3. USE OF REGIONAL ROADS BY TELECOMMUNICATIONS AND UTILITY COMPANIES

COMMITTEE RECOMMENDATION AS AMENDED

That Council approve that a tree planting utility trench be provided for all road reconstruction, preferably for an inner boulevard.

DOCUMENTATION

- 1. Director, Infrastructure Maintenance report dated 6 June 2000 is immediately attached.
- 2. Extract of Draft Minute, Transportation Committee, 5 July 2000 will be distributed prior to Council and will include a record of the vote.

REGION OF OTTAWA CARLETON

REPORT RAPPORT

RÉGION D'OTTAWA CARLETON

Our File/N/Réf. **50** 41-00-0001

Your File/V/Réf.

DATE 06 June 2000

TO/DEST. Co-ordinator, Transportation Committee

FROM/EXP. Director Infrastructure Maintenance

SUBJECT/OBJET USE OF REGIONAL ROADS BY TELECOMMUNICATIONS

AND UTILITY COMPANIES - PRESENTATION

DEPARTMENTAL RECOMMENDATION

That Transportation Committee receive this verbal presentation and associated handout material for information.

BACKGROUND

Attached is a copy of a handout associated with a presentation made by an Environmental and Transportation Department staff member at the American Public Works Association's annual Ontario Chapter meeting in Toronto on 01 February 2000. A similar presentation was made to an International Right of Way Association workshop here in Ottawa on 12 May 2000.

Staff would like an opportunity to provide Transportation Committee with a brief overview of the effort that the Region has been making with respect to managing the use of Regional Roads by Telecommunications and Utility Companies.

Approved by W. S. Beveridge

Attach. (1)



USE OF REGIONAL ROADS BY TELECOMMUNICATIONS AND UTILITY COMPANIES

REGIONAL MUNICIPALITY OF OTTAWA-CARLETON TRANSPORTATION COMMITTEE 5 JULY 2000

AMERICAN PUBLIC WORKS ASSOCIATION

1301 Pennsylvania Avenue, NW, Suite 501, Washington, DC 20004 202/393-2792, Fax 202-737-9153

Approved by the Utility and Public Right Of Way Committee on August 3, 1999 Approved by the Government Affairs Committee on September 21, 1999 Adopted by the APWA Board of Directors on September 22, 1999

APWA Position Statement

PUBLIC RIGHTS-OF-WAY MANAGEMENT

Position

With the surge in new communications providers, deregulation of electric and gas industries, the need to upgrade aging water, sewer and drainage facilities coupled with enhanced environmental requirements, it is vital that public agencies retain authority to execute their statutory obligations and duties related to the public rights-of-way. In this fiduciary capacity, the responsible public agency must have the authority to regulate and manage public rights-of-way to ensure its efficient use through the development and implementation of effective policies, practices and regulations.

It is the position of the American Public Works Association that regulations developed by the Federal Communications Commission as well as legislation at the state and federal level, should uphold the authority of public agencies to manage the public rights-of-way and to receive fair and reasonable compensation for it's use. This includes the ability to:

- Establish permit, location, inspection, and pavement restoration controls
- Encourage cooperation among and develop scheduling and coordination mechanisms for all right-of-way users
- Obtain and maintain accurate information for locating existing and new facilities in the public rights-of-way
- Hold responsible parties accountable for the restoration of the public rights-of-way
- Charge and receive compensation for the use of the public rights-of-way

Issue and Rationale

The number of communications providers working in the public rights-of-way (PROW) has increased dramatically causing significant demands to be placed on all users of the PROW and on the publicly funded infrastructure as well. Public Agencies strive to keep public rights-of-way in a state of good repair and free of unnecessary encumbrances. Right-of-way obstruction contributes to lost business and is a cause of frustration for everyone that must avoid utility construction projects or change travel or shopping plans because of them. Many elected officials have chosen to be good stewards of the public rights-of-way by adopting reasonable ordinances that allow them to:

- Manage the PROW on behalf of their citizens regarding public health, safety, and convenience.
- Manage the surface of the PROW to ensure the structural integrity, availability, safety and a smooth street surface for the traveling public.
- Manage the space below the surface to ensure safe and economical access to the Public Agencies' water, storm drain and sanitary sewer systems.
- Manage the space below the surface to ensure safe and economical access for all current and future users of the rights of way.
- Manage the space above the surface by managing the placement of overhead facilities to minimize safety hazards, to minimize the impact on community aesthetics and to promote development.

Each utility provider installs a separate system in its own unique location within the right-of-way. The systems are installed on existing pole lines, in narrow trenches, or conduits bored (augured) into place, which result in the street surface being repaired with "ribbon" like patches or smaller rectangular patches. Repeatedly cutting and repairing streets adversely impacts the life of a street. The adverse impact is particularly severe where there are multiple parallel or intersecting pavement cuts which reduce the structurally integrity of the paved surface and the stability of its subgrade.

Multiple street openings or obstructions also have a detrimental economic consequence for residents and businesses that face frequent disruption. Construction, repair, and maintenance of utilities in the public rights-of-way entail extrinsic costs to the public in addition to right-of-way management costs such as the administrative demands, traffic control, and inspections. These extrinsic costs are typically not captured on the books of the municipalities in a readily identifiable fashion.

One of the cost categories that has been analyzed in some depth is the so-called disruption costs. The disruption cost is the economic penalty imposed as the result of the adverse impact on the citizens of a city and others who are required to alter travel routes and times resulting from right-of-way obstructions. These costs can be easily identified with a quantitative value given to them.

Other economic costs that are not identifiable in a public agency budget are the loss of business to merchants, air pollution, noise pollution, dust, lack of access to homes and offices, changing bus routes due to loss of access to streets, alleys and sidewalks and the general frustration of the public. These costs are real and substantial.

Background

In 1996 Congress passed the Telecommunications Act of 1996 which gave broad latitude to communications providers to install and market communications systems in communities across the country. The emphasis of the Act was on providing the greatest opportunities for communications providers to develop and expand. The Federal Communications Commission has been promulgating regulations under the Act. At the same time the courts continue to rule on cases between communications providers who want faster and cheaper access to their customer base and local governments who are obliged to use taxpayer dollars to provide public services, including the maintenance of roads and management of the public rights-of-way.

The right to obtain and use land for public benefit has been a long-standing tradition and is provided for by law. The concept of using a portion of the street right-of-way for providing both public and privately owned utilities has been a recognized action in the public interest for more than a century. The dynamic nature and constantly changing demands of society have continually increased the need for the movement of people and goods as well as access to utility services. Public corridors or strips of land known as public rights-of-way are normally acquired and developed by public agencies for transportation routes, water supply, waste disposal, power distribution, means of communications and similar services for the common good of the public with all uses generally being authorized and directed by public agencies. These agencies have the statutory obligation to regulate and manage the use of public rights-of-way in the interest of public safety and convenience. They also must provide for the operation and protection of public facilities.

Population as well as business growth is continuing to occur at rates often faster than can be accommodated by infrastructure capacity creating congestion in a limited resource, the public rights-of-way. This congestion is occurring, either temporarily by work crews or long term by the placement of above or below ground utilities. The budgets of public agencies are often directly impacted by the installation, repair and maintenance of facilities which cause traffic obstruction, underground congestion and pavement degradation. Pavement cuts for the placement of new facilities or access to existing structures have become a persistent problem.

¹ <u>Utility</u> --- privately, publicly or cooperatively owned line, facility, or system for producing, transmitting, or distributing communications, cable television, power, electricity, light, heat, gas, oil, crude products, water, steam, waste, storm water, or any other similar commodity, including any fire or police signal system or street light system, which directly or indirectly serves the public.



USE OF REGIONAL ROADS BY TELECOMMUNICATIONS AND UTILITY COMPANIES

REGIONAL MUNICIPALITY OF OTTAWA-CARLETON TRANSPORTATION COMMITTEE 5 JULY 2000

REGION OF OTTAWA-CARLETON

- 12 MUNICIPALITIES (1 ON 1 JAN 2001)
- 750,000 POPULATION
- 1,000,000 METRO
- 1,250 KMS OF REGIONAL ROADS
- 5,700 TOTAL KMS IN THE REGION
- 3,100 LN-KMS OF REGIONAL ROAD
- 2,757 SQUARE KMS





REGIONAL ROADS ARE PUBLIC RIGHTS-OF-WAY

"any kind of public road, lane, street or other highway together with the airspace above and subsoil beneath" - FCM





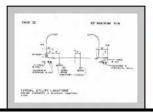
PUBLIC RIGHTS-OF-WAY - MULTIPLE USES

- PEDESTRIANS
- VEHICLES
- SHADE TREES
- SIGNS/SIGNALS
- STREET LIGHTS
- ELECTRIC WIRES
- COMMUNICATIONS (TELEPHONE, CABLE TV ETC)
- SANITARY SEWERS
- STORM SEWERS
- WATER MAINS
- **GAS LINES**
- PIPELINES
- STREET FURNITURE
- MANY OTHERS



PUBLIC RIGHTS-OF-WAY MANAGEMENT

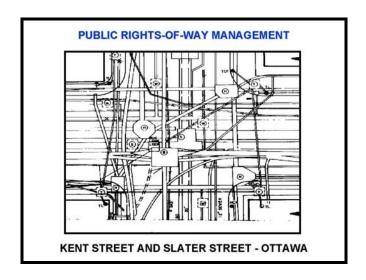
- MUNICIPALITIES OWNERS & STEWARDS
- BALANCE
- ESSENTIAL AND COMPETING DEMANDS
- R-O-W MANAGEMENT PRACTICES AND POLICIES
- HEALTH, SAFETY, WELFARE
- ECONOMICS
- FINITE RESOURCE
- BENEFIT OF ALL USERS











PUBLIC RIGHTS-OF-WAY MANAGEMENT

PUBLIC SAFETY IS #1

BACKHOE STRIKES 24-INCH GAS MAIN IN CHICAGO LINE MISMARKED



PUBLIC RIGHTS-OF-WAY MANAGEMENT

1838

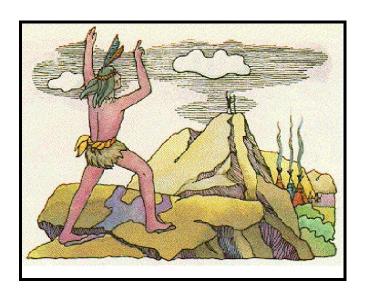
"What hath God wrought?"



Telegraph



Samuel F.B. Morse



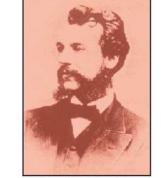
PUBLIC RIGHTS-OF-WAY MANAGEMENT

1876

"Mr. Watson,come here, I want you!"



The telephone



Alexander Graham Bell

PUBLIC RIGHTS-OF-WAY MANAGEMENT WHY THE CURRENT FOCUS?

- MONOPOLY
- DEREGULATION (22 TELECOMS)
- TECHNOLOGICAL CONVERGENCE
- MUNICIPAL AWARENESS
- FISCAL REALITIES
- PRO-ACTIVE
- COST RECOVERY
- USE LICENCE FEE



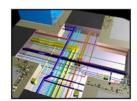


PUBLIC RIGHTS-OF-WAY MANAGEMENT PRINCIPLES

FEDERATION OF CANADIAN MUNICIPALITIES

- AUTHORITY TO MANAGE
- RECOVERY OF COSTS (NO SUBSIDY)
- REVENUE IN EXCESS OF COSTS





OTTAWA-CARLETON'S PUBLIC RIGHTS-OF-WAY POLICY

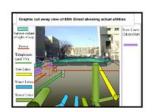
- NINE REPORTS TO COUNCIL
- REGIONAL COUNCIL 9 SEPTEMBER 1998
- **THREE REQUIREMENTS**
 - FCM PRINCIPLES
 - WILLING TO NEGOTIATE MAA
 - THIRD PARTIES
- **FAIR APPROACH**
 - TIME LINES
 - NO PERMITS



PUBLIC RIGHTS-OF-WAY MANAGEMENT

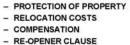
- STATUTORY RIGHT (QUALIFIED)
- MUNICIPAL CONSENT
- TERMS AND CONDITIONS





PUBLIC RIGHTS-OF-WAY MANAGEMENT MUNICIPAL ACCESS AGREEMENT

- GENERIC AGREEMENT
- CONSENT
 BY-LAWS/STATUTES
- TERM
- TERM
- PLANS REVIEW & APPROVALSWORK TO SATISFACTION
- STOP WORK PROVISIONS
- STOP WORK PROVISIONS
- AS-BUILTS
- PUC MEMBERSHIP
- 24 HOUR CONTACTSPLANT LOCATES
- THIRD PARTY REQUIREMENTS
- WORKMAN'S COMPENSATION
- OCCUPATIONAL HEALTH & SAFETY
- INSURANCE/INDEMNIFICATION
- REPORTING



 DARK AND LIT FIBRE COMPENSATION OPTIONS

- EXCESS CAPACITY

- ENVIRONMENTAL RESPONSIBILITY

- ABANDONED PLANT PROVISIONS

- ENCOURAGE USE OF EXISTING PLANT

- ARBITRATION



PUBLIC RIGHTS-OF-WAY MANAGEMENT MUNICIPAL ACCESS AGREEMENTS

- 9 TELECOMMUNICATIONS COMPANIES
- NATURAL GAS COMPANY
- ELECTRIC COMPANIES
- FCM PRINCIPLES APPLY TO ALL
- EQUITABLE TREATMENT OF ALL RIGHTS-OF-WAY USERS



PUBLIC RIGHTS-OF-WAY MANAGEMENT COSTS & COMPENSATION

- COST RECOVERY
 - GENERAL ADMINISTRATIVE COSTS
 - PAVEMENT DEGRADATION COSTS
 - RELOCATION & ADJUSTMENT COSTS
 - DIRECT QUANTIFIABLE COSTS
 - "WORK AROUND" AND UNQUANTIFIABLE COSTS
- ROAD USE LICENCE FEE
- PERMIT FEES, DIRECT BILLINGS & ANNUAL PAYMENTS



- MUNICIPAL RIGHTS-OF-WAY ARE PUBLIC ASSETS
- VALUABLE TO MUNICIPALITIES
- VALUABLE TO UTILITIES
- VALUABLE AND FINITE ECONOMIC RESOURCE
- MARKET VALUE
- REVENUE ABOVE COSTS FOR USE OF PUBLIC LANDS





PUBLIC RIGHTS-OF-WAY MANAGEMENT COST COMPENSATION

"Working around" telecommunications duct banks on Elgin Street in Ottawa - 1999



PUBLIC RIGHTS-OF-WAY MANAGEMENT



UTILITY TRENCHING DAMAGES ROADS

PUBLIC RIGHTS-OF-WAY MANAGEMENT Appel Surface Summan Surface Appel Surface Ap

PUBLIC RIGHTS-OF-WAY MANAGEMENT PAVEMENT DEGRADATION COSTS

Time since last Resurfacing (years)	Economic life cycle loss (minimum) due to utility trenching (per m²)
2 or less	\$24.00
>2 to 4	\$20.00
> 4 to 7	\$16.00
>7 to 10	\$10.00
More than 10	\$ 4.00

Pavement Life cycle costs due to utility trenching in Ottawa-Carleton

PUBLIC RIGHTS-OF-WAY MANAGEMENT





PUBLIC RIGHTS-OF-WAY MANAGEMENT

WHAT IS RIGHT-OF-WAY "USE"?

- AERIAL
- SURFACE
- UNDERGROUND
- OWNED
- LEASED
- WHETHER OR NOT IT IS IN OR ON SOMEONE ELSE'S DUCTS OR POLES



PUBLIC RIGHTS-OF-WAY MANAGEMENT COMPENSATION - LEGAL ISSUES

- TELECOMMUNICATION ACT (FEDERAL)
- MUNICIPAL ACT (SECTIONS 308 and 220.1)
- REGULATION 34/98 UNDER THE MUNICIPAL ACT
- CRTC PROCEEDING 99-25
- OEB PROCEEDING RP-1999-0048 (EBO 125)
- ENERGY COMPETITION ACT (BILL 35)
- PUBLIC SERVICES WORKS ON HIGHWAYS ACT
- ENERGY BOARD ACT
- PUBLIC UTILITIES ACT
- ASSESSMENT ACT



PUBLIC RIGHTS-OF-WAY MANAGEMENT

ITS NOT ONLY ABOUT THE MONEY!

- HEALTH
- SAFETY
- WELFARE
- BENEFIT ALL ROW USERS AND THE COMMUNITY



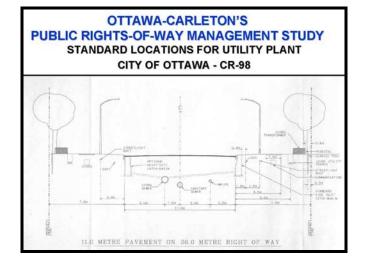


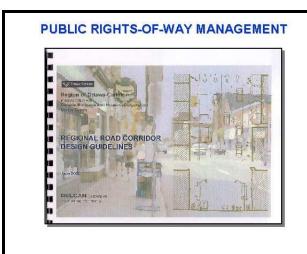
OTTAWA-CARLETON'S PUBLIC RIGHTS-OF-WAY MANAGEMENT STUDY

- 106 RECOMMENDATIONS
- ADMINISTRATION (holistic approach)
- LEGAL ISSUES
- INSPECTION
- RESTORATION STANDARDS
- TRAFFIC MANAGEMENT
- STANDARD LOCATIONS
- CO-ORDINATION
- TECHNOLOGY
- REGULATORY CODE
- FEES
- **CONTINUOUS IMPROVEMENT**
- FOLLOW-UP



OTTAWA-CARLETON'S PUBLIC RIGHTS-OF-WAY MANAGEMENT STUDY TRAFFIC MANAGEMENT





NATIONAL RESEARCH COUNCIL OF CANADA/US ARMY CORPS OF ENGINEERS UTILITY CUT CONSORTIUM STUDY ### STATEMENT CONSORTIUM STUDY

- NORTH AMERICAN WIDEBETTER CUT RESTORATIONS
- ADJUST TO ALL LOCAL CONDITIONS
- STEPS
 - LITERATURE REVIEW/SURVEY
 - FIELD EXPERIMENTS
 - US ARMY COLD REGION'S LAB
 - MODEL VALIDATION/TESTING
 - GUIDELINES AND SOFTWARE
- OTTAWA-CARLETON FIRST TEST SITE







PUBLIC RIGHTS-OF-WAY MANAGEMENT INFORMATION

- CRTC (www.crtc.gc.ca)
- OEB (www.oeb.gov.on.ca)
- FCC (www.fcc.gov)
- IRWA (www.irwaonline.org/)
- APWA (www.apwa.net/ResourceCenter/row.asp)
- FCM (www.fcm.ca/)
- OGRA (www.ogra.org/home.asp)
- NATOA (www.natoa.org/)
- MRSC (www.mrsc.org/)
- WASHINGTON POST (washingtonpost.com/wpdyn/articles/A50719-2000May1.html)
- PORTLAND, OREGON (www.ci.portland.or.us/occfm/right_of_way_video.htm)







THANK YOU

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AMERICAN PUBLIC WORKS ASSOCIATION UTILITY AND PUBLIC RIGHTS-OF-WAY COMMITTEE ANNUAL REPORT 1998-1999 SEPTEMBER 21, 1999

Leonard Krumm, Chair Liaison

John MacMullen, Staff

BACKGROUND:

The Utility and Public Rights-of-Way Committee (UPROW) was appointed in April of 1998 after a task force identified 30 major right-of-way management issues and recommended the creation of a new P/E/T Committee to work on these issues. Since that time UPROW has been working for the membership by delivering products and creating mechanisms for enhancing a mutual understanding of management of the public rights-of-way. This is being accomplished by providing guidance in the area of planning and coordination, best practices for construction and restoration, and examples of right-of-way management.

The Committee members are Paul Devaney, Telcordia Technologies; Tom Jackson, Georgia Power Company; Diane Linderman, City of Richmond; Lorne Ross, Region of Ottawa-Carleton; and Leonard Krumm, City of Minneapolis. The Committee conducts its business by holding monthly teleconference calls which are also attended by the chairs of its three subcommittees: Mark Macy, Construction Practices; Walt Pegram, Planning and Coordination; and John Cunningham, Public Right-of-Way Management.

Throughout the past year and one-half the Committee has used the original task force report as a guideline for writing its business plan and conducting business. The Committee has been focused on policy issues and product management while the three sub-committee chairs are concentrating on the previously identified issues. The 30 issues were reduced to 28 issues and then divided into three main categories; Construction Practices, Planning and Coordination, and Rights-Of-Way Management. They are also charged with identifying other issues that they consider appropriate.

CURRENT ACTIVITIES:

- The committee is working on a grant proposal for APWA to revise and expand the Federal Highway Administration (FHWA) publication number FHWA-SA-93-049, HighwaylUtility Guide. FHWA approval of this grant will allow APWA to be a major contributor to the management of the public rights-of-way.
- Right-of-way management documents are being obtained, analyzed and posted on the APWA web site as examples for the membership to use in their own situation.
- The Committee was contacted by the US Government's Federal Laboratory
 Consortium for Technology Transfer and assisted in the development of a
 Statement of Need for new underground infrastructure location technology. This will
 be an ongoing project in the next twelve months as potential technologies are
 suggested and evaluated.

- Committee members have met with representatives of the National Research Council of Canada to evaluate their proposed pavement restoration project and advised them about issues critical to our membership.
- Three technical sessions for the 2000 International Public Works Congress and Exposition are being developed.
- Discussions are being conducted with the president-elect of the International Rightof-Way Association to explore working together on areas of mutual concern.
- Committee members are planning and coordinating a summit meeting between the members of the Urban Forum and executives of the communications industry for the purpose of establishing "Common Ground-Peaceful Coexistence between Public Agencies and the Telecommunications Industry."
- A recently completed right-of-way management survey is being reviewed and evaluated to help determine next years priorities.

ACCOMPLISHMENTS:

- In conjunction with the One-Call Systems International Committee, the UPROW Committee has initiated a quarterly newsletter and published its first two issues.
- The UPROW Committee has been active in obtaining items for posting on the web site. As of early August over two-dozen papers, model ordinances and sample documents relating to managing public rights-of-way had been posted in the Resource Center area on APWA's web site. An additional 30 to 40 documents have been obtained in hard copy format and will be posted to the web site upon conversion to electronic formats.
- The Committee has also developed three technical sessions for this year's Congress and will support both a Roundtable and Peer Discussion Forum in Denver. A Business Plan for 1999-2000 has been developed and approved.
- An APWA Policy Statement supporting the right of local governments to exercise control over public rights-of-way has been drafted and submitted to the GAC.
- The Committee has also been asked to work with NATOA and other associations interested in managing public rights-of-way.
- The Committee held its spring meeting in the Washington, D.C. office. In-addition to conducting normal Committee business meetings were held with a senior staff members of the Federal Communications Commission and the Federal Highway Administration.
- Committee members responded to all general member inquiries and requests.
- The Construction Practice Subcommittee completed a review of several traffic control manuals and has recommended sections that they feel represent the "best practices" in each area.
- Four right-of-way management articles were written for the APWA Reporter.

SUPPORT:

The mission and goals of this committee would not get started much less completed if it weren't for the efforts of the people listed here.

SUBCOMMITTEE MEMBERS: The members of the subcommittees (rosters attached) are the backbone of the Committee. It is through their efforts that the 28 major issues are being addressed and the presentations are being made at congress.

RICHARD RIDINGS: Richard keeps us focused by reminding us about the "APWA big picture". He has been a positive influence on the Committee and especially valuable during the times that the committee was struggling with its mission. He keeps pushing us to do more than we think is possible.

DENNIS ROSS: Dennis is the clutch hitter that the Committee goes to for solutions to the unique problems. Quite often he provides some guidance and then provides direction by asking key questions that let us find our own solutions.

SARAH LAYTON: Sarah has been extremely helpful because she forced the Committee to do what it doesn't like to do, draft policy. Through her efforts a right-of-way management policy was written and forwarded to the Government Affairs Committee.

JOHN MACMULLEN: Mac has been the workhorse of the Committee. It has been through his efforts that the list of accomplishments was completed and that the current activities of the Committee continue to move forward at a respectable pace.



American Public Works Association 2345 Grand Boulevard, Suite 500, Kansas City, MO 64108-2625 Telephone (816) 472-6100 • Fax (816) 472-1610 Web: www.apwa.net • E-mail: jmacmullen@apwa.net

Memorandum

Date: November 5, 1999

To: Common Ground Summit Attendees

From: John MacMullen

Re: Right-of-Way Management Resources Available on the Internet

The American Public Works Association and several other organizations are using the Internet to make resource materials on right-of-way management available to interested individuals, agencies and firms. The following is a brief listing of some of these sites:

http://www.apwa.net/resourcecenter/row.htm - APWA ROW Management Resource Center page. This site contains links to other resource sites on the Internet, model ordinances and franchise agreements, studies and papers.

http://www.mrsc.org - Municipal Research & Services Center of Washington home page. This site contains ordinances, links to other Internet sites, and reviews of federal court cases written by city attorneys.

http://munitelecom.org - Municipal Telecommunications Strategies Program home page. This site serves as the portal to The Journal of Municipal Telecommunications and provides links to numerous other Internet sites.

In addition to the materials available for download from the APWA Resource Center other studies, papers and publications are available in hard copy format. For further information on these materials see the enclosed Publications Catalog or contact John MacMullen at APWA National Headquarters.

APWA Your Source for Information on Public Works

NATIONAL POST

Here's one reason to blame your busted shocks on the Internet



Associated Press

Drivers in Washington are spending more time with their cars in repair shops, cyclists are bouncing off their bikes and winter threatens to be awful for commuters -- all because of a law passed by Congress. As a result, telecommunications companies have been digging up the streets of Washington in the race to go high-tech. "It's a life-threatening situation," said Mark Gross, who manages Quick Messenger Service. "Just the other day, I witnessed a moped rider for one of our competitors go down really hard." And drivers on four wheels have had problems as well. "For the past year, it seems like my car is in the shop all the time," said Sheila Hankley as she manoeuvred her Mercedes-Benz around trenches and patches on one downtown road. "I've needed my alignment adjusted, and my muffler fell off." Other parts of the United States have had similar experiences. "Telecom companies intruded on our cities," complains Leonard Krumm, director of field services for Minneapolis. "We weren't prepared at all." In Washington, 12 firms are now installing fibre-optic cable under streets and permits are pending for many others, according to the city's public works department. The telecommunications companies are digging trenches to install fibre-optic cable for high-speed Internet use and other services. Businesses say this is essential because fibre optics carry more data at a higher speed than existing copper-wire technologies. The rush to wire cities started after Congress passed the 1996 Telecommunications Act. It requires cities to allow companies to install fibre-optic cable, although cities can set regulations governing the work. Some drivers say it's just not worth the trouble.

