

December 1992

Commission OKs part of IDOT plan

The Iowa Transportation Commission at its December meeting in Ames approved all but one item of the IDOT's interim proposal for implementing certain parts of the ISTEPA.

The IDOT asked the commission to approve an interim procedure and to continue the review period to further develop a final plan that would implement the Surface Transportation Program for the federal fiscal years 1994-1997.

The interim procedure would be only for federal fiscal years 1992 - 1993. It proposes to continue funding urban and rural projects through "current administrative practices." Transportation enhancement projects - one of the STP requirements - would be met by soliciting

project ideas from regional and metropolitan planning agencies. The final request on the interim proposal included initial funding and technical support for regional planning.

All of these were approved by the commission except the funding to begin regional planning. The commission rejected that because a definite plan for involving regional councils of government in the process has not been decided. The IDOT's proposal to use regional councils of government met with some resistance at a Nov. 23 forum (see related story) and through letters received by the IDOT since the meeting.

The IDOT will make another proposal for regional involvement to the commission during its February meeting.

Feelings mixed on IDOT plan

By Larry Mendenhall
Editor, *Technology News*

The Iowa Department of Transportation's proposed plan to implement the Surface Transportation Program under the Intermodal Surface Transportation Efficiency Act

(ISTEPA) of 1991 met with mixed reactions at a review meeting held November 23 at Iowa State University.

While a few in the crowd of about 200 voiced support for the proposal,



Joe Henderson

Henderson joins ITC staff

The Iowa Transportation Center welcomes Joe Henderson, P.E., as the latest addition to its staff. He replaces Mohammed Elahi as the Center's transportation specialist.

His initial projects will be a study on the safety impacts of left-hand turn treatments and developing a manual on maintenance of highway safety features.

Prior to coming to the Center, Henderson was the city traffic engineer for Casper, Wyoming. His Master's degree is in civil engineering with an emphasis in traffic engineering and transportation planning from the University of Wyoming.

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New gift law effective January 1

By Larry Mendenhall
Editor, *Technology News*

Accepting a seed-corn cap, a pen, or even a calendar may find state and local government employees in violation of the state's new gift law which becomes effective January 1.

The new law makes it a serious misdemeanor (punishable by one year in jail or a \$1,000 fine) for any state, county, or local government official or employee to accept any objects as

gifts. It allows government officials to accept \$2.99 or less in food and beverages per day.

Another part of the law – if interpreted broadly – may classify county and city engineers as lobbyists if they call a legislator to express an opinion on a piece of legislation. According to the new law a lobbyist is (1) a person paid for influencing legislation, (2) a person who represents, on a regular basis, an organization which has as one of its purposes influencing legis-

lation, and (3) any government employee who represents the official position of that person's agency who may try to influence legislation.

According to Story County Attorney Mary Richards, the third item may possibly include county attorneys or city public works directors.

"A broad interpretation of section three could define city and county engineers as lobbyists," Richards said. "The language of the bill needs to better reflect the intent of the legislation. There's currently a request to the attorney general for a legal opinion on that particular section."

The bill also provides for the formation of a Local Government Ethics Committee. Members of the committee will include representatives from the League of Iowa Municipalities, the Iowa State Association of Counties, and the Iowa Association of School Boards. The committee is supposed to submit a written report to the Legislature by January 1 which, according to the bill, "... shall include recommendations for legislation and other matters ..."

Those recommendations may include applying a different set of gift limits to local officials. Those limits

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Wayne Chizek, assistant Marshall County engineer (left), and Jon Burgstrum, assistant Clinton County engineer, log on to the Iowa Transportation Center Bulletin Board Service at the 46th Annual Iowa County Engineer's Meeting December 8 in Ames.

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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 the Iowa Department 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.

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

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more people expressed concern about funding procedures and whether a new layer of government was being added by the process.

ISTEA contains several radical differences when compared to past highway programs. One such difference is the Surface Transportation Program (STP) through which funds are distributed to the state. The ISTEA gives state and local governments much more latitude in deciding where and on what to spend the money. It also requires consultation with local officials and many other interest groups.

Past transportation acts distributed funds through specific programs and through a formula. For example in Iowa, the former federal aid urban (FAU) program distributed funds only to cities of over 5,000 population. Under the DOT proposal funds distributed through the STP program would not be programmed by individual local jurisdictions, but rather programmed and planned by regional organizations such as Councils of Government (COG's), Metropolitan Planning Organizations (MPO's), and Transportation Management Areas (TMA's). These organizations would be responsible for developing Transportation Improvement Programs (TIP's) that must include not only county and city projects, but public transit and state projects as well.

In Iowa, the three TMA's are Council Bluffs, Davenport, and Des Moines and the MPO's are Cedar Rapids, Dubuque, Iowa City, Sioux City, and Waterloo. The rest of the state consists of 16 rural (less than 5,000 population) and small urban (between 5,000 and 50,000 population) regions.

This approach is one of the major differences in the DOT's approach to implementing ISTEA. Within certain broad limits and a few federally mandated requirements, local governments would have more flexibility in deciding which projects to fund. It is this flexibility which Ian MacGillivray, the DOT's director of planning and research who hosted the meeting, said was ISTEA's greatest opportunity.

Each of those areas would receive a funding target based on the funding level identified by Congress (see the June, 1992 issue of *Technology News* for a general description of ISTEA funding). A funding target amounts to an estimate of the money a TMA, MPO, or rural area will receive under the STP. The funding targets serve as a starting point for selecting projects for a particular area's TIP. Selecting these projects require a cooperative effort between all agencies (including the DOT) within the area and must include state projects as well as city and county projects.

Each region, TMA, and MPO submits its priority list of projects to the Iowa Transportation Commission, which will develop a state-wide TIP. The state TIP would include funds programmed through the TMA, MPO, and RPAs as well as funds available for use anywhere in the state that would be programmed through the Iowa Transportation Commission.

Some details of the process are still undecided. It was that lack of clarity in the proposal which raised concerns among some of those attending the Nov. 23 meeting.

"I'm not concerned so much about the concept as I am about the process," Larry Stevens, Oskaloosa city engineer and president of the state chapter of the APWA, said. "There are too many unknowns in the proposal and most of the procedure has not been clearly defined. It's those unknowns that we're concerned about."

Stevens and Bob Haylock, county engineer for both Hardin and Butler counties and speaking as president of the Iowa State County Engineers Association, didn't want the process to become a grant-writing competition.

"Everyone is going to have to compete to get the money for their projects," Stevens said, "so an agency is going to need someone qualified to write grants. I'm concerned about smaller cities having the resources needed to compete effectively."

Haylock also expressed concern that the regional concept would add another layer of government.

"I think that there will definitely be another layer of government and there will be administrative costs associated with the program up to half a million that used to go to roads," Haylock said.

Haylock said the Iowa State County Engineer's Association thought there was a simpler way to distribute money and that the present system with slight modifications would fulfill any requirements set down by ISTEA.

"We would have liked to have had more input," he said. "Usually the DOT is receptive to talking to us. In this case, we didn't feel there was any give and take. We felt that they

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Options abound for network cabling

Networking computers in an office is a process involving many decisions. The last issue (*Technology News*, Oct. 92) discussed decisions to be considered before installing a network. This article, the second in a series about networking, discusses two important hardware decisions that have to be made: what type of cabling to use and the physical layout, or topology, of the network.

This column gives a brief description of commonly used cabling and topology. Cabling and topology make up the "nervous system" of a network. The next column will look at the software needed to run a network.

Cabling involves more than simply linking computers together. The type of cabling chosen will effect the integrity of the data as well as how efficiently it travels through the network. Two popular types of cabling are twisted-pair and coaxial. A third type, fiber-optic cable, is expensive to buy and better suited to extremely large networks or networks that need to move large amounts of information quickly. There are also wireless networks that use radio or infrared light to transmit data. This column will discuss only twisted pair and coaxial cabling.

Twisted-pair cable consists of two copper wires twisted together in a precise configuration and comes either shielded or unshielded. In general, shielded twisted-pair cable is more reliable (therefore, more expensive) than unshielded.

Shielded cabling protects the data from possible electrical interference that could corrupt data as it travels through the network. Unshielded twisted-pair cabling, however, is

Microtechnology

By Larry Mendenhall
Editor, *Technology News*

used frequently and with success. In fact, if it is capable of handling the data transfer rates of an agency's hardware, existing telephone wiring may be used since it is frequently twisted pair. In case of future problems, however, local agencies choosing this method should test it for reliability. They will also need a detailed map of the wiring to help track down problems that may arise.

Coaxial cable is similar to that used in cable-TV. It consists of a single wire covered by special insulation and wire mesh. Its advantages are that it can carry more information farther and faster than either type of twisted-pair cabling. The disadvantage is that it is more expensive to purchase, install, and maintain.

Cabling is used to interconnect computers on a network. Topology is concerned with how data travels from a file server or another station through the network to its proper destination. Topology can be relatively simple. Small networks can use a point-to-point topology where all the devices on a network (printers, modems, other computers) are directly connected to each other. More often, however, networks are configured as either star, ring, or bus topologies.

Star topology is the same physical layout as that used by phone systems. In terms of computer networks, star topologies consist of computers

connected directly to a centrally-located hub. Switches inside the hub allow information being sent from one computer to be relayed to another.

A star network has several advantages. One is that it is relatively easy to wire the computers to the hub. A second advantage is that any segment of the network can fail without disrupting the entire network. Disadvantages include the cost of the hub and that the entire network collapses if the hub fails.

In ring topologies, computers are connected to the computer on either side of it, effectively forming a ring. Each computer has a unique "address." When information is sent to a specific computer, that computer's address is encoded in the information.

Before a message or data is sent, the network "listens." If it "hears" another message traveling on the network, it waits until that message has been sent. If this didn't happen, collisions between messages would occur and data would be corrupted. A popular type of ring network is a token-ring network. In this configuration the network software passes what is called a "token" from computer to computer. Whenever a computer has the token, it is allowed to send messages or data.

In bus topologies, each computer is connected to a bus cable which in turn is connected to a file server. When a computer sends a request for information it must travel to the file server via the bus cable. Bus networks are relatively inexpensive but they may be more difficult to install

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Work zone accidents rising

By Kim Shelquist
Editorial Assistant

Road work zones are dangerous places, but particularly so in the last two years. Eighteen people have died in work zone-related accidents in 1991 and 1992, making it the worst period for fatalities since 1982. Local agencies should review their safety procedures to help keep work zones safe for both crew members and motorists.

Ed Bigelow, the Safety Circuit Rider for the Iowa Transportation Center, offers several suggestions for improving work zone safety. His first suggestion is safety training for all crew members. While not required by any state or federal regulation, Bigelow believes training all crew members helps ensure that safety standards are being followed at all times. Current OSHA guidelines state that each work-crew chief must attend a workshop teaching work zone traffic control and safety procedures. The work-crew chief is then responsible for making sure the work zone is set up according to specifications found in Part VI of the MUTCD.

Bigelow's next suggestion for improving safety is to follow a work zone safety plan. Standardized work zone safety plans are designed and produced by the IDOT for all the different kinds of road work operations. The plans contain instructions on placing traffic control personnel and warning signs. They also include instructions on altering the plan's design to take into account such factors as speed limitations and road terrain. Many local agencies already have these plans on file. If not, they are

readily available from the IDOT District Local Systems Engineer.

Once the work zone has been set up, one of the crew should drive through it and verify that all warnings and instructions are visible and easy to understand. Performing this last easy step is a good way to double check that motorists will be able to navigate the site without putting themselves or crew members in danger.

A drive-through inspection is also advocated by the IDOT's Safety Program Administrator, Joyce Emery. She also adds that it is necessary to repeat the drive-through after dark if that's when the crew will be working. She also suggests selecting an older crew member to perform the drive-through inspection. Emery says while attending a FHWA sponsored course on older drivers she learned older drivers need more light to read signs and warning signals.

No matter how well the work zone is designed or how much training the crew has received, there is still the danger of motorists failing to obey warning signs and crashing into the work zone. In Iowa during 1992, two people were killed in this type of accident. Efforts are being made through regulations and new safety devices to reduce injuries and fatalities in these situations. For example, flagger placement guidelines in safety manuals include clear escape routes for the flagger should a vehicle go out of control. These type of guidelines help, but road crews also have other options available to increase safety and awareness for both workers and motorists.

One of these options is using what has been called a "crash vehicle." This is a vehicle — usually a large truck — which is placed between the traffic flow and the work zone. The purpose is to stop the out-of-control vehicle before it enters the work zone and hits crew members. The possibility of this type of accident makes it even more important for workers to be alert and trained in basic safety procedures.

In addition to the techniques mentioned above, two practical and low cost new products that might help alert motorists to approaching construction zones and reduce accidents are available from the Strategic Highway Research Program. A portable "rumble strip" which makes a loud rumbling noise when a vehicle passes over it, works much like the permanent strips placed in pavement to warn drivers in advance of stop signs. The other product is the Flashing Stop-Slow Paddle which can be used by flaggers to increase their visibility. Instructions for converting a standard stop-slow paddle are available. Contact Chuck Fisher, Public Works Director for the City of Spencer, at 712/264-7220 for more information.

As the average age of our highway systems increases, so will the need for repair. Much of the work will be done while the highways are in use. In order to ensure the safety of workers and motorists it is important for county and city road and street supervisors and engineers to explore their safety options and consider adding more traffic control training for crew members.

Tips From The Field

Marker helps drivers miss mailboxes

With curb side mail delivery available in many cities, it is important for snowplow operators to move the snow back far enough so that the mailcarrier can reach the mailboxes. However, that makes it easier for an operator to inadvertently knock down a mailbox.

Snowplow flags can help drivers keep their distance from mailboxes. The flag shown in the photo is sold commercially. It is coated with a rubber like material that allows coiled springs at the bottom of the shaft to



bend easily when striking a mailbox. Flags can be replaced easily when needed as they clip in with "S" hooks to the end of the shaft.

Contact Willard Wray, City of Clive Public Works Director, 8505 Harbach Blvd., Clive, IA, 50053 515-223-6230.

A marker attached to a snowplow blade helps keep operators from hitting mailboxes.

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had preconceived ideas and that they went ahead and did what they wanted to."

Stevens was also concerned about politics within regions. He suggested that if a region is largely rural, counties will have more representation on the regional technical committee and that cities "will come out on the short end in competing for funds."

Speaking in favor of the proposal was John Crews, mayor of Cedar Falls and representing the Cedar Falls/Waterloo MPO and the Iowa Northland Regional Council of Governments. Much of the interagency cooperation called for in the proposal is already in place in the area because of a massive highway program nearing completion.

"We've developed good working relationships with the councils, counties, and COG's," Crews said. "We've had a good experience working together and the way the proposal is written we would be able to build upon that experience."

Crews said the groups he represented at the meeting felt that "... with a little more regional planning there would be a little better utilization per capita for projects ..." passing through different jurisdictions.

"I could see why others would be concerned. But we've developed a good rapport and set up procedures for working together," Crews said. "There were some difficulties, but the end result more than justified the effort."

Networks

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(especially if the network extends through several rooms or floors). Another disadvantage is the entire network collapses if one segment fails.

As with other aspects of computing, each local agency must look at its own requirements and make its choices accordingly. The size of the network is probably the determining factor in deciding on hardware. For many smaller to medium-sized networks, star topologies are probably the most popular. Also smaller networks are better suited for choosing inexpensive cabling, such as unshielded twisted pair.

An agency must also choose software to run the network. The final column on networking will look at some of the more popular types of networking software.

For More Information

The videotapes and publications listed in this column may be borrowed 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.

Design Manual for Low Water Stream Crossings is a publication of the Iowa Highway Research Board and provides applicability, design, and construction guidelines for low water stream crossings. **166 pages: Request #832**

Liability/Traffic Control for Low Water Stream Crossings is a companion publication to #823 and provides traffic control measures to reduce liability when a LWSC is used in place of a drainage structure. **40 pages: Request #831**

Snow and Ice Control on Local Roads was produced in Maine but can provide a good summary of the subject for any area in the snow belt. **Request #828**

Iowa Signals GO — Project Summary covers a project in the motor

vehicle fuel reduction program that involved demonstrations in 19 Iowa cities. Improved traffic flow and reduced vehicle delays were accomplished through traffic signal modernization. **Request #824**

Drivers' Behavior at RR Crossings — Before/After Experience is a report on an Iowa Highway Research Board project. It documents drivers' behavior in the vicinity of grade crossings before and after a safety promotional campaign and the significance of any change in driver behavior. **Request #815**

Transverse Joint Sealing with Improved Sealants is a publication by the Iowa DOT. This project tested and evaluated eight sealants both in the lab and in the field. **Request #777**

Caution: Litigation Ahead, The Road to Effective Risk Management Tort liability awards continue to increase and these dollars are not available for construction and maintenance. This videotape addresses how to maintain a safe system to help reduce accidents and to defend

against litigation. **Running Time 25:00; Request #284V**

Subsurface Utility Engineering reviews a method using advanced technology to precisely locate utilities, both vertical and horizontal, without major excavation. **Running Time: 13:00; Request #283V**

Idea Store #7 is a videotape made by the Pennsylvania DOT on innovative tips and tools. This volume covers a curb scraper, a dump truck air foil, timber bridge information, a better cylinder wrench, and other ideas. The other "Idea Store" volumes are also available. **Running Time: 10:00; Request #282V**

First on the Scene deals with how to identify the material in a chemical spill, how to approach the scene, how to stabilize the incident, and where to obtain help. **Running Time: 32:00; Request #25V**

Loader Operations Part I and II provide a step-by-step order in pre-trip inspection, start-up, the various uses of the loader, and safety tips. **Running Time: 15:00; Request #28V and #29V**

Publication order form

To obtain the materials listed on this page, or to request a list of available publications and videotapes, return this form to the Iowa Transportation Center, Iowa State University, 194 Town Engineering, Ames, IA, 50011-3233.

Name _____	Title _____	Index No. _____
Address _____	_____	_____
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Phone (____) _____	_____	_____

___ Please send a complete listing of all publications from your office.

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

Conference Calendar **Gift law**

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

Asphalt Paving Conference January 26, Scheman Building, ISU This conference is designed to inform the construction and design elements of the highway industry of the innovations in the design, construction, and operation of asphalt highway and runway surfaces. Contact Janet Gardner at 515/294-5366 for more information.

Federal Aid Requirements February 9 – Storm Lake, February 10 – Atlantic, February – February 23 – Mason City, February 24 – Cedar Rapids, March 3 – Ottumwa, March 4 – Ankeny This conference is de-

signed to help the city, county, or consulting engineer who deals with federal aid highway projects. Topics include the rules, regulations, and paperwork that accompanies federal projects. For more information, or to register contact Ed Bigelow at 515/294-6384.

National Association of County Engineers Annual Meeting January 31, February 1-4; San Antonio, Texas

Slug Testing for Hydraulic Conductivity January 8 — Iowa State University Performance and analysis of slug testing, with computer applications. For more information or to register contact Ladon Jones at 515/294-6848.

A more complete listing of events can be viewed on the ITCBBS calendar. Log on by calling 515/294-9784.

would be the same as the current law; that is anything over \$35 is prohibited and anything between \$15 and \$35 must be reported. Recommendations may also include changes in the bill's language.

"I would advise everyone covered by the gift law to contact their county or city attorney and follow their advice," Richards said.

Among the exceptions allowed in the new gift law are: expenses for food, beverages, travel, and lodging when given in return for participating on a panel or for speaking engagements and plaques or items of negligible resale value given as recognition for public service.

And justice for all

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