



National Guide to Sustainable
Municipal Infrastructure
(InfraGuide)



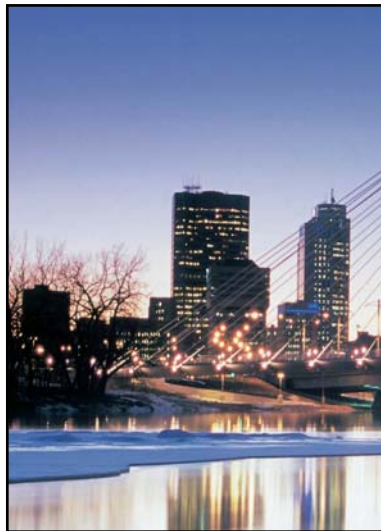
BEST PRACTICES AUDIT GIVES WINNIPEG A PATH TO QUALITY INFRASTRUCTURE

RECOMMENDATIONS

- Improve QA/QC program for road maintenance (MR1/MR6)
- Improve specification for crack sealing & filling (MR4)
- Mitigate rutting through design, construction, maintenance techniques (MR5)
- Minimize sidewalk treatment problems (MR8)
- Enhance municipal infrastructure accessibility for the physically impaired (MR8)
- Continue research of ways to reuse and recycle and asphalt and concrete (MR11)

SUMMARY

When Winnipeg next publishes its bi-annual report on the state of the city's infrastructure, it will focus on more than infrastructure costs alone. The report will reflect a new vision of maximum infrastructure life, optimum re-use of resources, appropriate social responsiveness and the application of InfraGuide best practices across the Public Works Department. It is the vision shared by Bill Larkin, Winnipeg director of public works, and Darwin Kupskey, a public works research and standards engineer.



In 2005, the two seized an opportunity to hire an experienced student and delve deep into InfraGuide best practices. With an eye to accreditation under the American Public Work Association's (APWA) program, they needed a clear understanding of how the

department's practices compared to the best in the public works service delivery.

They armed their student, Satwant Mavi¹, with seven InfraGuide best practices publications and sent him off to perform a "best practice audit" of the department in priority areas. The audit produced key recommendations that the director and his engineer now hope to implement. The text box on the left shows the main recommendations and the InfraGuide best practice publications in brackets that led to each of them.

Reviewing department practices against the best practice publications is now standard procedure in Winnipeg Public Works. Another 14 InfraGuide best practice publications are directly relevant to Public Works. The department will continue to use InfraGuide publications as a baseline for measuring its performance and as a foundation for APWA accreditation.

1. Internationally Educated Engineers Qualification Pilot Program (IEEQ) from the University of Manitoba. Program supported by The City of Winnipeg, Public Works Department.



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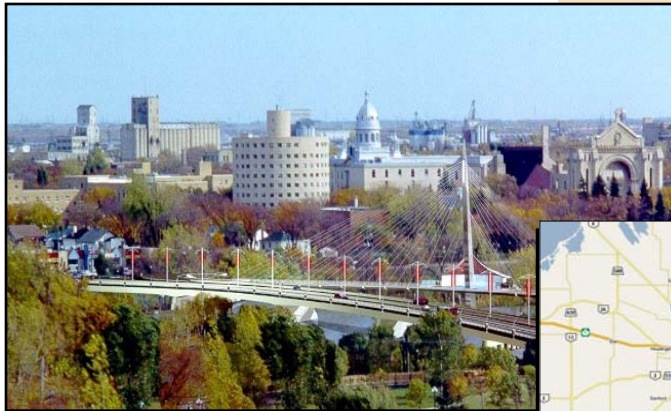
BACKGROUND

Temperatures that range from -40°C in the winter to +40°C in the summer put stress on Winnipeg’s aging infrastructure. Established 135 years ago, the city now has a diverse population, drawing people from many parts of the world. By 2004, approximately 647,600 people² used the city’s roads, bridges, sidewalks, parks and transit system.

Winnipeg’s economy is also diverse. Much of its success is dependent on having a road system that functions well. Its unique location in the middle of Canada makes the trucking industry an important economic driver. Some 6,800-lane km of roads and 55 major bridges crossing rivers keep the city’s economy on the move.

Still, Winnipeg has had difficulty finding adequate funds for its aging infrastructure. The annual operating and capital budgets for roads and bridges now total about \$100 million, leaving a shortfall of about \$40 million annually. As a result, it is very important that every dollar the department spends is stretched—and stretched again.

Like most Canadians, Winnipeg’s citizens expect good value for the money they invest in infrastructure. For two consecutive years public surveys have shown that their number one concern is the deterioration of the city’s roads.



CHALLENGE

When Bill Larkin and Darwin Kupskey sat down to tackle their infrastructure challenge they set four clear goals for themselves and for the department:

- maximize infrastructure life;
- optimize re-use of resources;
- ensure appropriate social responsiveness; and
- apply sustainable municipal infrastructure best practices across the department.

To make sure those goals were achieved, they set out three strategies—benchmark the department’s practices against the InfraGuide best practices, implement any improvement opportunities, and seek accreditation under the APWA program.

Both officials were very familiar with the InfraGuide best practice publications. Bill had served on the InfraGuide Roads and Sidewalks Technical Committee. Darwin had been a contributor to working groups leading to publications on sidewalk design, construction and maintenance, and reuse and recycling of road construction materials.

Its unique location in the middle of Canada makes the trucking industry an important economic driver.

2. Statistic Canada—Population of Winnipeg, July 2005. <http://www.winnipeg.ca/cao/pdfs/population.pdf>

PRIORITY BEST PRACTICE PUBLICATIONS

- Timely Preventive Maintenance for Municipal Roads (MR1)
- Restoration and Repair of Utility Boxes in Pavements (MR3)
- Guidelines for Sealing and Filling Cracks in Asphalt Concrete Pavements (MR4)
- Rut Mitigation Techniques at Intersections (MR5)
- Priority Planning and Budgeting Process for Pavement Maintenance and Rehabilitation (MR6)
- Sidewalk Design, Construction and Maintenance (MR8)
- Reuse and Recycling of Road Construction Materials (MR11)

ADOPTED SOLUTION

The “Best Practices Audit” focused on how well the department performed in decision-making, and in construction and maintenance of roads and sidewalks. The student worked closely with department staff to complete a comprehensive review of the city’s standard construction specifications, the department’s pavement rehabilitation guidelines, standard details and other guidelines—assessing them against the seven selected InfraGuide Municipal Roads best practice publications. (See titles listed on the left.)

He produced his findings in three sections. The first described all departmental practices that were in line with best practices. The second section described best practices not yet adopted by the department, while the third section provided recommendations for improvement.³

Having determined the areas where improvements are needed, the next step will be to further analyze the recommendations for potential implementation.

The audit report has given officials a number of key recommendations. Among them:

- Improving quality control and quality assurance programs for both preventive road maintenance (MR1) and general road maintenance (MR6)
- Improving performance-based specifications for sealing and filling cracks (MR4)
- Mitigating rutting through design, construction and maintenance techniques (MR5)
- Developing standardized guidelines to solve common sidewalk problems and to eliminate inconsistency of treatments applied by engineering consultants (MR8)



- Continuing the research on using reused and recycled concrete and asphalt as a base course and sub-base. The department will use it to continue to improve the quality of recycled materials that replace gravel and crushed quarry stone (MR10)
- Meeting often with industry representatives, contractors and consultants to develop an action plan to maximize the use of recycled asphalt materials (MR11)

Changing from current practices to best practices has challenged the department’s workforce, consultants and contractors. Education is helping them to understand the transition and become familiar with new practices.

Another challenge is to develop a solid business case for adopting best practices and abandoning current ones. It must meet the city’s strategic infrastructure investment policy—a policy that recommends extending pavement life and getting value for money spent on infrastructure. Fortunately, InfraGuide best practices fit well with the city policy. They describe clearly the benefits of adopting the practices in terms of infrastructure life expectancy, impact on the environment and social benefits.

3. Review of Current practices being followed by the City of Winnipeg in comparison to published InfraGuide best practices. City of Winnipeg, Public Works Department. September 2005.





VALUE

Every two years the department releases a City of Winnipeg State of Infrastructure report. Officials are now confident that following InfraGuide best practices and implementing the recommendations of the department's audit will produce positive findings for the next report. They anticipate an increase in the average life of the pavement, a corresponding decrease in the use of materials and resources, a positive impact on the environment and, with safer roads lasting longer, a positive impact on the community.

The audit process alone has been valuable. Collaboration among staff members was excellent and all increased their knowledge of best practices. The audit has assured Bill Larkin that everyone in the department wants to find the best way to do the job. He also has a new tool to unequivocally answer the perennial question from elected officials and the public: "Are we getting best value for our infrastructure dollar?"

CONCLUSION

Any city with a vision for sustainable infrastructure must start by benchmarking its current practices against the best practices in the industry. Only then can it chart a path to well-managed, quality infrastructure. The City of Winnipeg's Bill Larkin and Darwin Kupskey saw this and launched the first best practice audit. To date, the experience has been excellent.

The department is now committed to implementing recommendations, based on a clear benefits-based business case. It is also committed to continuing the audit process in other areas of its work across the department

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TESTIMONIALS

"InfraGuide best practices have been key in the Department's success by allowing staff to benchmark their technical standards and the processes and practices they use to carry out their infrastructure work."

Bill Larkin P. Eng., Director of Public Works of City of Winnipeg.

"Having the InfraGuide best practices publications is helping me to understand how to use the latest and greatest of Canadian municipal infrastructure knowledge."

Darwin Kupskey P. Eng. Research and Standards Engineer, Public Works Department of the City of Winnipeg.



NEXT STEPS

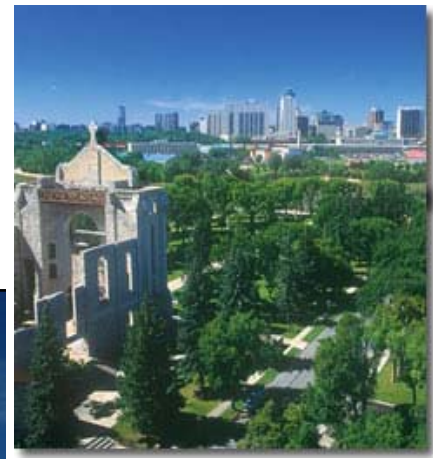
Next comes distribution of the audit report to other engineering and maintenance officials, inviting their comments and the development of an implementation plan. A business plan must support the recommendations before work proceeds. As each recommendation is implemented, the economic, environmental and social benefits will be evaluated. The audit report will also be shared the Water and Waste Department in the hope that it can identify areas that have potential benefits.

CONTACT INFORMATION

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CASE STUDY TEMPLATE

InfraGuide is always interested in knowing how municipalities have used these best practices in their effort to build sustainable futures for their communities. If you have an interesting case study that you would like to share with us, please use the following template and email it to us at [<infraguide@nrc-cnrc.gc.ca>](mailto:infraguide@nrc-cnrc.gc.ca).

DESCRIPTION

Provide a brief description of the organization or municipality and describe the scope of the project (*in a few sentences*).

THE CHALLENGE

Discuss the challenge faced by the municipality. What problem(s) you had to overcome (*one paragraph*).

THE SOLUTION

What InfraGuide Best Practices were used to overcome the challenge(s) and describe how

the best practice(s) helped you overcome these challenge(s)? If possible, describe what quantitative and qualitative measures were used to assess the project. Against what benchmark was the success of the project measured? (*This section can include tables and figures.*)



THE VALUE

What are the benefits of the value-added and tangible results that were derived from using InfraGuide best practice(s)?

TESTIMONIAL

Provide brief testimonials that support the use of InfraGuide best practices.

ABOUT INFRAGUIDE

A Network of Excellence

InfraGuide is a national network of experts and a growing collection of best practice publications for core infrastructure—offering the best in Canadian experience and knowledge of core infrastructure. With our founders—the **Federation of Canadian Municipalities**, the **National Research Council** and **Infrastructure Canada**, and our founding member the **Canadian Public Works Association**—we help municipalities make informed, smart decisions that sustain our quality of life. By gathering and synthesizing the best Canadian experience and knowledge, InfraGuide helps municipalities get the maximum return on every dollar they spend on infrastructure—while being mindful of the social and environmental implications of their decisions.

Volunteer technical committees and working groups—with the assistance of consultants and other stakeholders—are responsible for the research and publication of the best practices. This is a system of shared knowledge, shared responsibility and shared benefits. We urge you to become a part of the InfraGuide Network of Excellence.

PLEASE JOIN US

Contact **InfraGuide** toll-free at 1-866-330-3350 or visit our Web site at [<www.infraguide.ca>](http://www.infraguide.ca) for more information. We look forward to working with you.

INFRAGUIDE PROJECT INFORMATION

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Our products:

- Best Practice Publications
- Case Studies
- Knowledge Products
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- Network of Consultants



InfraGuide Best Practices

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