IPWEA National
Overseas Study Tour 2005
Canada, United States and United Kingdom

Best Practice & Innovation in Public Works

St Anthony Falls
Mississippi River
Minneapolis

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Communication and Community Consultation for the Public Works Engineer

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Sponsored by the Municipal Engineering Foundation Victoria and Bayside City Council

Contents

Institute of Public Works Engineering Australia

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Synopsis

The IPWEA National Overseas Study Tour 2005 had as its general theme, Best Practice and Innovation in Public Works. My specific interest focused on identifying good examples of communication and community consultation by public works engineers and how those examples might translate to the Australian local government environment.

This focus was adopted in response to the findings of the *Review of the Current and Future Role of Municipal Engineering in Australia*. The Review found that success as a municipal engineer in meeting the challenges of the future relies, amongst other things, on communication and community consultation skills and further, that these skills are not typically exhibited by engineers.

Over the period of 2 September 2005 to 22 September 2005 the tour party visited local authorities in Canada, the United States of America, and the United Kingdom, attended the American Public Works Association International Public Works Congress, and visited an information technology and digital city in Hong Kong.

Local Authorities Visited

The Canadian Cities of Edmonton and Calgary were visited. These two cities, which are the largest in the Province of Alberta, are both developing and implementing comprehensive infrastructure strategies which are the equivalent of asset management strategies in the Australian context.

In the USA, the tour party visited the Cities of Minneapolis and Eden Prairie. Minneapolis is one of the largest cites in the State of Minnesota, and together with the State Capital, Saint Paul, is one of the so called “Twin Cities”. Eden Prairie is a smaller municipality on the outskirts of the “Twin Cities”.

The City of Brighton and Hove, situated on the south coast of England, was the final local authority visited by the tour party.

APWA Congress

The 2005 APWA International Public Works Congress, attended by more than 6,000 delegates, provided the tour party with four days of technical and development sessions and a large trade exposition within the single venue of the Minneapolis Convention Center.

Through sessions at the APWA Congress, there was also interaction with the USA Cities of Milwaukee, Overland Park and Saint Paul, and with the County of Sacramento. These sessions and subsequent discussions provided information on a wide range of public works communication practices and tools.

Key Findings and Recommendations

1. The state of infrastructure is amongst the most critical communication subjects for the public works engineer, with the plans to manage these infrastructure assets, a critical component of the communication effort.

2. Effective communication on the state of the infrastructure, the management of those assets, and the services provided through public works, can gain for the public works engineer the understanding, commitment and support of Councillors, senior management, other departments, critical stakeholders and the public at large.

3. Technology has emerged as a key component of those communication and community consultation efforts which effectively engage the target audience, serve the community and expand public awareness of public works issues.

Within the framework of the 3 key findings, 11 specific recommendations, varying in complexity and ease of application, are made for the application of those findings to the Australian local government environment.

Conclusion

The structures of government and the local authority legislative frameworks varied not only with Australian structures and frameworks, but also between the countries visited. Nevertheless, it became clear that there is a consistency across the challenges confronting local authority public works practitioners and managers in those jurisdictions. It therefore follows that the communication findings and recommendations can be applied in the Australian local government environment.

Success in this regard, requires the public works engineer to engage with people face to face, on their terms and using language that will assist their understanding.

1 Introduction

The IPWEA National Overseas Study Tour 2005 was arranged and managed by the National Office of the Institute of Public Works Engineering Australia. My participation was funded by the Municipal Engineering Foundation, Victoria and supported by my employer, Bayside City Council.

The general purpose of the Study Tour was to provide participants with the opportunity to explore the theme – Best Practice and Innovation in Public Works – through interaction with local government managers and public works practitioners from other countries. Within this general theme, the focus of my interest was Communication and Community Consultation for the Public Works Engineer.

Over the period of 2 September 2005 to 22 September 2005 the tour party visited local authorities in Canada, the United States of America, and the United Kingdom, attended the American Public Works Association (APWA) International Public Works Congress, and visited an information technology and digital city in Hong Kong.

Chris Champion, National Chief Executive Officer of the IPWEA lead the tour party which included Participants from New South Wales, Queensland, Tasmania, Victoria and Western Australia. The participants are from a diverse range of public works engineering backgrounds, and currently work in varied roles for local governments serving communities of different size and circumstances.

The tour party was fortunate to be joined by Warren Roberts, the National President of IPWEA and Keith Wood, a Trustee of the Municipal Engineering Foundation, Victoria for the APWA Congress in Minneapolis and the United Kingdom leg of the Study Tour. Four participants in the Integrated Water Quality Management Study Tour sponsored by the Municipal Engineering Foundation, Victoria also joined with the tour party for the APWA Congress.

The interactions with local authorities revealed a significant range of communication and community consultation initiatives. Given that many of these initiatives are similar in nature, only selected examples from each local authority have been included. It is suggested that reference be made to the web-sites of these authorities to appreciate the broad range of initiatives each uses.

During the Study Tour, generous assistance and hospitality was provided by many public works practitioners and local government managers. I wish to record my appreciation for this generosity.

2 Background

The Municipal Engineering Foundation, Victoria funded a research project during 2003 to review the current and future roles of municipal engineering in Australia. The research involved a study tour visiting 35 Councils across Australia and a validation workshop held during the IPWEA National Conference in Hobart.

The 2004 report of the research – *Review of the Current and Future Role of Municipal Engineering in Australia* – found that:

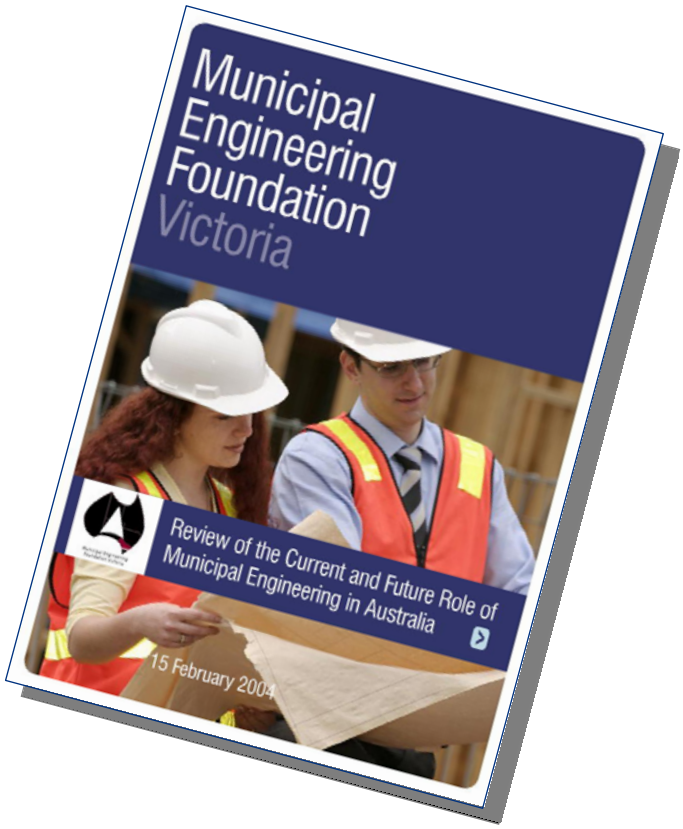
- success as a municipal engineer in meeting the challenges of the future relies, amongst other things, on communication and community consultation skills; and
- these skills are not typically exhibited by engineers[1].

On the basis of these findings, the report of the Review included the following recommendation.

"That practicing Municipal Engineers note the emerging requirements identified for Director level positions and amend their professional development plans accordingly as required;

- Development of skills including political, community consultation, communication, financial management, people management, leadership, public presentation, environmental management in addition to technical skills;
- …"[2]

The focus of my interest in the Study Tour – Communication and Community Consultation for the Public Works Engineer – is a response to these findings and this recommendation of the Review. Specifically, the outcome sought from my participation on the Study Tour is to provide guidance to public works engineers to assist them to respond to the findings of the Review. Success in the specific outcome sought for public works engineers will also provide to their authorities, improved general communication and community consultation outcomes.



3 Study Tour Interactions

3.1 APWA International Public Works Congress

3.1.1 About the Congress

The 2005 APWA International Public Works Congress, held in Minneapolis, Minnesota, was attended by more than 6,000 delegates – many from outside North America.

It provided the tour party with four days of technical and development sessions, covering 17 themes[3] with a dozen or so concurrent sessions to choose from. These sessions and a trade exposition with nearly one hectare of trade displays were all provided within the single venue of the Minneapolis Convention Center.

3.1.2 Sessions of interest

I attended a range of sessions that provided both professional and personal interest to me. These covered the themes of: Administrative Management; Engineering/Construction Management; Facilities; Parks and Grounds; Personal Enrichment; and Urban Forum.

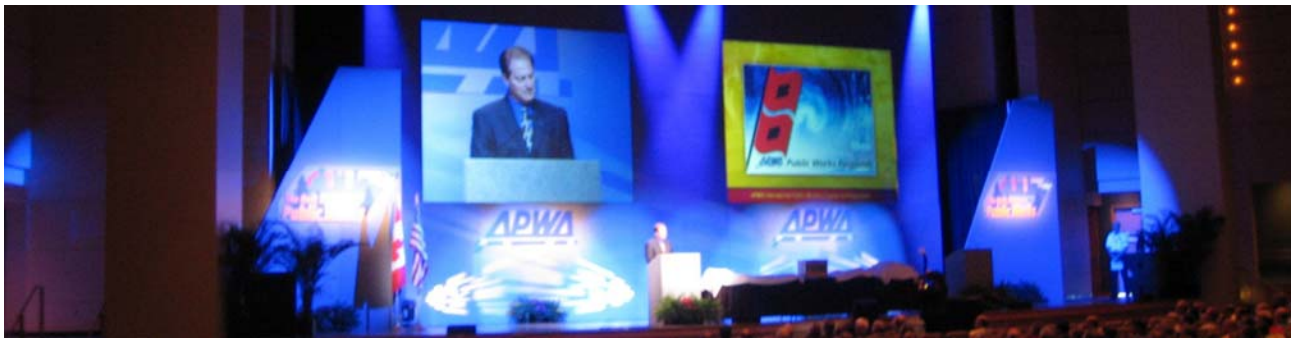
There were sessions of particular relevance to my focus for the Study Tour.

- *Don't Let Your Projects Manage You!*
- *What Does Your Department Do? Marketing Your Facilities and Grounds Program to Public Officials.*
- *Putting a Face on Public Works.*

Through these sessions, there was interaction with the USA Cities of Milwaukee, Overland Park and Saint Paul, and with the County of Sacramento. These sessions and subsequent discussions provided information on a wide range of public works communication practices and tools.

3.1.3 Other Matters

One further aspect of the Congress I found to be quite beneficial was the opportunity to meet with public works engineers from other countries and cultures. This added a real personal value to the Congress far beyond that acquired through the Congress sessions.



3.2 City of Edmonton, Alberta, Canada

3.2.1 About Edmonton

The City of Edmonton is the capital city of the Province of Alberta and is located centrally within the Province. Alberta is a western prairie province abutting the border with the USA. The City of Edmonton has a population of approximately 712,000 covering 700 square kilometres, and is the centre of a greater metropolitan population of more than 1 million. More than 8,000 municipal staff serve the community.

3.2.2 Communication Initiatives

The City of Edmonton, like most major metropolitan areas in North America, is confronted by an infrastructure gap. That is, a shortfall between the cost of infrastructure projects required to meet demands and the money available to pay for those projects.

In response to the infrastructure gap, in 1998 the City adopted an Infrastructure Strategy in which it articulated the view that "(a) city's health can be measured by the quality of its infrastructure." [4]
The Strategy acknowledges that more effective infrastructure management strengthens the City's ability to:

- provide cost-effective municipal services;
- promote economic development;
- ensure citizen safety;
- protect the environment; and
- provide a high quality of life for Edmontonians.

Under the Strategy, Edmonton's approach to infrastructure management has been to:

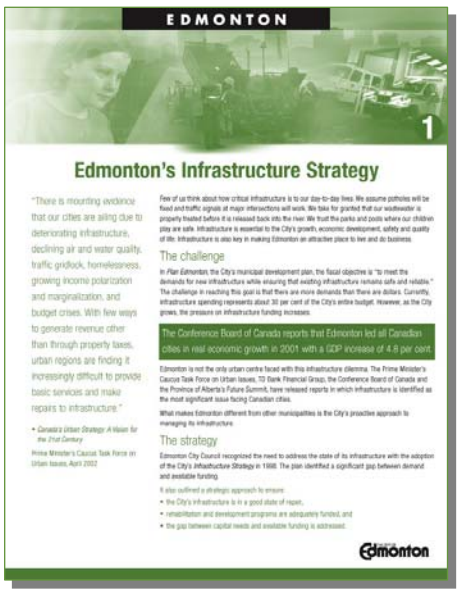
- gain understanding and commitment of elected officials and senior management;
- incorporate infrastructure in corporate strategic planning and decision making processes;
- change civic priorities and policies; and
- achieve strong buy-in and support from City departments.

Included in the suite of mechanisms to create public awareness and enlist community support and advocacy for infrastructure issues, is the Infrastructure Technical Advisory Committee (ITAC).

ITAC, with membership drawn from 20 external professional and technical organisations, is mandated to:

- provide advice to the City as it improves and validates strategies, processes and planning tools;
- provide a broad scope review of infrastructure issues; and
- foster two-way communications between the City and key stakeholders.

The Office of Infrastructure considers ITAC to be an effective information conduit to key stakeholders about the City's ongoing activities related to its infrastructure inventory.


EDMONTON

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Edmonton's Infrastructure Strategy

"There is mounting evidence that our cities are ailing due to deteriorating infrastructure, declining air and water quality, traffic gridlock, homelessness, growing income polarization and marginalization, and budget crises. With few ways to generate revenue other than through property taxes, urban regions are finding it increasingly difficult to provide basic services and make repairs to infrastructure."

• *Canada's Urban Strategy: A Vision for the 21st Century*
Prime Minister's Caucus Task Force on Urban Issues, April 2002

Few of us think about how critical infrastructure is to our day-to-day lives. We assume potholes will be fixed and traffic signals at major intersections will work. We take for granted that our wastewater is properly treated before it is released back into the river. We trust the parks and pools where our children play are safe. Infrastructure is essential to the City's growth, economic development, safety and quality of life. Infrastructure is also key in making Edmonton an attractive place to live and do business.

The challenge

In *Plan Edmonton*, the City's municipal development plan, the fiscal objective is "to meet the demands for new infrastructure while ensuring that existing infrastructure remains safe and reliable." The challenge in reaching this goal is that there are more demands than there are dollars. Currently, infrastructure spending represents about 30 per cent of the City's entire budget. However, as the City grows, the pressure on infrastructure funding increases.

The Conference Board of Canada reports that Edmonton led all Canadian cities in real economic growth in 2001 with a GDP increase of 4.6 per cent.

Edmonton is not the only urban centre faced with this infrastructure dilemma. The Prime Minister's Caucus Task Force on Urban Issues, TD Bank Financial Group, the Conference Board of Canada and the Province of Alberta's Future Summit, have released reports in which infrastructure is identified as the most significant issue facing Canadian cities.

What makes Edmonton different from other municipalities is the City's proactive approach to managing its infrastructure.

The strategy

Edmonton City Council recognized the need to address the state of its infrastructure with the adoption of the City's *Infrastructure Strategy* in 1998. The plan identified a significant gap between demand and available funding.

It also outlined a strategic approach to ensure:

- the City's infrastructure is in a good state of repair,
- rehabilitation and development programs are adequately funded, and
- the gap between capital needs and available funding is addressed.

Edmonton

A further technique used for successful communication of the Infrastructure Strategy is the production of a range of easily understandable documents that successfully translate the detailed Infrastructure Strategy from technical language into community idiom. These documents include fact sheets and a summary in the form of an overview. They have been provided extensively in hard copy and are also available from the City's website.[5]

The successful implementation of the Infrastructure Strategy has clearly highlighted the significant role public works engineers have in making and keeping Edmonton healthy. Indeed, when addressing the tour party, Mayor Stephen Mandel complimented the Office of Infrastructure on its critical contribution to the well-being of the City. It is therefore clear that the Office of Infrastructure staff have successfully communicated the implications of the state of the infrastructure to stakeholders, principally by applying the age-old technique of talking to all affected people and organisations face to face, tailoring their message to the understanding of each audience.

An inspection of the South Light Rail Transit (SLRT) extension project was included in the itinerary of the tour party.

The SLRT extension project is a major light rail project that includes a pair of 300m bored tunnels, with a finished diameter of 5.8m, as well as at-grade track work.

A professional film crew filmed our visit as part of an ongoing effort to record the whole project for marketing and promotion of the project and for future archives. While it would not be common for Australian local government authorities to undertake projects of this magnitude, this means for communicating to current and future audiences is nevertheless worth consideration for projects where the specific benefits justify the cost.

3.2.3 Edmonton Observations

- The state of the infrastructure is among the most critical communication subjects for the public works engineer.
- Effective communication on the state of the infrastructure can gain the understanding, commitment and support of Councillors, senior management, City departments, critical stakeholders and the public at large.
- Well written fact sheets and summaries assist communication by successfully translating technical language into community idiom.
- Utilisation of professional film technology can provide an invaluable resource for marketing, promoting and providing an archive record of major projects.

3.3 City of Calgary, Alberta, Canada

3.3.1 About Calgary

The City of Calgary is located in the south of the Province of Alberta. Alberta is a western prairie province abutting the border with the USA. The City of Calgary has a population nearing 1 million within an area of 722 square kilometres. About 13,000 municipal staff serve the community.

3.3.2 Communication Initiatives

Like the City of Edmonton, the City of Calgary is also confronted by a significant infrastructure gap. The City's response to this infrastructure gap has been to develop Calgary's Asset Management Strategy.

Interestingly, Calgary's Asset Management Strategy identifies that its value will be broader than just responding to the infrastructure gap. The four reasons included in the Strategy for its adoption can be summarised as:

- municipal infrastructure supports competitive advantage and sustainable growth;
- the growing infrastructure maintenance gap;
- the link between municipal infrastructure and quality of life; and
- asset management supports transparent, rational and accountable infrastructure decision making.[6]

Calgary is also utilising a range of easily understandable documents that successfully translate the detailed Asset Management Strategy from technical language into community idiom. Like Edmonton, these documents include fact sheets and a summary provided in hard copy.

Within the City's overall framework, the Waterworks and Wastewater Business Units are implementing an asset management program. In explaining to the tour party the value of doing so, Business Unit representatives used much plainer language than that used in the Strategy. They said that it is unreasonable to expect the Council to "just trust us".

Calgary is well underway with the implementation of its Asset Management Strategy and has achieved, amongst other things, commitment and support for the Strategy by the Councillors and senior management. Clearly, providing robust data within a sound asset management framework has provided the council with the tools for transparent, rational and accountable infrastructure decision making. That is, in relation to asset management, it has lifted the relationship of public works engineers with Councillors and senior management beyond the "just trust us" paradigm.

In this sense, Calgary's sound asset management approach has proven to be a successful communication tool for informing Councillors and senior management. Further, by producing easily understood Asset Management Strategy documents, and by talking to affected people and organisations face to face, Calgary is successfully communicating the implications of the state of the infrastructure to stakeholders.

This successful communication has been achieved through the skills of the public works engineers in the various infrastructure programs.

3.3.3 Calgary Observations

- The state of the infrastructure is among the most critical communication subjects for the public works engineer.
- Effective communication on the state of the infrastructure can gain the understanding, commitment and support of Councillors and senior management.
- Well written fact sheets and summaries assist communication by successfully translating technical language into community idiom.

3.4 City of Minneapolis, Minnesota, USA

3.4.1 About Minneapolis

The City of Minneapolis is one of the so-called Twin Cities within the State of Minnesota, situated in the east of the State on the Mississippi River. Minnesota is a northern plains state abutting the border with Canada.

The City has a population of about 385,000 within an area of 143 square kilometres.

3.4.2 Communication Initiatives

The City of Minneapolis Public Works Department also provides a web-based tool for communication with the community. Reference to the Department web-page[7] provides access to construction projects via lists and interactive maps.

The details provided are particularly interesting and helpful. They include:

- a location map;
- a description of the project features, timing and impacts on traffic;
- renderings of the finished project;
- a project update;
- photographs of the project as it proceeds; and
- detour information.

This tool is very "user friendly", providing a good mix of information in an interesting manner. The information is cleverly collated and presented from Department records and plans by the public works engineers. I would expect any user of this tool to be well informed and satisfied with the breadth and quality of information provided. Appendix 1 includes an example of the use of this tool.

The Department also provides a single page news sheet – *Monthly update…the department at a glance*.

This simple news sheet provides a message from the City Engineer – Director of Public Works, achievements of the past month, works for the ensuing month, an update on selected projects and recognition of employee excellence. It is an easy read, available in hard copy and on the Department web-site.[8]

3.4.3 Minneapolis Observations

- Web-based tools focussed on specific infrastructure issues – in this case current construction projects – can be very effective in serving the community and expanding public awareness of public works issues.
- Written general communication, presented in an interesting and engaging manner, can be effective in presenting the work and role of the public works engineer to the public.

3.5 City of Eden Prairie, Minnesota, USA

3.5.1 About Eden Prairie

The City of Eden Prairie is situated about 20 kilometres south west of Minneapolis.

The City has a population of about 60,000 within an area of 83 square kilometres. About 270 full-time employees serve the community. It is a very quickly growing business and residential city.

3.5.2 Communication Initiatives

The tour party visited the City of Eden Prairie as a result of a feature of the City's web-site being noticed by one of the tour party. The feature is the use of weblogs – blogs as they are colloquially known. The City Manager, Scott H Neal, is one of those who maintains a weblog on the City web-site[9]. He focuses his efforts on issues across the full breadth of City activities, including from time to time, public works issues. A scan of his weblog for September 2005 reveals comments on three public works issues – the introduction of roundabouts, road median maintenance and tendering processes for capital projects. An extract of his weblog is included in Appendix 2. In the same period, the weblog also addresses administrative arrangements within the City, the death of a City Police Officer while on duty, meetings with state agencies and visits to the City by politicians, students and others – including our tour party.

Even when viewed against the quickly developing opportunities that the internet provides, weblogs are certainly not seen as traditional, or even usual, communication tools for local authorities. Nevertheless, this innovative Eden Prairie venture is clearly valid. Scott Neal's weblog is accessed by about 5,000 readers each month, and by any measure, this level of engagement with a community, must be seen as successful community consultation.

While the City Manager is not a public works engineer, his style of utilisation of his weblog, which includes highlighting public works issues, demonstrates the appropriateness of the weblog as an effective communication tool for public works engineers that can be taken up fairly easily.

3.5.3 Eden Prairie Observations

- Innovative and unusual use of technology can be a very effective communication and consultation tool for local authorities, and that such a tool can be very effective in informing the community about specific issues and expanding public awareness of public works issues.

3.6 Brighton and Hove City Council, UK

3.6.1 About Brighton & Hove

The City of Brighton and Hove is situated on the English Channel about 80 kilometres south of London. It is a compact historic city built on rolling hills and valleys between the South Downs and the sea.

The City has a resident population of about 252,000 within an area of 83 square kilometres. However, the population at any one time is significantly augmented by the 8 million tourists and visitors each year.

3.6.2 Communication Initiatives

The City of Brighton and Hove has public transport responsibilities as well as road and traffic management responsibilities. The tour party's visit included an inspection of the City Transport operations centre, from which the transport performance and situations are monitored and managed.

One web-based communication tool utilised by City Transport provides valuable information to residents in relation to bus timing (in real time), car park availability, traffic congestion and road works and detours.[10]

In the case of road works, a map identifies active locations and provides a link to details of the project and expected impacts on the community. As with many other communication tools, not only does this one inform residents of a project that might impact on them, it also serves to expand public awareness of public works issues. Appendix 3 includes an example of the use of this tool.

3.6.3 Brighton & Hove Observations

- Web-based tools providing the community with easy access to information on a range of active issues can be very effective in serving the community and expanding public awareness of public works issues.

3.7 Sacramento County Department of Transportation, California, USA

3.7.1 About Sacramento County Department of Transportation

The County of Sacramento is one of the original counties of the State of California with a population of more than 1.2 million and covering an area of 2,564 square kilometres.

The City of Sacramento is the largest city within the County. It serves as the Capital of the State of California and is situated approximately 120 km north east of San Francisco. The County extends from the low delta lands between the Sacramento and San Joaquin rivers, north to about 16 kilometres beyond Sacramento and east to the foothills of the Sierra Nevada Mountains. The southernmost portion of the County has direct access to the San Francisco Bay.

Interaction with the local government managers and public works practitioners of the Sacramento County Department of Transportation (SACDOT) was through the APWA Congress session *Don't Let Your Projects Manage You!*

3.7.2 Communication Initiatives

SACDOT fulfils project management functions for the County. It currently has 52 active projects to the value of US$280 million under construction or programmed for construction.

Historically, SACDOT project managers achieved reasonable results by applying their experience, but were often unable to effectively deal with constantly changing priorities, inherited design process and staff changes.

In the APWA Congress session, the role of project management at SACDOT was represented by Theron Roschen, Principal Civil Engineer, as:

- lead the planning and the plan;
- control the execution;
- monitor the status;
- make appropriate course corrections, funding, scope and resources; and
- communicate, communicate, communicate.

To further emphasise the challenge and significance of communication in project management, it was pointed out that communication paths increase exponentially with additional parties.

Communication is one element of the SACDOT project management framework. Robust communication planning and execution has been identified as essential in managing the complexities of the communication that must occur with all stakeholders.

Theron Roschen argues that organisations project manage to varying degrees of success. He has produced a simple model to describe an organisation's project management performance against the variables of common sense and process rigour. (figure 1)

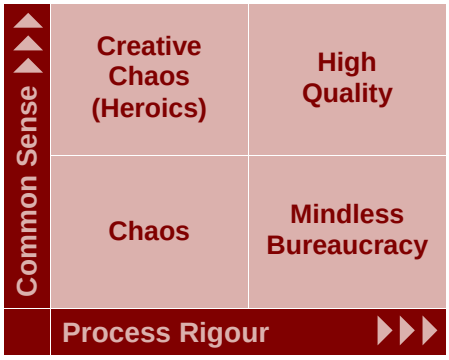


figure 1
Project Management Performance (SACDOT model)

The top two quadrants reflect competent engineers (good commonsense) with performance moving from *creative chaos* to *high quality* as process rigour increases. This applies to all elements of the project management framework – including communication.

While providing an indication of the quality of communication performance in project management, it can be argued that this model also reflects the credibility of the public works engineer in the eyes of the stakeholders. That is, credibility increases as the application of both common sense and process rigour increase. (figure 2)

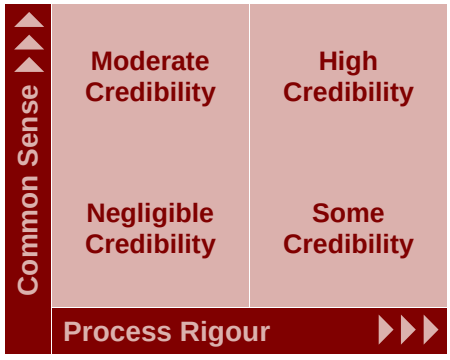


figure 2
Project Management Performance (SACDOT model) modified to reflect Credibility of the Public Works Engineer

The SACDOT public works engineers have concluded that good communication in project management provides for improved projects, which in turn, provides for improved credibility.

3.7.3 Sacramento Observations

- Successful planning and execution of the communication element of project management is to do with using common sense and sound process to apply universal principles of communication with all stakeholders
- Credibility of the public works engineer with Council, colleagues and the community can be improved by improving both factors of communication – common sense and process.

3.8 City of Milwaukee Department of Public Works, Wisconsin, USA

3.8.1 About Milwaukee Department of Public Works

The City of Milwaukee is situated on the western shore of Lake Michigan in the State of Wisconsin about 130 kilometres north of Chicago. Wisconsin is in the Great Lakes region which abuts the Canadian border.

The City of Milwaukee has a population of 597,000 within an area of 249 square kilometres. About 9,000 municipal staff serve the community.

Interaction with the local government managers and public works practitioners of the City of Milwaukee Department of Public Works was through the APWA Congress session *What Does Your Department Do? Marketing Your Facilities and Grounds Program to Public Officials.*

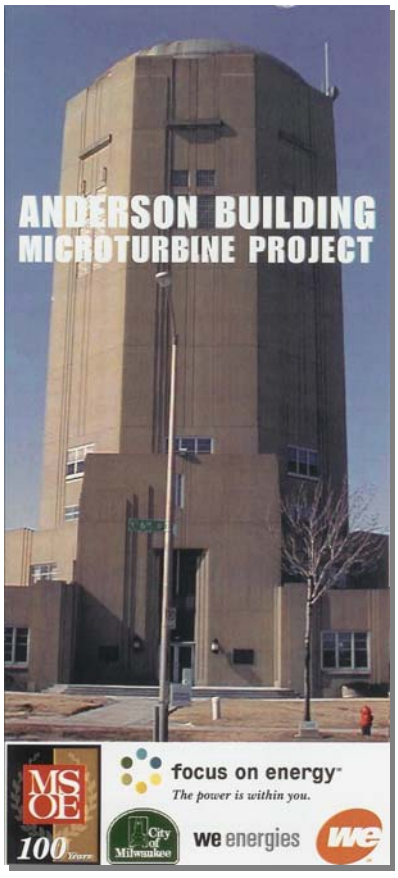
3.8.2 Communication Initiatives

At the APWA Congress, Venu J Gupta, Director Buildings and Fleet with the Public Works Department of the City of Milwaukee, provided several examples of the Department's marketing the work they do.

The examples cited include:

- micro turbine demonstration project;
- construction flyers;
- update flyer for City Hall exterior restoration;
- new field headquarters information handout;
- Building Services brochure; and
- handbook on emergency procedures.

All of these marketing initiatives are provided in hard copy for distribution directly to affected and interested people.



Of the examples cited, the micro turbine demonstration project is of particular interest.

The project consists of a 60 kW micro turbine installed in the Anderson Lake Tower Municipal Building as a partnership between the City of Milwaukee and two energy companies. The Milwaukee School of Engineering is undertaking the research phase of the project – the continuing monitoring of the electricity generation and the associated heat recovery from the installation. The outcome will be an understanding of the practicality of combining distributed generation and combined heat/power technologies.

The particular interest of this project comes from two initiatives.

Firstly, engaging with the academic community on a project not only has the potential to improve the veracity of that project, but also broadens community understanding of the work and role of the public works engineer through expansion of the public works stakeholder base.

Secondly, the City considers that the use of internet-based communications makes this research project unique. The use of a webcam focussed on the micro turbine[11] is a relatively inexpensive initiative which can easily be applied to all manner of public works projects where it is considered that the community may like to observe progress online.

The Department also provides comprehensive information about the playgrounds and other recreation facilities within the City. This service highlights one role of the Public Works Department while providing helpful and easily accessible information in relation to the recreation facilities.

From a map based entry point[12], a resident can locate every playground and recreation facility within the City and drill down to gain the details of each facility, including maps and activities provided for. It is understood that this initiative of the Department public works practitioners has been very popular with residents and Aldermen. Appendix 4 includes an example of the use of this tool.


July/August/September 2005

In the Works

© Dept. of Public Works, City of Milwaukee

Milwaukee Water Flows to New Berlin

Automated Payment Centers Introduced at Three Police District Stations

First Night Time Parking Permit Dispensing Machines in the Country

The Department also publishes a quarterly newsletter – *In the Works*.

This 8 page newsletter provides updates on selected projects, initiatives and services, recognition of employee activities and general public works news. It is comprehensive and well constructed and would certainly assist in disseminating information about the role of the Public Works Department to the community at large and within the organisation.

In the Works is available to the public in hard copy and on the Department web-site.[13]

3.8.3 Milwaukee Observations

- Engaging with the academic community can broaden the understanding of the work and role of the public works engineer through expansion of the public works stakeholder base into this significant community.
- The use of a webcam focussed on a project of interest to the community is a relatively inexpensive initiative which can easily be applied to all manner of public works projects.
- Web-based tools focussed on specific public works activities – in this case playgrounds and recreation facilities – can be very effective in serving the community and expanding public awareness of public works issues.
- Written general communication, presented in an interesting and engaging manner, and focusing on both external and internal readers, can be effective in presenting the work and role of the public works engineer to the public.

3.9 City of Overland Park, Kansas, USA

3.9.1 About Overland Park

The City of Overland Park is located in the far east of the State of Kansas about 20 kilometres south of Kansas City. Kansas is a central plains state in the heart of the USA.

The City of Overland Park has a population of about 166,000 within an area of 147 square kilometres.

Interaction with the local government managers and public works practitioners of the City of Overland Park was through the APWA Congress session *Putting a Face on Public Works.*

3.9.2 Communication Initiatives

The City of Overland Park provides one of the best web-based community information tools identified through the Study Tour. The opening web-page[14] for the City provides the opportunity for a resident to interrogate several City databases to find out "what's happening in my neighbourhood".

After entering an address, the tool provides a listing and location maps of items within a selected radius of the address. The active items include Planning Commission items, special events permits, active building permits, public works projects and capital improvement projects. Each of the items can then be further interrogated for detailed information.

In relation to public works and capital improvement projects, the details provided are drawn from the City's project management database and include a log of progress reports for the project.

The great strength of the Overland Park tool is that it provides a single, comprehensive point of access to the City databases and linked access to project details. Appendix 5 includes an example of the use of this tool.

This quite remarkable tool, now applied organisation wide, has developed out of a initiative by the Public Works Department. In 1996, it was a telephone hotline with public works project information. 2000 was the year it was translated to the City web site as an interactive map-based project status report. It was converted to its current role, providing much more than just project information, in 2004.

3.9.3 Overland Park Observations

- Web-based tools providing the community with easy access to information on a range of active issues – including specific infrastructure issues – can be very effective in serving the community and expanding public awareness of public works issues.

3.10 City of Saint Paul, Minnesota, USA

3.10.1 About Saint Paul

The City of Saint Paul is the second of the so-called Twin Cities within the State of Minnesota. It is situated about 10 kilometres east of Minneapolis, and like Minneapolis is also situated on the Mississippi River. Saint Paul is the Capital of the State of Minnesota.

The City of Saint Paul has a population of about 280,000 within an area of 137 square kilometres.

Interaction with the local government managers and public works practitioners of the City of Saint Paul was through the APWA Congress session *Putting a Face on Public Works.*

3.10.2 Communication Initiatives

In a presentation to a session at the APWA Congress, John P Maczko, Director of Transportation/City Engineer with the City of Saint Paul, explained that in Saint Paul's experience, the community does not always receive what public works engineers say exactly as was intended. He suggested a reason for this is that public works engineers don't always speak the community's language.

John referred to a specific example – Ayd Mill Road, which was built in the 1960s and envisioned as a medium-speed north-south route. It has been the subject of much contention with some wishing it to be a high-speed link between freeways, and others wishing for a park in its place.

The Public Works Department undertook a one-year test configuration of the road to help determine what to do. John explained that in spite of many meetings with the public in large and small groups, good quality drawings and clear descriptions, his public works engineers were still misunderstood by the community during this process.

He suggested that as most people aren't conceptual, public works engineers should be creative and use the technology available to help the consultation and communication process.

To this end, the Public Works Department embraced visioning and virtual reality by commissioning the production of a DVD simulating the preferred solution for the Ayd Mill Road project.

The point of difference with Saint Paul's approach to the visualisation is that they provided real video of the whole route, shot from the air, juxtaposed with a 3D representation of the design. The upper portion of the screen shows existing conditions, that is, what is there now, while the lower portion shows the simulation of the proposal. The effect is that as one flies, in a virtual sense, through the project, the view is of the existing conditions transforming into the finished project. The impact is very powerful, providing an unambiguously clear understanding of the impacts of the project. Appendix 6 includes still views from the visualisation.

Copies of the DVD were provided to interested parties, allowing them to explore the impacts of the proposed project at their leisure. It is also provided on the City's web site at a reduced resolution.[15]

John Maczko's throw-away line about the visualisation is that if a picture is worth 1000 words then Saint Paul's 3D video is worth 1000 pages of words. I concur with this.

3.10.3 Saint Paul Observations

- Success in consulting with the community on complex and controversial projects can be improved significantly by applying sophisticated technology to produce easy to use visualisation of the project.

3.11 Cyberport, Hong Kong

3.11.1 About Cyberport

Cyberport is an information technology and digital city being built on a 24 hectare site at Telegraph Bay on Hong Kong Island's southern side.

The US$2 billion project commenced in 2002 and is scheduled for completion in 2008. At completion, it will be home to 10,000 residents and about 100 IT companies. Many residents and about 40 companies are already in occupation.

Cyberport is owned by the Hong Kong Special Administrative Region Government, and is being constructed in partnership with a private consortium. It is managed by a staff of only 18, with most services contracted in.

3.11.2 Matters of Interest

The comprehensive tour of Cyberport was an extra activity of the Study Tour made possible through the professional relationship of one of the tour party with Dr Dennis Mui, Associate Director (Technical Services) of the Hong Kong Cyberport Management Company Ltd.

On one hand, Cyberport can be viewed as a small city and therefore potentially, as a Hong Kong example of a small local authority. On the other hand, it is a private limited liability company, albeit fully owned by the Government, and must therefore be viewed as such.

Nevertheless, being exposed first hand to the scale of the project and the administrative arrangements for its management, the visit to Cyberport provided a dimension to the Study Tour beyond the structured sessions with local authorities and the APWA Congress sessions. It provided an interesting and enjoyable expansion of my experience of projects and Hong Kong administrative systems.

4 Key findings and Recommendations

The Study Tour gathered experiences of local government managers and public works practitioners from other countries. From this, three key findings, have been identified, together with recommendations for the application of those findings to the Australian local government environment.

It is expected that there will be excellent examples from Australian local government that also support some or all of the key findings. However, given the focus of the Study Tour on other countries, local examples have not been sought. Where a recommendation is being considered for implementation, further benefit might be gained by using appropriate local networks[16] to identify relevant Australian examples.

The recommendations vary in complexity and ease of application. Many can be applied to the Australian local government context generally and with little lead-time or resources, others require the establishment of complex, organisation-wide systems, while yet others have high cost structures and are therefore more appropriate for communication of specific major projects or initiatives where the cost is justified. The following key is used to identify these variations and assist with interpretation of the recommendations.

Simple to apply ✓	A recommendation that requires little lead-time or resources to put in place.
General application ✓	A recommendation that has the potential for application to a broader range of circumstances than those specific circumstances from which the recommendation is derived.
Complex systems ✓	A recommendation that requires the establishment of complex systems for implementation. It may require an organisation-wide commitment and longer lead-time.
High cost structure ✓	A recommendation that has, or may have in some circumstances, a high cost structure. This may lead to application of the recommendation being limited to very significant projects and initiatives.
Brighton & Hove	A reference to a local authority from which the recommendation is derived.

Finding 1 *Infrastructure*

The state of infrastructure is amongst the most critical communication subjects for the public works engineer, with the plans to manage these infrastructure assets, a critical component of the communication effort.

The Infrastructure Strategy of the City of Edmonton and the Asset Management Strategy of the City of Calgary both deal very competently with the state of infrastructure and form the basis of all critical public works communications in those cities. In both cases they have been effectively communicated to relevant stakeholders.

Australian accounting standards require the funding of depreciation. As a consequence, asset management plans already exist, or are under development, in Australian local government. It therefore follows that Australian public works engineers should ensure that asset management plans are competent and that they are effectively communicated to stakeholders. The techniques utilised by Edmonton and Calgary public works engineers are worth consideration.

Recommendation 1

Public works engineers should ensure that asset management plans are adequate to support critical public works communications.

Simple to apply ✓
General application
Complex systems
High cost structure

Calgary
Edmonton

Finding 2 *Credibility*

Effective communication on the state of the infrastructure, the management of those assets, and the services provided through public works, can gain for the public works engineer the understanding, commitment and support of Councillors, senior management, other departments, critical stakeholders and the public at large.

Effective communication on public works issues can gain credibility for the public works engineer in the eyes of their Council, their colleagues and their community, and can achieve understanding and acceptance for the Council in the eyes of their community.

The sound asset management approach of the Cities of Edmonton and Calgary includes the provision of robust data supporting an extensive regime of informing, involving and educating all stakeholders. An important element of the state of the infrastructure communication is the production of a range of easily understandable documents, including fact sheets and summaries, that successfully translate the detailed strategies from technical language into community idiom. It is clear that this has strengthened the credibility of the public works engineers at these cities.

The Public Works Department newsletters of the Cities of Minneapolis and Milwaukee are examples of simple tools that present the work and role of the public works engineer to the public. Provided in both hard and soft copy, these newsletters have the potential to reach a broad external and internal audience.

Recommendation 2

Public works engineers should develop documents, written in styles to suit the intended audiences, as a means to expand external and internal stakeholder awareness of public works issues.

Simple to apply ✓	Calgary
General application ✓	Edmonton
Complex systems	Milwaukee
High cost structure	Minneapolis

The model that SACDOT uses to describe project management performance can be extended to suggest that the credibility of the public works engineer can be improved by improving both the processes used and the application of common sense to the task of selecting the most appropriate communication tools and applying universal principles of communication with all stakeholders.

Recommendation 3

Public works engineers should endeavour to improve both the common sense and process rigour of project management communication to improve project outcomes and, as a consequence, their credibility with Council, colleagues and the community.

Simple to apply ✓	SACDOT
General application ✓	
Complex systems ✓	
High cost structure	

The City of Milwaukee has engaged with the academic community in undertaking the Anderson Lake Tower Municipal Building micro turbine project. Initiatives such as this can broaden the understanding of the role of public works engineering, and as a consequence, the credibility of the public works engineer.

Recommendation 4

Public works engineers should consider opportunities for partnerships with the academic community for the technical value of their involvement and to broaden the understanding of the role of public works engineering.

Simple to apply ✓	Milwaukee
General application ✓	
Complex systems	
High cost structure ✓	

Finding 3 *Technology*

Technology has emerged as a key component of those communication and community consultation efforts which effectively engage the target audience, serve the community and expand public awareness of public works issues.

The following summary refers to examples of the successful use of technology identified in this report. They have been grouped under the themes of public works project information, public works services information, awareness of public works issues, and visualisation tools for specific project consultation.

These tools are universal in their potential application and could therefore be applied to Australian local government. This may have already occurred in some instances.

Public Works Project Information

The web-based tools used by the Cities of Brighton & Hove (Appendix 3), Minneapolis (Appendix 1) and Overland Park (Appendix 5) to provide their communities with information on public works projects have been reviewed. They are all effective.

Overland Park provides a single, comprehensive point of access to the City databases and non-technical updates of each project, while Minneapolis provides an extensive range of renderings of the project, construction photographs and detour information. While both are exceptional, they have individual strengths, which if combined would provide a very high level of communication.

Recommendation 5

Public works engineers should consider creating, or expanding existing, web-based community information tools to provide access to details of public works projects. Further benefit can be gained by engaging the whole organisation to provide a resident with the opportunity to gain details of all Council activities and applications for permits nearby to them.

Simple to apply	Brighton & Hove
General application ✓	Minneapolis
Complex systems ✓	Overland Park
High cost structure	

The professional filming of important and interesting aspects of Edmonton's SLRT extension project provides a unique resource for marketing and promoting the project and for future archives. While it would not be common for Australian local government authorities to undertake projects of this magnitude, this means for communicating to current and future audiences is nevertheless worth consideration for projects where the specific benefits justify the cost.

Recommendation 6

Public works engineers should consider commissioning a professional standard video record of the progress of major projects as a means of communicating the magnitude, significance and community value of public works to current and future audiences.

Simple to apply	Edmonton
General application ✓	
Complex systems	
High cost structure ✓	

The City of Milwaukee Anderson Lake Tower Municipal Building micro turbine project uses a webcam focussed on the micro turbine as part of the research element of the project undertaken by the Milwaukee School of Engineering. This use of a webcam focussed on a project provides a relatively inexpensive model that is easily transferable to all manner of public works projects of interest to the community.

Recommendation 7

Public works engineers should consider the use of a webcam to provide easy community visual access to a project as a means of developing and maintaining community interest in the project and public works generally.

Simple to apply ✓	Milwaukee
General application ✓	
Complex systems	
High cost structure	

Public Works Services Information

The web-based tools used by the Cities of Brighton & Hove (Appendix 3) and Milwaukee (Appendix 4) to provide their communities with information on public works services have been reviewed.

From one map-based entry point, Brighton & Hove provides real time information on bus timing, car park availability and traffic congestion, and the current status of road works and detours. One aspect of Milwaukee's effective use of the tool is the provision of detailed map-based information about playgrounds and recreation facilities.

Recommendation 8

Public works engineers should consider creating, or expanding existing, web-based community information tools to provide map-based access to details of public works services, to assist community awareness of issues such as recreation facilities, traffic impacts of road works and the like.

Simple to apply	Brighton & Hove
General application ✓	Milwaukee
Complex systems ✓	
High cost structure	

Awareness of Public Works Issues

The weblog of the City Manager of the City of Eden Prairie (Appendix 2) was the only one identified during the Study Tour. This non-traditional (for local government) use of the internet is very successful in communicating with a quickly expanding segment of the community. It is worth serious consideration for use by others.

Recommendation 9

Public works engineers should consider using weblogs and other innovative, non-traditional use of the internet, to highlight and expand public awareness of public works issues with a quickly expanding internet literate segment of the community.

Simple to apply ✓	Eden Prairie
General application ✓	
Complex systems	
High cost structure	

Public works newsletters produced by the Cities of Milwaukee and Minneapolis have been reviewed. Both are interesting and engaging publications, are published in hard copy and on the web, and target both external and internal readers.

Recommendation 10

Public works engineers should ensure that all public documents produced are made available from their webpage as a means to expand community exposure to the documents.

Simple to apply ✓	Milwaukee
General application ✓	Minneapolis
Complex systems	
High cost structure	

Visualisation Tools for Specific Project Consultation

The City of Saint Paul (Appendix 6) demonstrated a visualisation tool that has a point of difference to many others. It combines real footage with simulations in a way that enhances understanding – particularly for those who struggle to interpret conceptually.

Recommendation 11

Public works engineers should consider the use of sophisticated technology to produce easy to use visualisation of complex and controversial projects as a means to significantly improve community consultation outcomes for the projects.

Simple to apply	Saint Paul
General application ✓	
Complex systems	
High cost structure ✓	

5 Conclusion

Within the general Study Tour theme of Best Practice and Innovation in Public Works, my interest focused on identifying good examples of communication and community consultation by public works engineers and how those examples might translate to the Australian local government environment.

This focus was adopted in response to the findings of the *Review of the Current and Future Role of Municipal Engineering in Australia*. The Review found that success as a municipal engineer in meeting the challenges of the future relies, amongst other things, on communication and community consultation skills and further, that these skills are not typically exhibited by engineers.

The recommendations provide guidance to public works engineers to assist them to respond to the findings of the Review. These 11 recommendations arise from specific examples identified during interactions with the local authorities, and as a consequence, are specific in nature.

There is however, a more general, universal principle of communication which is not found explicitly in any recommendation, but which is nevertheless essential if the public works engineer is to meet the future communication and community consultation challenges as identified by the Review. That is, as an underlying prerequisite for the successful application of any of the recommendations, the public works engineer must talk to people. Engage with them face to face, on their terms and using language that will assist their understanding.

The Study Tour has provided me far more than a technical understanding of the communication practices of public works engineers in other countries. I have gained significant personal benefit from exposure to other countries and cultures, in particular, from my interaction with public works practitioners and local government managers from those countries and cultures. This has added a personal value to the Study Tour far beyond that acquired through the APWA Congress sessions and formal presentations given at Cyberport and by the local authorities the tour party visited.

The structures of government and the local authority legislative frameworks varied not only with Australian structures and frameworks, but also between the countries visited. Nevertheless, it became clear that there is a consistency across the challenges confronting local authority public works practitioners and managers in those jurisdictions. It therefore follows that the communication findings identified during the Study Tour can be applied in the Australian local government environment.

David Powell
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December 2005

6 Appendices

Appendix 1 City of Minneapolis Public Works Department –
Project Information via the Department Web-site

Appendix 2 City of Eden Prairie –
General Information via Weblog of City Manager, Scott H Neal

Appendix 3 City of Brighton and Hove –
Road Works Information via the Department Web-site

Appendix 4 City of Milwaukee Department of Public Works –
Playground and Recreation Facility Information via the Department Web-site

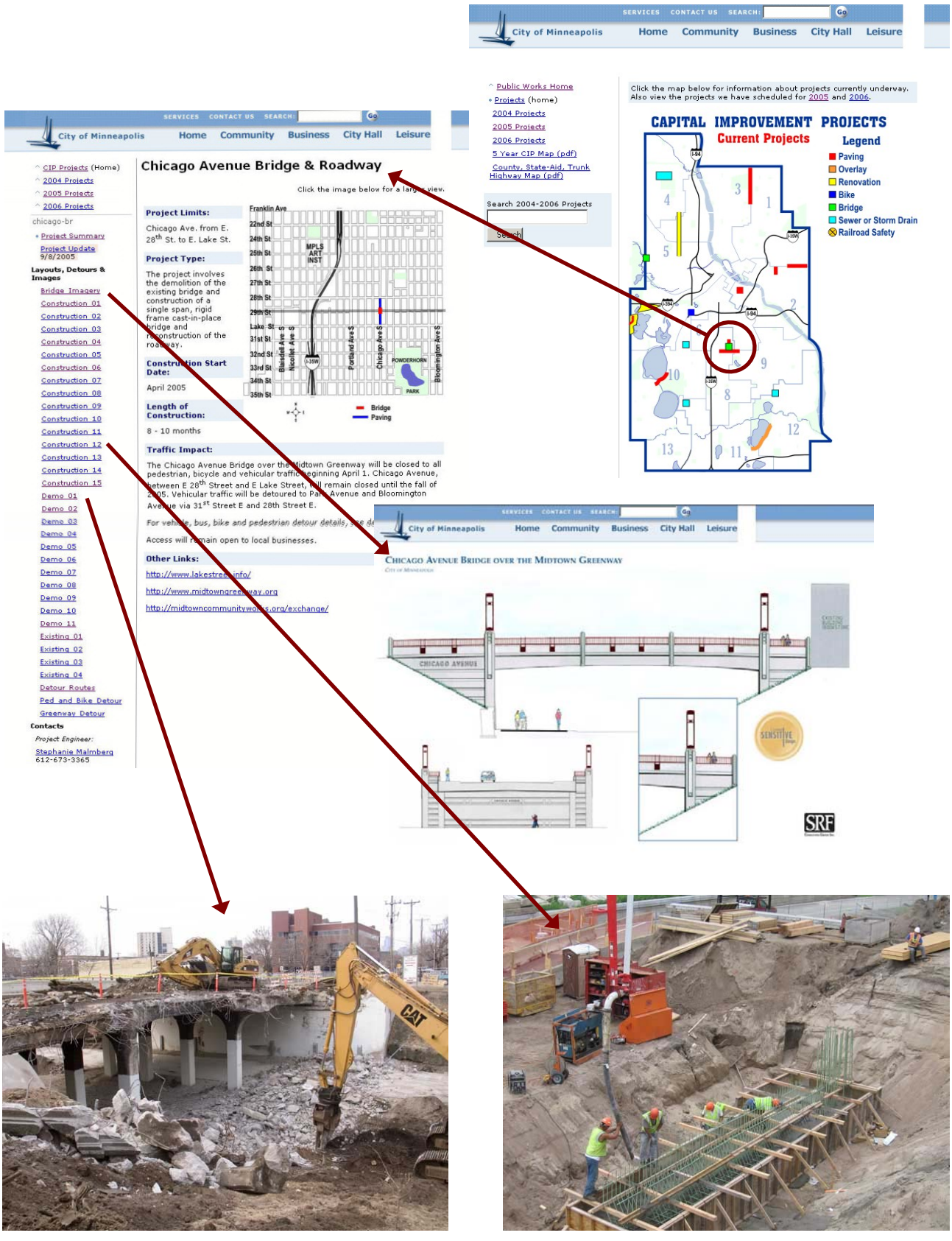
Appendix 5 City of Overland Park –
Project Information via “what’s happening in my neighborhood” on the City’s Web-site

Appendix 6 City of Saint Paul –
Visualisation of Ayd Mill Road Project

Appendix 1

**City of Minneapolis Public Works Department –
Project Information via the Department Web-site**

Chicago Avenue Bridge and Roadway Project at www.ci.minneapolis.mn.us/public-works/cip



Appendix 2

City of Eden Prairie –
General Information via Weblog of City Manager, Scott H Neal

Median Maintenance from 15 September 2005 weblog at www.edenprairieweblogs.org/html/scott_neal.html

WEBLOGS

LIVE • WORK • DREAM

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The Blog from City Hall

City Manager Scott Neal's Weblog

Thursday, September 29, 2005

Invasion of the 6th Graders

This is what our City Center atrium looked like today. It was our annual Invasion
This happens once each year when Oak Point Intermediate School 6th Grade te
the City Council, Ron Case organizes a bike trip for the 6th grade students to see

Thursday, September 15, 2005

Dirty Medians

I am as human as the next person and I've got a pet peeve: Dirty Medians. I hate dirty medians. I am referring to medians in streets. And the "dirt" in this case is our eternal human nemesis: **The Weed**.

Here's what I'm talking about. This is a dirty median that I drove by yesterday in a neighboring community:

Now here's a "clean" median that I drove by today in Eden Prairie:

Again, a dirty median in another community:

And, one more time, a clean median from Eden Prairie:

I think the reason it bugs me to have weeds growing in the street medians is that I think it makes the community look unkempt and ugly. It makes it look like we don't care. I think that our Street Maintenance workers do a pretty good job of keeping our street and highway medians attractive and free from weeds. We make an effort to do it every year. I think it's starting to pay off.

We're not perfect. I've seen a weed or two in our medians, but most of them look pretty clean. I like it that way. I hope that our citizens do too.

Posted by Scott at 10:43 AM | PermaLink

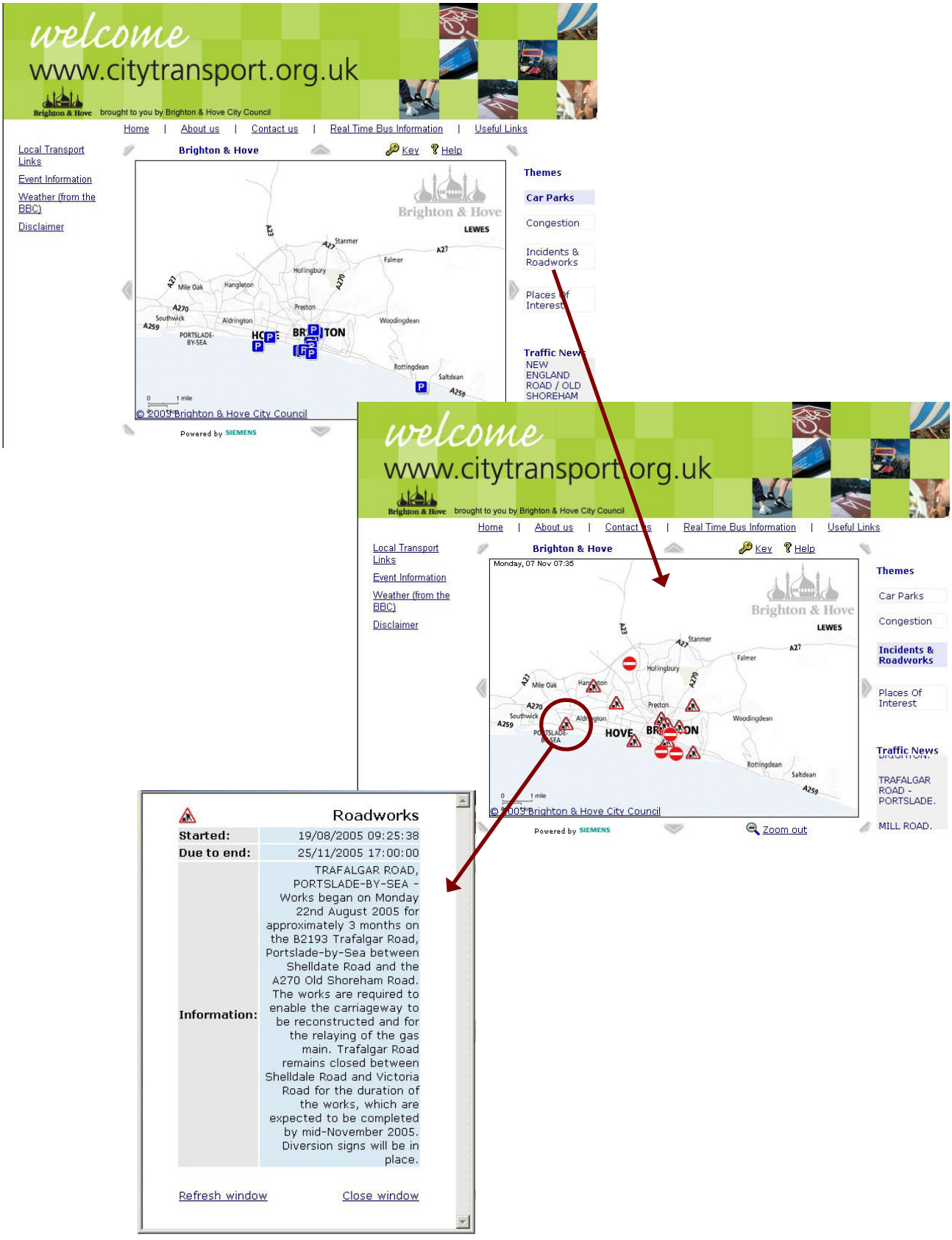
I think the reason it bugs me to have weeds growing in the street medians is that I think it makes the community look unkempt and ugly. It makes it look like we don't care. I think that our Street Maintenance workers do a pretty good job of keeping our street and highway medians attractive and free from weeds. We make an effort to do it every year. I think it's starting to pay off.

We're not perfect. I've seen a weed or two in our medians, but most of them look pretty clean. I like it that way. I hope that our citizens do too.

Appendix 3

City of Brighton and Hove –
Road Works Information via the Department Web-site

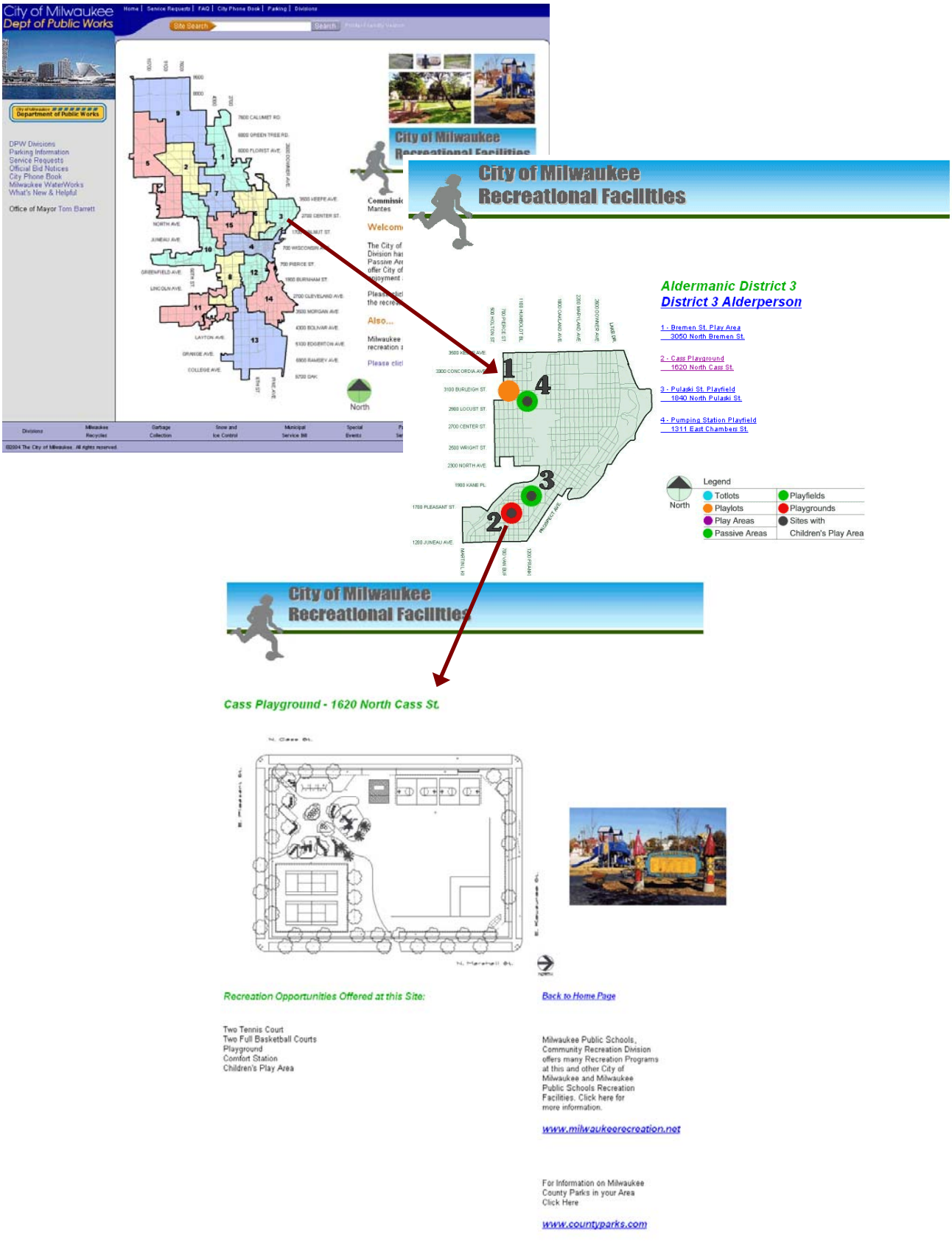
Trafalgar Road Project at www.citytransport.org.uk/emerge.html



Appendix 4

City of Milwaukee Department of Public Works –
Playground and Recreation Facility Information via the Department Web-site

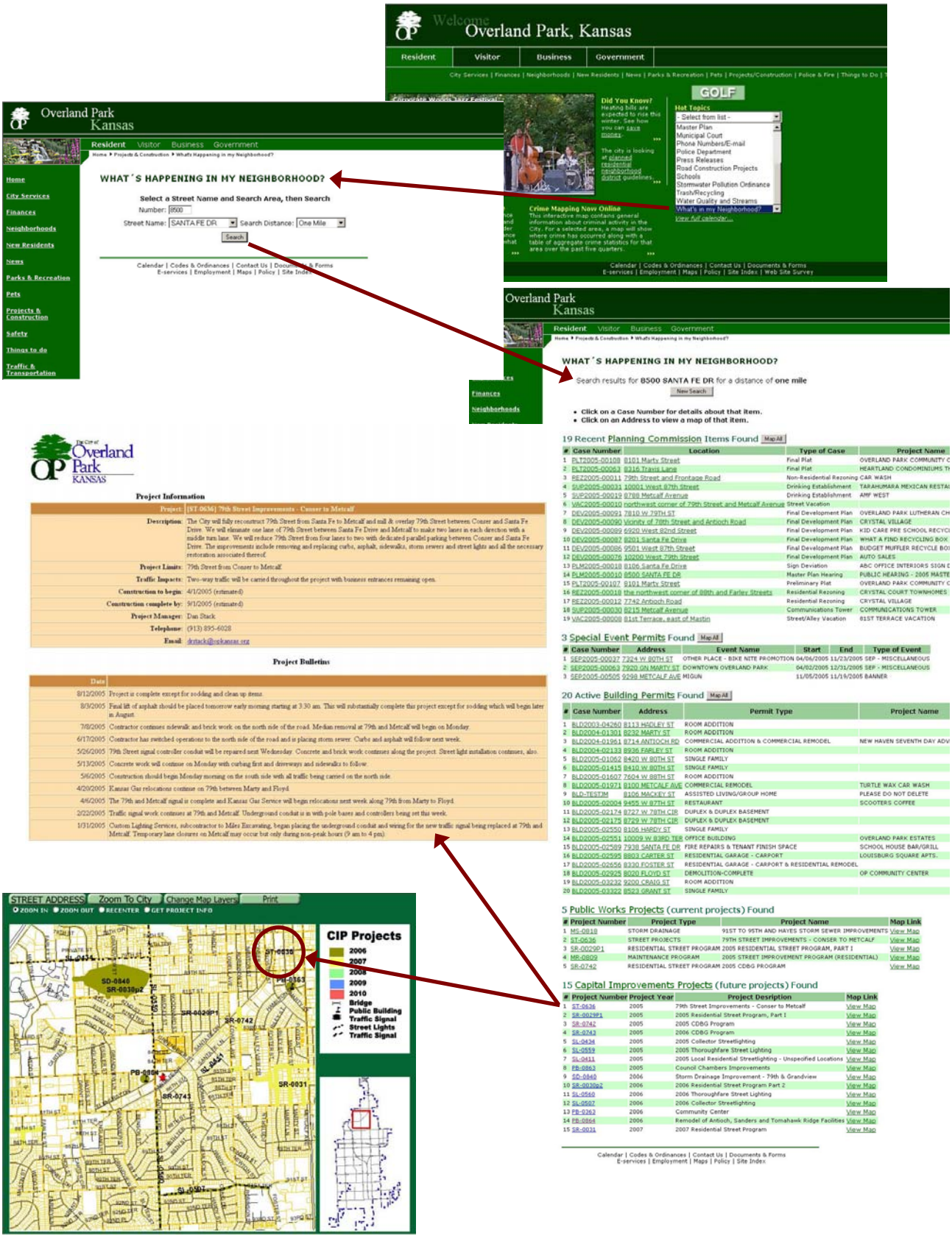
Cass Playground, 1620 North Cass Street at www.mpw.net/playgrounds



Appendix 5

City of Overland Park –
Project Information via "what's happening in my neighborhood" on the City's Web-site

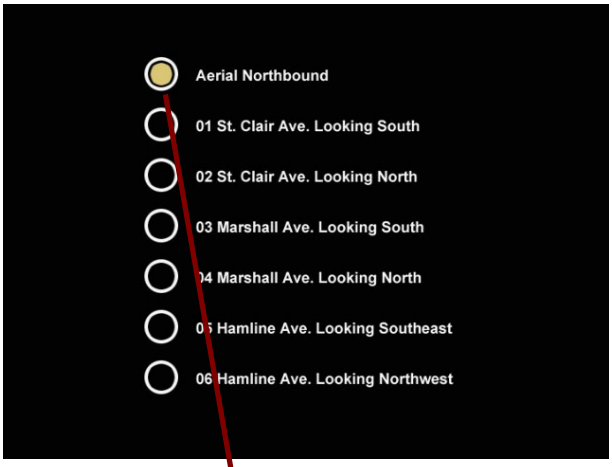
79th Street Improvements Project
Accessed at www.opkansas.org, using a one mile radius from 8500 Santa Fe Drive

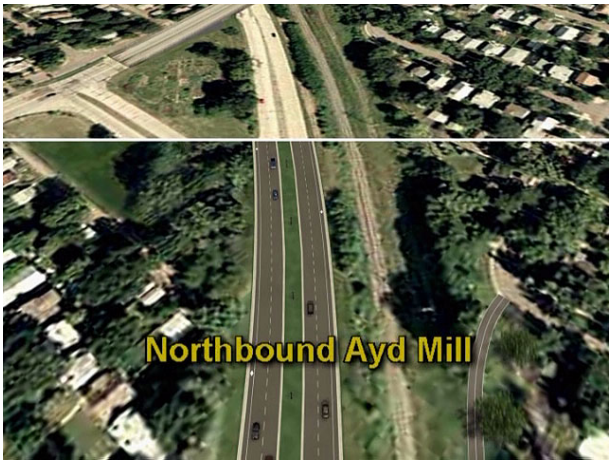


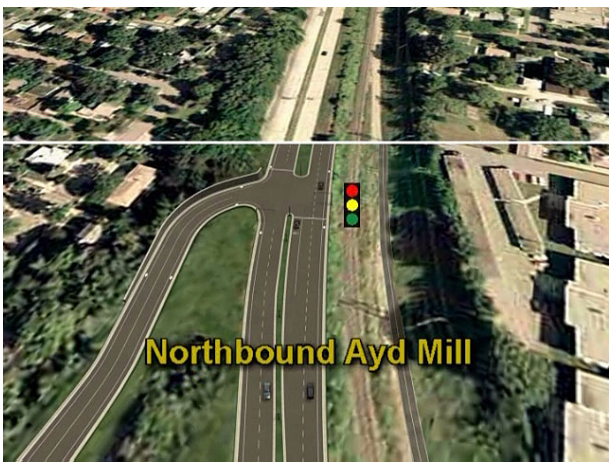
Appendix 6

City of Saint Paul –
Visualisation of Ayd Mill Road Project.

Selected still images from video visualisation
Lower resolution video may be viewed at event.netbriefings.com/event/cstp/Archives/aydmill







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Executive Manager Technical Services
Town of Victoria Park
Western Australia

Tom Stacey
Manager of Works
City of Belmont
Western Australia

Itinerary

3 Sep 2005	Cyberport, Hong Kong www.cyberport.hk
6 Sep 2005	City of Edmonton, Alberta, Canada www.edmonton.ca
9 Sep 2005	City of Calgary, Alberta, Canada www.calgary.ca
11 to 14 Sep 2005	APWA International Public Works Congress www.apwa.net
	Sacramento County Department of Transportation, California, USA www.saccounty.net
	City of Milwaukee Department of Public Works, Wisconsin, USA www.mpw.net
	City of Overland Park, Kansas, USA www.opkansas.org
	City of St Paul, Minnesota, USA www.ci.stpaul.mn.us
15 Sep 2005	City of Minneapolis, Minnesota, USA www.ci.minneapolis.mn.us
15 Sep 2005	Eden Prairie City Council, Minnesota, USA www.edenprairie.org
19 Sep 2005	Brighton & Hove City Council, UK www.brighton-hove.gov.uk

Web Pages

IPWEA	www.ipwea.org.au
MEFVic	www.mefvic.org.au
Bayside City Council	www.bayside.vic.gov.au

Abbreviations

APWA	American Public Works Association
IPWEA	Institute of Public Works Engineering Australia
ITAC	City of Edmonton Infrastructure Technical Advisory Committee
MEF Vic	Municipal Engineering Foundation, Victoria
SACDOT	Sacramento County Department of Transport
SLRT	City of Edmonton South Light Rail Transit

Notes

[1] Statements in *Review of the Current and Future Role of Municipal Engineering in Australia*, 2004 supporting my summary that success as a municipal engineer in meeting the challenges of the future relies, amongst other things, on communication and community consultation skills; and that these skills are not typically exhibited by engineers, can be found on pages 22 and 24 under the subheadings *Rise of Other Professions* and *Status of the Engineer*.

A text copy of the report is available at www.mefvic.org.au

[2] *Review of the Current and Future Role of Municipal Engineering in Australia*, 2004, Recommendation 4, page 41

[3] APWA International Public Works Congress Themes

- Administrative Management
- Emergency Management
- Engineering/Construction Management
- Facilities
- Fleet
- Information Systems
- Parks and Grounds
- Personal Enrichment
- Public Works Historical Society
- Solid Waste
- Snow and Ice
- Stormwater/Flood Control
- Street/Road Maintenance
- Traffic Operations
- Urban Forum
- Utilities/ROW
- Water and Wastewater

[4] City of Edmonton, *Infrastructure Strategy Overview*, August 2004, page 1

[5] Copies of the City of Edmonton Infrastructure Strategy Fact Sheets and *Infrastructure Strategy Overview* can be found by following the links to *Infrastructure Strategy* at www.edmonton.ca

[6] Details of the reasons for adopting *Calgary's Asset Management Strategy* can be found at page 4 of the Strategy.

[7] Details of current infrastructure projects of the City of Minneapolis can be found at www.ci.minneapolis.mn.us/public-works

[8] Copies of the City of Minneapolis Public Works Department news sheet – *Monthly update…the department at a glance* – can be found at www.ci.minneapolis.mn.us/public-works/about/updates.asp

[9] The weblog of Scott H Neal, the City Manager of the City of Eden Prairie can be found at www.edenprairieweblogs.org/html/scott_neal.html

[10] Details of current road works of the City of Brighton and Hove can be found at www.citytransport.org.uk/emerge.html

[11] The webcam for the City of Milwaukee Anderson Building micro turbine project can be found at www.msoe.edu/orgs/focus/microturbine/WebCam1.shtml

[12] Details of all playgrounds and recreation facilities of the City of Milwaukee can be found at www.mpw.net/playgrounds

[13] Copies of the City of Milwaukee Public Works Department newsletter – *In the Works* – can be found at www.mpw.net/docs/CityMkeNL.pdf

[14] City of Overland Park "what's happening in my neighbourhood" can be found at www.opkansas.org

[15] The visualisation video of the Ayd Mill Road project, City of Saint Paul can be found at event.netbriefings.com/event/cstp/Archives/aydmill

[16] AskYourMates@ipwea.org.au, an IPWEA online network for sharing public works information, is one resource for researching Australian examples of specific public works communication initiatives.