6581

Don Schumann, P.E.
 Ames, 515-233-3734

Bob Younie, P.E.
 Fort Dodge, 515-955-3766

District two engineers

Mason City, 515-423-7584

Bob Bortle, P.E., district engineer
 M. Dean Browning, P.E., district maintenance engineer
 Alan C. Samson, P.E., district construction engineer
 Philip M. Hassenstab, P.E., district materials engineer
 William D. Kupka, P.E., local systems engineer
 Odell C. Solem, P.E., district transportation planner

Resident construction engineers

Thomas A. Jenkins, P.E.
 Decorah, 319-382-3632

Gerald L. Lund, P.E.
 Waterloo, 319-235-9503

David Roeber, P.E.
 Britt, 515-843-3881

Resident maintenance engineers

Robert W. Davis, P.E.
 Decorah, 319-382-3631

James A. Nelson, P.E.
 Waterloo, 319-235-9503

Jim Sommer, P.E.
 Mason City, 515-423-8516

Richard L. Wing, P.E.
 Forest City, 515-582-4298

Videotapes/slides available

Maintenance Safety Sessions

Are your maintenance workers aware of what they should look for in the field? Could you use some training videotapes? The ISU Technology Transfer Center has acquired videotapes for field maintenance forces. These VHS tapes were prepared by the Florida Technology Transfer Center and are based on the National Highway Institute (NHI) course,

Safety Features for Local Roads and Streets. They are general in content and can be directly applied to the Iowa situation. They cover every part of the roadway and especially bridge rail, guard rail, and other appurtenances.

Pedestrian Safety

A slide/tape program of 78 slides on pedestrian safety is now available on

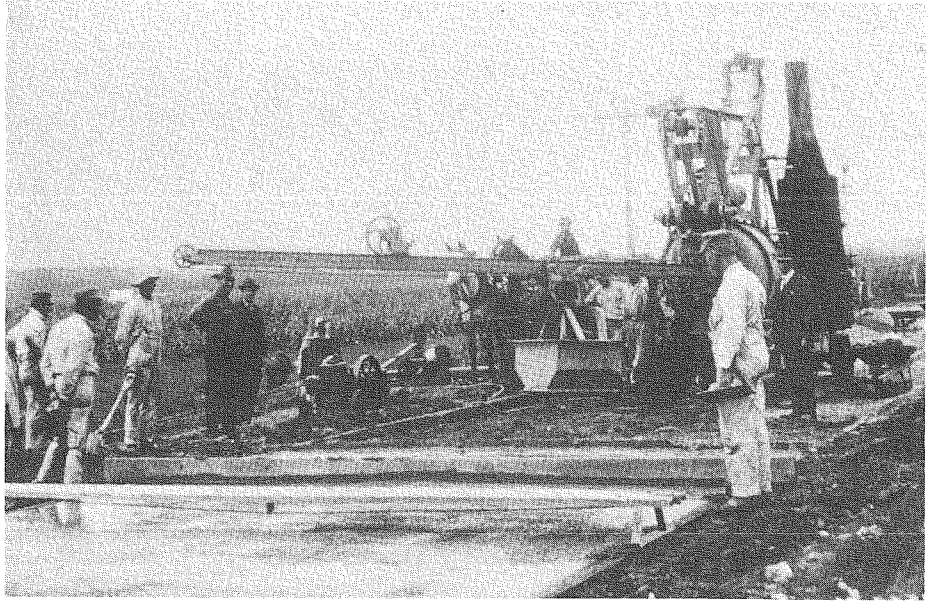
a loan basis from the Technology Transfer Center.

For further ordering information on either visual program, contact John Moody, Local Transportation Information Center, Haber Road, Iowa State University, Ames, Iowa 50011, phone 1-800-262-8498.

Out of jail and onto the pavement, prisoners used to build Iowa's roads

Early road work in Iowa, as well as in many other states, was often performed by prisoners. The prisoners had an opportunity to be out of the grim confines of the prison walls and working in the fresh air. Thus the cost of the pavement work was reduced greatly.

The laborers in white uniforms in the accompanying photograph were inmates working on one of Iowa's first rural concrete paving projects. Everyone lived in tents, including the guards and the watch dog.



In earlier times, prisoners were allowed outside the confines occasionally to help construct Iowa's roads, like this one near Fredonia, Iowa.



The prisoners weren't allowed complete freedom when working on the roads as these guards (and their watch dog) display.

And justice for all

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Patty Campbell
Technology Transfer Newsletter
Address correction requested.

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