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PUBLIC WORKS IN SMALL AND RURAL COMMUNITIES

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Executive Summary

The purpose of this paper is to provide a synopsis of how various public works are managed in small and rural municipalities across Canada. For the purposes of this study, public works have been defined as land use planning, building codes, roads and bridges, parks and recreational facilities, water and sewage systems, and solid waste collection and disposal. Given the relatively small size of First Nations communities, lessons learned in non-aboriginal communities of analogous size may be of some value to other governing arrangements.* The purpose of this paper is not to provide a definitive model of how public works should be organized within an individual community but rather to illustrate various approaches to public works management (chiefly financing, administration, and training).

One of the most important findings of this study is the similarity of trends faced by large and small municipalities in the area of public works. These issues include provincial downloading of responsibilities, growing use of public-private partnerships and user fees, problems of technology transfer, increased citizen expectations in service quality, and limited resources (time and funding) for staff training. What differentiates small and rural municipalities from larger ones is the acuteness of these challenges. The remoteness of these communities, for examples, further hampers adoption of innovative technology or the range of private companies willing to engage in public works partnerships with the local government.

It is worth noting several of the key observations regarding public works management in small communities that arise from this study.

Access to long-term capital for capital infrastructure is less secure in small municipalities

Since small communities are typically not rated by bond granting agencies, acquisition of debentures at reasonable rates of interest is difficult when acting alone. To offset this problem of debt issuance, a variety of means have been used to access long-term financing, including provincially-backed debentures, bond banks, and (and recently in some provinces) direct lending from chartered banks.

Small municipalities are increasingly forced to be more self-reliant in public works financing

User fees in small and rural communities are now commonplace for water and sewage operations (e.g. yearly household consumption or metered rates), solid waste collection and disposal (e.g. tipping fees) and recreational facilities.

* In describing the experience of select municipalities across Canada, the intent is not to suggest that this level of government is analogous to self-governing First Nations. Clearly, constitutionally recognized aboriginal communities are vastly different than municipalities in Canada, which exist as “creatures” of the provinces.

Engineering consultants are commonly required

Since few small communities can sustain the cost of a full-time professional engineer, contracted firms are commonly retained for specific projects or time frames given their expertise in infrastructure design and repair. This arrangement requires transparent contracting procedures and the building of longer-term relationships with individuals or companies who will be able to understand the unique public works specifications of the community.

Elected council oversight of public works is important

The role of council in small municipalities extends to land use planning, short- and long-term capital planning, tendering, and channeling citizen concerns regarding the state of municipal infrastructure. Evidence suggests that councils' direct involvement in public works management, particularly financial oversight, will continue to grow.

Citizens expectations are growing for improved service quality and planning for public works

Citizens are increasingly demanding greater quality in the delivery of public works and more meaningful forms of political participation. Municipal administrators also caution that governments must better manage these demands and avoid creating undue expectations of service. Building large-scale water or sewage treatment plants may simply not be feasible in certain smaller communities.

There is no optimal way of administering public works

There is no evidence to suggest that there is one correct way of organizing the administration of public works. The size and growth of the community, the range of public works functions, the complexity of operations and other unique local conditions are typically the most important considerations when administering a public works department.

Small municipalities must be open to joint servicing arrangements with neighbouring communities

The vast majority of small municipalities in Canada share some public works with contiguous communities, special purpose bodies, or regional governments. Inter-municipal agreements obviously provide an effective means to obtain economies of scale in service provision where otherwise absent.

There is agreement that training for public works managers and staff is needed given the diversity of their responsibilities

Training of public works managers and staff assumes added importance given the diversity of skills commonly required, the increasing use of technology, and the important health and safety considerations of public works functions. For managers, generalist knowledge of administrative and legal affairs is becoming as important as technical understanding of engineering practices.

Implications for First Nations

One of the most striking differences between aboriginal and non-aboriginal communities is the network of support for public works in small Canadian municipalities, components of which are largely absent in First Nations. These supporting institutions include:

- i) provincial governments: which provide training, accreditation, financial oversight, inspection, and redress mechanisms, among other services;
- ii) counties and regional governments: which, for small municipalities, are integral to land-use planning and building inspection;
- iii) professional associations: permitting exchange of information and accreditation;
- iv) universities and colleges: providing training and accreditation.

Financing

- Like small municipalities, self-governing (and ultimately self-financing) First Nations will also face difficulties in accessing long-term capital for financing capital works projects, more likely a result of capital markets rather than legislative prohibitions.
- User fees, which are the fastest growing source of revenue in small Canadian municipalities, may be difficult to implement in self-governing First Nations, given negative perceptions of taxation. Failure to adopt user fees will likely render management of demand for certain public works more difficult and may also result in quicker deterioration of physical infrastructure (water pipes, sewers, public housing, refuse sites).

Citizen Expectations & Participation

There are three essential features that must be considered by self-governing First Nations under this heading:

- i) ensuring adequate redress and adjudication mechanisms for aggrieved citizens in such areas as assessments (property taxes), debt financing, building permits, planning and zoning decisions, expropriation procedures, and public utility charges.
- ii) allowing for effective public participation in such areas as land-use planning, budgeting, economic development, and political restructuring.
- iii) managing expectations about the levels of service quality.

Service partnerships

- ❑ Like small and rural municipalities, First Nations would be well advised to consider service partnerships with neighbouring communities as a means of capturing economies of scale, sharing expertise and training, and assisting in technological diffusion.

Building Staff Capacity

- ❑ Allowance will also need to be made for highly technical training, in the absence of direct provincial training for certified public works officials (mainly water operators and building inspectors).
- ❑ Efforts should be made to retain staff for a sufficient period of time to facilitate learning and application of skills (largely by adequately remunerating public works staff and avoiding undue reshuffling of staff responsibilities on the First Nation.)

Planning at the regional level

- ❑ Given the absence of an upper-tier of government and the scale to afford full-time planning expertise, First Nation councils will likely be required to either coordinate planning between various communities or delegate authority upwards to an elected or appointed agency with responsibility over planning.

Role of Council

- ❑ The greater jurisdiction and responsibilities accorded to self-governing First Nations (e.g. health and education) relative to Canadian municipalities may pose some challenges to sustained interest on public works issues on the part of the elected council. The "invisibility" of many public works also conspires against drawing council's attention to the community's physical infrastructure.

Proposed Technical Guide for Urban Infrastructure for Canada

- ❑ This proposed guide, expected to be completed within five years, will function as a national code for physical infrastructure much in the same as the National Building Code operates for building safety. Self-government agreements may wish to make allowance for future reference of this document.

Table of Contents

EXECUTIVE SUMMARY	i
1. PURPOSE AND METHODOLOGY	1
2. CONTEXT AND TRENDS AFFECTING SMALL MUNICIPALITIES	3
2.1 Financing of Public Works	3
2.2 Role of Council	5
2.3 Public-Private Partnerships	6
2.4 Problems of Technology Transfer	8
2.5 Citizen Expectations & Participation	9
3. ADMINISTRATION OF PUBLIC WORKS IN SMALL MUNICIPALITIES	10
3.1 General Administration	10
3.2 Key Public Works Issues	11
3.3 Land Use Planning	13
3.4 Building Inspection	14
3.5 Water and Sewage	14
3.6 Roads and Bridges	16
3.7 Solid Waste Collection and Disposal	16
3.8 Parks and Recreational Facilities	17
3.9 Redress Mechanisms	18
4. TRAINING	19
4.1 Competencies of a Public Works Manager	19
4.2 Training Needs	20
4.3 Training Availability	21
5. CONCLUSIONS	23
5.1 General Observations	23
5.2 Implications for First Nations	25
APPENDIX 1 - LIST OF QUESTIONS	28
APPENDIX 2 - LIST OF INDIVIDUALS CONTACTED	30

1. Purpose and Methodology

Real Property Services for Indian and Northern Affairs Canada (RPS for INAC) has commenced activities and discussions concerning the development of guidelines or best practice under which governance structures and processes associated with public works functions can be developed by First Nations as they move closer to self-governing status. The Institute On Governance (IOG) has been asked to provide its expertise in this initiative.

In October 1998, the IOG produced two studies examining jurisdiction surrounding public works within existing First Nations self-government agreements and within Canadian jurisdictions more broadly. The purpose of the present paper is to provide a synopsis of how various public works are managed in small and rural municipalities across Canada. For the purposes of this study, public works have been defined as land use planning, building codes, roads and bridges, parks and recreational facilities, water and sewage systems, and solid waste collection and disposal. Given the relatively small size of First Nations communities, lessons learned in non-aboriginal communities of analogous size may be of some value to other governing arrangements.¹

In describing the experience of select municipalities across Canada, the intent is not to suggest that this level of government is analogous to self-governing First Nations. Clearly, constitutionally recognized aboriginal communities are vastly different than municipalities in Canada, which exist as “creatures” of the provinces and have fewer responsibilities.² Similarly, the purpose of this paper is not to provide a definitive model of how public works should be organized within an individual community but rather to illustrate various approaches to public works management (chiefly financing, administration, and training).

The paper is divided into three main parts: the first will examine a number of common trends affecting small municipalities in Canada; the second will identify approaches to organizing the above-mentioned public works functions; the third section will discuss training needs and approaches for public works managers and staff in communities of this size.

¹ The average size of the 20 largest First Nations in Canada is 6636 persons. Indian and Northern Affairs Canada, Indian Register Population by Sex and Residence (Ottawa: February, 1998), p. xvii.

² The experience of two communities effectively highlights this difference. The Village of Rexton, New Brunswick, has a population of 906 individuals with a total municipal budget of \$600,000 per year and 3 full-time staff, all of whom work on public works functions. By contrast, the Nipissing First Nation in Ontario has an on-reserve population of 960 people with a budget of \$8 million and a staff of 107 employees. Responsibilities of the First Nation government include -- among other things -- education, health, public works, economic development, social assistance, and housing.

Methodology

Given the scarcity of literature pertaining to public works management in small and rural communities, this study relied largely on interview-based research (see Appendix 1 for the list of questions used in the interviews). Communities were approached in consultation with provincial municipal associations. The main criteria for choice of municipalities were size (generally less than 5000 persons), incorporation (with an elected council) and recognized success in management of physical infrastructure. In addition to the chief administrative officers of these municipalities, the IOG also approached practitioners in various professional associations, provincial departments, and public works training organizations. Appendix 2 provides a list of individuals and organizations consulted.

2. Context and Trends Affecting Small Municipalities

Local government is the most varied form of government in Canada. Unlike the other two levels, which are fairly uniform in structure, local government is distinguished by its myriad structures, be it in the form of cities, towns, villages, townships, counties, improvement districts or special service areas. In addition to an elected council, municipalities are rife with special boards, commissions and agencies set up to administer functions that are common to a number of separate municipalities or to provide special services usually considered outside the scope of ordinary city or town government. Because the 6000+ local governments vary so greatly in terms of form and function across Canada, it is almost impossible to paint a definitive picture of this level of jurisdiction

It should be noted that several of the points raised under the following headings (financing, role of council, public-private partnerships, technology transfer, and citizen participation) are not unique to small and rural municipalities as identified in this study. They do, however, correspond to key issues raised by municipal officials and others in the course of interviews.

2.1 Financing of Public Works

Like most functions of municipalities, financing of public works is strictly regulated by the provincial government. Borrowing or debt financing for operating expenditures within municipalities, for example, is forbidden by most provinces. In addition to determining the amount of debt that municipalities can incur, provinces determine the type of expenditures that can be issued, the length of term and the use of the borrowed funds. Provincial oversight of municipal financial book-keeping is also strict, ranging from examination of public works revenues, short-term expenditures and long-term financing. It is common, for example, for provinces to demand reporting of separate public works accounts (e.g. for water, roads, solid waste collection) to ensure that revenue and expenditures can be better equated for individual public works functions. Several provinces also demand voter consent (through plebiscites) should a municipality wish to undertake significant capital borrowing (e.g. exceeding a prescribed provincial limit). As an illustration of provincial control over municipal financing, Table 1 summarizes various New Brunswick statutes that touch upon this area.

Table 1 - Provincial Powers over Municipal Financing (New Brunswick)

Legislation	Provincial Powers
Municipal Debentures Act (M-21)	- governs forms and registration of debentures (not handled through New Brunswick Municipal Finance Corporation Act)
Municipal Capital Borrowing Act (M-20)	- S. 2 - permits Lieutenant Governor in Council to appoint a Municipal Capital Borrowing Board - S. 4 - board may authorize a municipality to obtain money for a capital expense either by way of a loan or by the issue of debentures or guarantee the repayment of any loan or issue of debentures made for a capital expense; other provisions permit extensive examination of municipality's financial records
Municipalities Act (M-22)	- S. 89 - establishes limits to borrowing within municipalities; e.g. shall not borrow for its current operations any money in excess of the sum represented by 4% of the budget of that municipality for that year or \$5000, whichever is greater - S. 89 (3) - a municipality shall not, in any one year, borrow for capital expenditures any money in excess of the sum represented by 2% of the assessed value of real property in that municipality (can borrow in excess of this sum, but requires 60% support of those voting at a plebiscite)
Municipal Assistance Act (M-19)	S. 10 - provides for Budget Review Board that shall hear appeals by municipalities from the decision of the Minister not to approve a part of the proposed municipal budget for a municipality
Control of Municipalities Act (C-20)	Creates commissioner with responsibilities to: prescribe and regulate system of book-keeping, auditing in municipalities, and to approve debentures to municipalities. May also appoint inspectors.

Bond financing is the most common mechanism used to finance large capital projects in municipalities. Small municipalities, however, often have difficulty raising capital through the issue of bonds since they are usually not rated. If a small community can issue bonds, it will likely be at higher interest rates.³ To offset this problem of debt issuance, several provinces have resorted to the use of bond banks, such as the Municipal Finance Corporation in Nova Scotia or the Municipal Finance Corporation of British Columbia. In the interests of opening up new sources of capital for municipalities, some provinces, such as Manitoba, are permitting borrowing from chartered banks. At present, however, provincially-backed debentures remain the most common means of long-term capital financing in small and rural municipalities.

In terms of operating expenditures, the trends towards devolution of services and responsibilities to lower levels of government have increased public works costs in small municipalities. In Manitoba, for example, the province is no longer paying for engineering services in rural highways. In other provinces, small and rural municipalities have had to assume costs for fire protection services and building inspection. Additionally, municipalities are increasingly expected to be more self-reliant, turning to their own sources of revenue -- largely property taxes and user fees. Rationalization of service delivery at the local level through municipal consolidation has thus far not affected small municipalities to the same extent as urban regions, largely due to the inability to capture economies of scale in more remote communities. Evidence suggests,

³ Infometrica, *Financing Municipal Infrastructure: Alternative Methods* (Ottawa: Canada Mortgage and Housing Corporation, 1992), p. 17.

however, that consolidation will continue, particularly given growing approval for single-tier local government.⁴

Finally, intergovernmental grants provided to municipalities for financing capital projects continue to be very popular amongst small and rural communities across Canada. Concerns have been expressed, however, that funding programs and subsidy policies that mask real costs -- such as the recent Federal Infrastructure Works (FIW) program -- often introduce distortion in the decision-making process.⁵ The FIW program, for example, would typically not fund maintenance and minor rehabilitation of infrastructure, but it would support new construction or replacement. As a result, too often locally funded maintenance was deferred, allowing a facility to deteriorate to the extent necessary to qualify for federally funded replacement or major rehabilitation. The cumulative impact of such decisions is that taxpayers are paying a higher cost to maintain the integrity of infrastructure systems.⁶

2.2 Role of Council

The role of council in the management of public works tends to vary in small municipalities across Canada. While mayor and elected councilors (who invariably serve part-time and are modestly remunerated) typically do not directly manage maintenance staff, they do play an important role in land use planning, short- and long-term capital planning, tendering, and channeling citizen concerns regarding the state of municipal infrastructure. Given this broad array of responsibilities, several of those interviewed highlighted the important role elected officials play in ensuring the quality of public works. In instances where council has displayed limited interest in the upkeep of local infrastructure, several chief administrative officers admitted that the service of various public works appreciably suffered.

Traditionally, there has been some uneasiness between elected councils in small municipalities and engineering firms that have been hired on retainer, particularly if some council members were not involved in awarding the contract or if the engineer makes a determination that has a negative impact on a board member or a prominent constituent.⁷ These councilors or citizens may, in turn, bring pressure to bid on all engineering decisions, however routine. To avoid the expense and time of bidding out all activities,

⁴ Single-tier local governments are generally thought to be more accountable to residents (through more direct ties to the political process) and better capable of assessing the condition of the regional infrastructure (by developing repair, replacement, and maintenance schedules). Institute for Urban Studies, Municipal Infrastructure: Organization Structure, Financing and Delivery of Service (Ottawa: Canadian Mortgage and Housing Corporation, 1996).

⁵ Richard M. Soberman, "Taking Stock: A Review of the Canada Infrastructure Works Program." The Canada Infrastructure Works Office, Treasury Board Secretariat (Ottawa, August, 1996), p. 26.

⁶ Claire Felbringer, "Public Works" in James Banovetz (ed.) et al. Managing Small Cities and Counties: A Practical Guide. Washington, DC: International City/County Management Association, 1994.

⁷ *Ibid.*, p. 112.

the public works director and consulting engineer must be careful not to give the council any impression of undue influence.

There is also evidence to suggest that councils' oversight of public works financing will continue to grow. Although consulting engineers historically made recommendations to the public works director or the chief administrative officer, today there has been a trend toward making recommendations directly to the council, presumably because of an increase in interest and concern for public accountability. This implies that all officials, whether appointed or elected, will have to observe strict ethical guidelines when contracting out.

2.3 Public-Private Partnerships

As a means to control government debt and debt charges, all levels of government have been exploring relationships with the private sector in providing services, both for capital and operating costs. Small and rural municipalities are no exception. Interviews with chief administrative officers in these communities indicate that public-private partnerships are increasingly being considered, particularly as a result of provincial flexibility in seeking innovative financing arrangements for local infrastructure.

Public-private partnerships exist in a myriad of different forms. These range from complete privatization to operating part of a system for a fixed fee and for a fixed time. In between are a variety of build, operate and finance alternatives. A 1995 study examining public-private partnerships in municipal infrastructure highlighted a number of the benefits of these arrangements, largely stemming from the private sector's competitiveness, speed of decision-making, flexibility of organization, and capacity to share highly-skilled expertise.⁸ Additionally, large private firms serving more than one municipality may have economies of scale and lower costs than a small municipality operating its own system (see Box 1 below). Difficulties with partnerships include: the time required to negotiate contracts; the determination of a private rate of return which is politically acceptable (and reflects the risks involved); the need to clearly define responsibilities, service levels and fee rates; and the need to ensure that adequate maintenance takes place on facilities that are to be returned to government operations. Table 2 highlights a number of barriers to successful partnerships identified by both the public and private sectors in a 1998 survey.

⁸ IBI Group, Public-Private Partnerships in Municipal Infrastructure: Theory and Practice (Ottawa: Canada Mortgage and Housing Corporation, 1995).

Table 2: Barriers to Public-Private Partnerships

<i>Question: To what degree have these been barriers to successful partnerships? [magnitude of barrier (0-100)]</i>		
Barrier	Public	Private
Collective agreements	60	55
Resistance from unions or employee groups	58	58
Provincial legislation (or lack thereof)	53	46
Fear of losing accountability	46	58
Fear of adverse public opinion	44	57
Lack of internal expertise to evaluate bids, etc.	38	65
Complex costly administration after signing	35	0
Lack of internal policies that facilitate partnerships	33	60
Municipal legislation (or lack of)	27	36
Costs of retaining outside expertise	24	0

Source: 1998 National Survey for The Canadian Council for Public-Private Partnerships in cooperation with The Canadian Chamber of Commerce and The Federation of Canadian Municipalities. Available at www.pppcouncil.ca/~partners.

Some concerns were expressed about the viability of public-private partnerships in small communities during the course of the interviews. Despite growing provincial approval for municipalities to engage in viable partnerships, several chief administrative officers remain skeptical about their ability to attract private sector firms in small and rural municipalities. Profit margins may not be sufficient in communities failing to exhibit substantial population growth. Also, the frequent loss of jobs that accompany partnerships with the private sector may also render such arrangement politically unfeasible. This and other studies confirm that public-private partnerships are not a panacea and should be evaluated on a case-by-case basis.⁹

Box 1: Sainte-Marie de-Beauce Water Treatment Plant

Sainte-Marie-de-Beauce (PQ), a municipality of approximately 10,500 inhabitants, in conjunction with several adjacent municipalities, retained the private sector firm “Aquatech” to operate its water treatment plant. The municipality was responsible for financing and constructing the plant which remains in its possession. Aquatech provides full-time technical staff and provides specialized engineering or other highly skilled services required to serve specific operation problems. This arrangement has helped the town overcome the difficulty of obtaining and retaining highly skilled staff. Because the costs of the professionals are spread over a large number of locations where the private firm operates, the difficulties of having an unexpected and non-budgeted operating cost to deal with are eliminated by such an agreement.

⁹ A useful compendium of public-private partnerships, the majority addressing municipal infrastructure arrangements, can be found in: Canadian Council for Public Private Partnerships, Public-Private Partnerships Canadian Project and Activity Inventory (Toronto, 1998).

2.4 Problems of Technology Transfer

The difficulty of transferring new technology to assess, build and maintain public works is frequently voiced by municipalities across Canada. Laggardness in implementing new technology in small and rural communities is particularly problematic. Since public works staff in these municipalities often wear more than one hat, insufficient time prevents individuals from attending training sessions outside the community or to research new technologies and applications. Moreover, since the private sector typically drives changes in public works technology (which are often first introduced in urban centres), smaller municipalities are generally the last to benefit from these innovations.¹⁰

One of the initiatives presently being pursued by the federal government to address this problem is the creation of a National Technical Guide for Urban Infrastructure.¹¹ The National Building Code and National Fire Code have greatly assisted the construction industry in Canada by linking research to technology developments and through subsequent diffusion into the industry. The absence of such a code for infrastructure has resulted in considerable variation in technical manuals and contract specifications for infrastructure used by various levels of government and the private sector. This has led to a difficulty in predicting life-cycle costs for infrastructure, a lack of sharing of technologies and an inability for manufacturers to introduce new technologies in an orderly manner. The National Technical Guide -- designed to provide guidelines on constructed municipal facilities such as bridges, roads, buried utilities, sidewalks, and other urban fixtures -- is intended to be published by the year 2004 following several stages of cross-country consultations.

It is also increasingly clear that computers are changing the workplace in municipal public works departments. Cognizant of this reality, the Ontario Ministry of Agriculture, Food & Rural Affairs recently implemented a program subsidizing the purchase of up-to-date computer hardware and computer training in small and rural municipalities. According to one study, the future of public works management will increasingly involve geographic information systems (GIS), which collect, store and retrieve information based on location and then analyze the data spatially.¹² Information on streets and utility lines is the first to be digitized in public works departments, though virtually any public works information can be stored using GIS, including maintenance schedules and records of service calls.

¹⁰ Interview with Guy F  lio, Institute for Research in Construction, National Research Council.

¹¹ The project is being led by the Institute for Research in Construction (National Research Council). More information on this initiative can be found on the internet at www.nrc.ca/irc.

¹² Claire Felbringer, "Public Works" in James Banovetz (ed.) et al. *Managing Small Cities and Counties: A Practical Guide* (Washington, DC: International City/County Management Association, 1994), pp. 130-31.

2.5 Citizen Expectations & Participation

One of the most common trends cited by municipal administrators in small and rural municipalities across Canada is the rise in citizen expectations surrounding the quality of public works. With higher taxes has come greater demands for well-maintained streets, quicker road clearance, trash collection and other services. Aggrieved citizens in these communities also increasingly avail themselves to various local and provincial redress bodies, in the form of assessment boards, public utilities board, the provincial municipal board, planning appeal bodies or provincial ombudsmen. According to those interviewed in this study, the most common complaints relate to land use planning decisions (usually over zoning or subdivisions).

Public participation in local decision-making also continues to grow in these communities. Citizen involvement has been a routine part of land-use planning for over twenty-five years. Local governments are now increasingly confronted with the need to undertake citizen engagement in new areas such as budgeting, economic development, and political restructuring.¹³ Indeed, many provincial statutes now *require* local governments to formally seek citizen input before making decisions. In the case of expropriation procedures, for example, the provincial government may demand that a municipality give sufficient notice for a public meeting or advertise an upcoming meeting in the local media. While several local chief administrators expressed reservation about excessive use of citizen participation (e.g. slowing down the decision-making process, *over-consultation*), it is apparent that citizens no longer see public participation as an opportunity but rather as a basic service.

Box 2: Communications Technologies in the Town of Birtle, Manitoba

The Town of Birtle, Manitoba (population 750) televises council meetings on the local Access TV network located in the community. The network is entirely run by volunteers. Additionally, the town maintains a website with an active electronic “bulletin board”. According to the town’s Chief Administrative Officer, these communications technologies have increased residents interest in local affairs and thereby attendance at local town-hall meetings.

¹³ Katherine Graham and Susan Phillips, “Making Public Participation More Effective: Issues for Local Government” in Graham and Phillips, eds., Citizen Engagement: Lessons in Participation from Local Government (Toronto: IPAC, 1998), p. 2.

3. Administration of Public Works in Small Municipalities

3.1 General Administration

This and other studies of public works management demonstrate that there is no standard or recommended organizational structure for fulfilling public works functions. Some communities place public works functions in a single department; others place responsibility for streets and sidewalks in a public works department but have a separate water department or sanitation department. The delivery of potable water and its related infrastructure, for example, will be based on the community's population, demographics, proximity to other municipalities, topography, and geology, among several other factors. There is no evidence to suggest that one or another organizational pattern is better. Other factors -- such as size of community, range of public works functions, complexity of operations, and idiosyncratic local considerations -- will together shape the administrative structure.

It is important to note that other surveys have indicated that many concerns within public works departments are *size-independent*. A recent needs assessment undertaken by the American Public Works Association (which surveyed 1200 public works directors and rural stakeholders in the United States) concluded that a commonality exists between communities of all sizes on core public works issues.¹⁴ That said, while many of the present challenges surrounding public works are shared between different sized communities, the *organization* of public works departments is quite distinct and thus warrants further examination.

Based on the IOG's survey of small and rural municipalities across Canada, some generalizations can be made regarding the number of municipal staff within communities classed according to size.

Table 3: Public Works Staffing in Small Municipalities

Population	Public Works Manager (superintendents or foremen)	Town Engineer	Number of FT staff (dedicated to public works)*
10,000>15,000	4-5	yes	30-40
5,000>10,000	3-4	depends on size and growth	15-25
1,000>5000	2-3	depends on size and growth	5-20
<1,000	1-2	no	2-4

* Many small municipalities hire additional public works staff in the summer, such as students (not included here).

¹⁴ The APWA study surveyed the primary concerns -- such as road maintenance, sanitary sewers, water quality -- within the smaller public works departments. When respondents were asked if their responses and prioritization would change if their community's size were larger (between 50,000 - 100,000), less than 25% indicated that this would make a difference. APWA, Needs Assessment for Small City and Rural Community Public Works Departments (April, 1998).

As the above table indicates, a public works “department” in municipalities of 1000 or less typically consists of a foreman with an all-purpose maintenance staff. Regardless of the size of the municipality, however, every public works manager will at some time require a consulting engineer. For small and rural municipalities, this is obviously based on the need to acquire expertise for a specific job without having the expert on the agency’s regular payroll.¹⁵ In these communities, a professional engineering firm is often required to supervise all design and construction projects -- even when local employees are involved in those projects. In several provinces, the appropriate ministry will also certify the engineering consultant. Many small communities also keep an individual consulting firm on retainer to provide a designated number of hours per contract period. The rationale for this arrangement is to permit the company to become familiar with the jurisdiction, its unique political and social environment, and the geotechnical and topological features that have an impact on the design and development of infrastructure systems.¹⁶ Examples of engineering services include designing sewer systems, evaluating stormwater drainage, determining sidewalks replacement, preparing capital improvement plans and supervising and certifying all contractors.

3.2 Key Public Works Issues

The recent American Public Works Association (APWA) survey alluded to above attempted to determine the issues of primary concern amongst public works directors and rural stakeholders in small and rural municipalities. More than 50 percent of respondents identified storm sewers, road maintenance, and sanitary sewers as the most challenging issues facing their departments. Water quality/watershed management, safe drinking water, and bridge maintenance were close behind as areas of major concern for these communities. Table 4 summarizes the main findings of the survey.

¹⁵ The Town of Stonewall, Manitoba (population 4,000) -- one of the fastest growing communities in the province -- maintains a full-time town engineer on staff, given previously excessive costs of contracting out engineering services. The town engineer in Stonewall is presently responsible for a range of activities, including reviewing, approving and designing developments for residential dwellings, parks and recreational facilities, lot grades and drainage plans. He also serves as a back-up building inspector.

¹⁶ Claire Felbringer, “Public Works” in James Banovetz (ed.) et al. Managing Small Cities and Counties: A Practical Guide (Washington, DC: International City/County Management Association, 1994), p. 112.

Table 4: APWA Needs Assessment for Small City and Rural Community Public Works

<i>Question: In your opinion, which of the following areas of responsibility are the most difficult to fulfill in Public Works Departments in jurisdictions with populations less than 50,000? Please prioritize.</i>		
Area of Responsibility	Percent of Survey Mentioning	Percent of Survey Ranking as 1st Priority
Storm sewers	57	10
Road maintenance	56	15
Sanitary sewers	51	15
Other water quality/watershed management	50	5
Safe drinking water	43	12
Bridge maintenance	41	2
Management of national, state grants	39	3
Hiring, training, retention	37	7
Solid waste	36	3
Road construction	36	3
Hazardous waste	36	3
Emergency management	28	0
Land use including open spaces, wetlands	25	2
Transit services	24	2
Utilities services including rights-of-way	22	2
Public participation/community planning	20	2
Electrical deregulation	19	2
Bridge construction	18	1
Endangered species	17	0
“Brownfields” - low level toxic waste	15	0
Clean air	14	1
Vehicle maintenance	14	0
Highway systems	13	2

Source: American Public Works Association, “Needs Assessment for Small City and Rural Community Public Works Departments”, (April, 1998).

Interviews conducted during the course of this study confirm the general findings of the APWA study. Ensuring proper water and wastewater management usually ranks as the highest priority for public works managers from the perspective of public safety. Road construction and maintenance are also commonly regarded as key priorities, largely due to the high visibility (and frequent citizen complaints) of deficient road systems.

It is also interesting to note that funding shortages are generally cited as the most important issues within public works departments of small municipalities. In a 1996 survey examining the state of municipal infrastructure across Canada, administrators in communities with populations under 10,000 mentioned funding shortages (79%) as the greatest impediment to successful rehabilitation and replacement of infrastructure. This was followed by political inaction (12%), red tape (7%) and lack of staff (7%).¹⁷

Interviews conducted in 1997 by the Ontario Ministry of Agriculture, Food & Rural

¹⁷ Federation of Canadian Municipalities and McGill University, Report on the State of Municipal Infrastructure in Canada (January 1996), p. 21.

Affairs (OMAFRA) of 200 municipal managers in rural municipalities also pointed to funding shortages as the most critical issue facing communities (see Table 5).

Table 5: Current Issues in Small and Rural Municipalities (Ontario)

<i>Question: What would you say are the top three current critical issues facing your community?*</i>
1. funding, financing cost, tax revenue, financial cuts, staff resources (50%)
2. restructuring, amalgamation, joint service arrangements, partnerships, inter-community collaboration (42%)
3. realignment of municipal/provincial responsibilities, downloading, uncertainty (31%)
4. infrastructure, capital, drains, condition of roads, equipment (29%)
5. economy, economic development, tourism (21%)
6. urban/rural mix, land use policy, native relations, official plan, growth & development (21%)
7. employment, unemployment, jobs for young people, business closures (20%)
8. maintaining level of service, quality of life, stable community, demand for increased services (17%)
9. water quality, environmental concerns, waste management, natural resources (15%)
10. leadership, long-term planning, direction, council credibility, governance, municipal policy development, representation, community involvement, public education (13%)

*Results are based on interviews conducted between April and July 1997 with 200 municipal management staff in 102 municipalities across Ontario.

Source: Association of Municipal Clerks & Treasurers of Ontario and Ontario Ministry of Agriculture, Food & Rural Affairs, Rural Municipal Management Staff Needs Assessment (1997), p. 6.

3.3 Land Use Planning

Land use planning in small and rural municipalities across Canada is typically carried out on a county or regional level. Two or more small municipalities, for example, enter into an agreement to provide for a joint planning advisory committee, usually involving both elected and appointed members from each participating community. Since it is well recognized that effective planning requires considerable expertise of staff as well as maintenance of up-to-date data on the social, economic and environmental situation of a given area, these joint planning arrangements are an effective way of sharing resources (usually through a planning levy affecting all participating municipalities).¹⁸ Zoning by-laws and other exclusively local issues -- such as variances, site plans, and issuance of building permits -- are handled by the individual municipality alone.

It is also quite common for joint planning bodies to maintain a small complement of staff, which may include a professional urban planner as well as a building inspector. Additionally, these collaborative planning organizations frequently touch upon issues that go beyond land use planning per se, such as control over regional airports or involvement in economic planning.

¹⁸ Planning consultants are also used if such services are not provided by a joint planning body. Small and rural municipalities in Ontario have voiced concern about the growing need for these services. In the OMAFRA study of 1997, 60% of municipal managers mentioned planning expertise as the most important consulting service that will be required in the immediate future. Association of Municipal Clerks & Treasurers of Ontario and Ontario Ministry of Agriculture, Food & Rural Affairs, Rural Municipal Management Staff Needs Assessment (1997), p. 14.

Box 3: Land Use Planning for the Town of Dalhousie, New Brunswick

The Town of Dalhousie, population 4500, participates in a regional district planning commission. The town has 5 seats on the 25 member body, which meets on a monthly basis (in addition to meetings of the commission's committees). The planning commission employs a staff of 6 people, which includes planning experts and inspectors.

3.4 Building Inspection

There appears to be little uniformity in the handling of building inspection in small municipalities. In communities with populations under 5000, there is usually insufficient large-scale construction to warrant the appointment of a full-time building inspector. In these instances, it is common for building inspection to be provided by a joint planning commission or contracted out to a provincial agency.

From the perspective of the provinces, some concerns have been expressed about insufficient enforcement of building codes in remote and rural municipalities. As a result, several provinces now demand that a municipality formally appoint a chief building official. In these circumstances, municipalities will frequently delegate building inspection to the local fire commissioner's office.

3.5 Water and Sewage

From the perspective of health and safety, the provision of potable water in small communities tends to be less of a concern than wastewater treatment.¹⁹ All provinces have established strict guidelines through statutes and regulations regarding water quality standards and inspection procedures. Additionally, most (but not all) provinces certify water operators. According to municipal administrators who were interviewed, water inspection is carried out on average twice per week, with water samples commonly tested in laboratories in larger centres (usually by the provincial Department of Health).

The handling of storm and sanitary sewers tends to be more problematic in smaller communities since they are rarely capable of benefiting from economies of scale in wastewater treatment. This frequently results in the use of septic or aerated lagoon systems, which are sub-optimal from an environmental point of view. For communities capable of supporting a larger scale treatment plant, a smaller revenue base not only increases the cost per litre of water/sewage treated but also reduces the funds for training and salaries. Many provinces offer low-cost training programs to alleviate some of the fiscal pressure; however, better-trained personnel often move to larger centres, where

¹⁹ This is similar to the finding of the 1998 APWA survey. See Table 4. It should be noted that most of the communities contacted obtained water from groundwater (deep well) sources. Treatment of groundwater is usually much simpler (often entailing only basic chlorination) than surface water.

salaries are typically higher. When this occurs, small communities have difficulty retaining licensed operators and must again invest in hiring and training employees.²⁰

User fees for water and sewage are the norm in virtually all the communities contacted during this study.²¹ Approximately half of these municipalities had also installed water meters, revealing that administrative costs are minimal under this arrangement, even for small municipalities. Small communities have also been able to avail themselves to a variety of service delivery arrangements for water and wastewater treatment. The Town of Morris, Manitoba (population 1700) contracted the services of the Pembina Body Water Cooperative for water treatment, which also provides water to neighbouring communities and farms. Municipalities frequently contract with a private company or larger water system to provide services such as operation and maintenance, meter reading and billing, and sample collection and analysis. The Sainte-Marie Water Treatment Plant in Beauce, Quebec, for example, is operated by a private company but owned by the community (see Box 1).

One of the most persistent problems associated with water and sewer systems is deferred maintenance in both small and large municipalities, largely because they are not visible and therefore less prone to citizen complaint (relative to roads). It has been estimated that approximately 25 to 30 percent of all drinking water produced in Canada is lost (or unaccounted for) in distribution systems as a result of leakage.²² Studies have also shown that protection of pipes over their lifetime is 8 to 10 times less expensive than replacement and produces annual savings in excess of 25% over continuing repairs on pipes left unprotected.²³ In the eyes of many councils, ribbon cutting for above ground facilities is almost always a preferable activity to repairing underground water mains. To guard against this tendency, technical guidelines to diagnose and repair leaks need to be widely distributed and implemented.

Box 4: Water Service Arrangements with Local First Nations

The City of Truro, Nova Scotia (population 12,500) provides water and sewer services for Milbrook First Nation (population 606), which is located within the city's boundaries. Fees are assessed based on miles of watermain as well as per capita costs for fire protection.

The Town of Haines Junction, Yukon (population 850) also has a similar arrangement with the Champagne Aishikik First Nation (population 250), which purchases water at a bulk rate. In addition to water services, both communities share in the cost of a by-law enforcement officer and fire protection services.

²⁰ Claire Felbringer, "Public Works" in James Banovetz (ed.) et al. *Managing Small Cities and Counties: A Practical Guide*. Washington, DC: International City/County Management Association, 1994, p. 123.

²¹ According to a recent survey, 63% of all municipalities in Canada now rely on user fees as a source of revenue for water distribution/supply, compared with 43.5% for sewage and 40.3% for solid waste. Federation of Canadian Municipalities and McGill University, *Report on the State of Municipal Infrastructure in Canada* (January 1996), p. 23.

²² Guy Féléo and Roger Mareschal, "Canadian Municipal Infrastructure Solutions," (June, 1998). Available on the National Research Council of Canada website at www.nrc.ca/irc.

²³ Brousseau & St. Martin, "Cathodic Protection of Cast Iron Watermains - Economic Analysis", in *Bulletin technique du Groupe Exploitation, Association québécoise des techniques de l'environnement*, May 1995.

3.6 Roads and Bridges

In virtually all smaller communities, streets are constructed either by a private firm under contract or by a developer during subdivision development. Small scale maintenance (such as filling potholes or patching) is typically handled by the community's public works staff. In instances where the services of a private company are required, the tendering process is generally handled by the public works manager in consultation with the chief administrative officer and elected council. Insufficient choice of contractors, even in small or remote communities, is rarely a problem. Many small communities also find it impractical to own road machinery and will therefore contract the services of grader and snowplow owners.

Depending on the size of the community, the development, updating and enforcement of standards for streets and sidewalks may be undertaken by the public works manager or a consulting engineer. Engineers typically have developed some general "rules of thumb" by which the need for surface repairs can be related to the age of the pavement structure, as well as its original design features.²⁴ They have also developed objective, systematic means of defining pavement condition by an index obtained from field measurements of pavement distress and deflection. Similar techniques can be applied to the inventory of municipal bridges although here, visual inspection by qualified experts is probably a better indicator of repair needs than simply historical data on the date of construction.²⁵

Road maintenance is commonly cited by municipal managers as one of the most onerous of all public works, largely due to the high visibility of road deterioration. Studies have clearly proven that cost is best controlled, not by deferred maintenance, but by regularly scheduled repair and rehabilitation performed on the basis of an inventory of individual streets that projects the maintenance needs over a period of years. Of course, the frequency of complaints regarding road roughness, pot holes, etc. will also likely determine the priority of a particular improvement for both roads and bridges.

3.7 Solid Waste Collection and Disposal

Despite living in less densely populated communities, citizens in small and rural communities, akin to urban residents, continue to complain about the siting of landfills. This is commonly referred to as the NIMBY rule -- "Not In My Back Yard." Effective siting procedures usually require citizen participation strategies to ensure ample deliberation and buy-in of decisions. Most experts also agree that citizen participation is

²⁴ Richard M. Soberman, "Taking Stock: A Review of the Canada Infrastructure Works Program." The Canada Infrastructure Works Office, Treasury Board Secretariat (Ottawa, August, 1996), p. 23.

²⁵ It has been estimated that regional roads have a life expectancy of 20 years (40 with renewal), bridges 60 to 80 years, water systems 60 years and sewers 60-80 years. Federation of Canadian Municipalities and McGill University, Report on the State of Municipal Infrastructure in Canada (January 1996).

also crucial as a means of changing people's habits regarding materials they use and discard into the waste stream. Efforts to reduce, reuse, and recycle solid wastes require extensive public education campaigns.

User fees for trash collection and disposal are less common than water charges in small municipalities, though their use appears to be growing.²⁶ Interviews conducted with towns that had implemented user fees gave no indication of deleterious consequences of this arrangement (such as discarded refuse in ditches). It is also quite common for contiguous communities to share in the cost of site maintenance or to contract this out to a private company.

Inspection of disposal sites is generally undertaken by public works staff in the municipalities themselves, as mandated by provincial health regulations. This includes monitoring of ground water, surface water, and gas migration.

Box 5: Trash Collection in the Town of Stonewall, Manitoba

Stonewall (population 4000), located 50 kilometres north of Winnipeg, has implemented a "tipping" fee for trash collection, allowing each household two bags of garbage per week (extra bags cost more). According to the town's chief administrative officer, this system is supported by 80% of residents and has resulted in a 40% reduction in waste since being implemented. Trash collection is also contracted out to a private firm.

3.8 Parks and Recreational Facilities

Parks and recreational facilities in small and rural communities are the most common public works functions to be administered through public-private partnerships, largely due to the ease of capturing user fees. It is rare in such municipalities, however, for these facilities to be completely privatized, given the need to subsidize their continued operation through public funds. In the communities contacted for this study, user fees accounted -- on average -- for one-third of a recreational facility's budget. The most successful community that was contacted recouped two-thirds of its recreation budget from user fees.

²⁶ Across Canada, 40.3% of revenue for solid waste collection and disposal comes from user fees, compared with 32.8% from general taxes, 16.4% from municipal reserve, 6.3% from public-private partnerships and 4.0% from other sources. Federation of Canadian Municipalities and McGill University, Report on the State of Municipal Infrastructure in Canada (January 1996), p. 23.

3.9 Redress Mechanisms

For virtually every public works function listed above, some right of redress is available for aggrieved citizens. In small municipalities, initial appeal of decisions or charges is often handled by local bodies, such as water utilities boards or land use planning commissions. All provinces have also established boards, commissions, or quasi-judicial agencies to oversee many of the functions of municipalities and to act as a body of appeal for citizens. In some provinces, citizens may even appeal debt-financing decisions made by a council. The most prevalent issues that are appealed by citizens include zoning decisions, tax assessment, and utility rates.

4. Training

4.1 Competencies of a Public Works Manager

Based on the results of this study, it is clear that public works managers (and staff) in small and rural municipalities handle a range of responsibilities and interact with a myriad of officials, including consultant engineers, council members, clerical staff, lawyers, solid waste handlers, labourers and provincial officials. The broad nature of public works functions requires a director to perform a variety of managerial tasks, many requiring very different skill sets.

An American Public Works Association (APWA) survey carried out in 1990 indicated that education is an important ingredient in the successful management of public works. Of the respondents, 55 percent believed an engineering degree is necessary; 39 percent preferred a management degree; and most agreed that continuing education should focus on managerial training.²⁷ General experience has confirmed these statistics. The appointment of a person with a background in civil engineering as director of public works has been common practice for many years. More recently this practice has begun to give way to the employment of public works directors who have training and experience in public administration. An understanding of law is also widely considered to be beneficial, particularly given increasing liability issues faced by municipalities in the area of public works. The need to contract the services of consultants with highly specialized engineering knowledge and the increasing complexity of government regulations suggest that administrative and legal training or experience will be increasingly demanded of public works directors in the future.

The multiplicity of responsibilities for public works managers in small municipalities demand a variety of skills. Table 6 lists various competencies as identified during the course of interviews for this study.

Table 6: Competencies of a Public Works Manager

Responsibilities	Associated Skill Sets/Training
Utility system operation, road maintenance, equipment and building maintenance	⇒ civil engineering, especially roads and water/sewage treatment
Management of contracts	⇒ legal and administrative knowledge
Budgeting & financial planning	⇒ accounting & math; computer skills
Hire, motivate and discipline staff	⇒ communication, leadership & management skills
Liaison with citizens & municipal council	⇒ communication skills
Coordinate disaster response	⇒ organization skills; knowledge of CPR

²⁷ American Public Works Association, Public Works Today: A Profile of Local Service Organizations and Managers (Chicago: APWA, 1990).

Public works staff in small and rural municipalities must also handle a wide variety of responsibilities, many of which will be acquired through on-the-job training. The need for accreditation of certain public works professionals may necessitate some specialized training. These licenses are naturally intended to assure minimum levels of competence in the operation of such facilities as water, waste-water treatment, and power plants. In the case of waterworks operators in Alberta, for example, the province will set out particular classes of licenses and training depending on the size of the local population and the complexity of the utility. Professional associations and provincial agencies generally provide the training necessary for licensing on various levels. As a rule, the more highly regulated the public works function, the more likely it is to require a license.

Besides specialized training for public works staff, one of the most commonly mentioned skill requirements is basic math -- for budgeting, geometric measurement, calculating water flow, slopes of streets, etc.. The Ontario Good Roads Association, one of the largest municipal training organization in Canada, is in the process of developing a basic math course and book geared towards public works staff.²⁸

4.2 Training Needs

Despite acknowledgment that human beings are a vital component of the infrastructure system, there has been no consistent and sustained attention from any level of government concerning a human infrastructure policy at the municipal level.²⁹ Unfortunately, when budgets get tight, training and professional development budgets are among the first to be cut by local policymakers. This is especially the case for small and rural municipalities across Canada.³⁰

Time is also a major issue in smaller public works departments. Attendance away at training sessions is hard to justify given the many responsibilities and limited number of staff back home. Public works staff are therefore caught in a difficult dilemma: taking the time to learn new, innovative, more efficient methods most likely means letting responsibilities accrue in their departments. The 1998 APWA study alluded to earlier confirmed this problem. When public works managers were asked what they perceived as barriers to the exchange of ideas, information and expertise, the recurring themes were lack of funds and time.³¹ Additionally, inability to pay competitive salaries results in the

²⁸ Interview with Heather Crewe, Manager of Professional Development and Training, Ontario Good Roads Association.

²⁹ Claire Felbringer, "Public Works" in James Banovetz (ed.) et al. Managing Small Cities and Counties: A Practical Guide. Washington, DC: International City/County Management Association, 1994.

³⁰ While funding for training is often scarce within municipalities themselves, there are instances where training funds are offered by outside organizations. The Association of Yukon Communities, for example, has a budget of approximately \$500,000 devoted for municipal staff training of either elected or appointed officials.

³¹ American Public Works Associations, Needs Assessment for Small City and Rural Community Public Works Departments (April, 1998).

hiring of under-qualified personnel who lack adequate training. Such training usually requires travel to larger centres, which is doubly expensive: the cost of the transportation and lodging, along with the cost of training and time away from the department.

The 1997 OMAFRA study of municipal staff training needs across Ontario probed training delivery preferences. Workshop methods, on-the-job-training and expert presentations were all preferred to distance learning, computer-based instruction or independent study. Local day-long workshops or seminars were also preferred to regional or provincial events.³² It is also useful to note the internal weaknesses identified by municipal managers in small and rural municipalities as a means of highlighting areas where training might be needed (see Table 7).

Table 7: Organization Weakness in Small Municipalities (Ontario)

<i>Question: To reach a goal of having the most effective and efficient operation possible, what are the three most significant internal weaknesses which must be overcome?</i>
1. workload, staff shortages, revenue to cover service demand, budget, funding, financial (57%)
2. systems, internal communications, equipment (42%)
3. structures, strategic planning, business planning (27%)
4. teambuilding, cooperation, management team, motivation (24%)
5. politics, political leadership, political will, councilor "agendas", lack of leadership (24%)
6. council/staff relations, hiring practices, trust, council role in management (22%)
7. training - technical skills (20%)
8. traditional thinking, change management, flexibility, fear of change, uncertainty (17%)
9. other (miscellaneous concerns) (16%)
10. infotech (lack of software & hardware) (10%)

*Results are based on interviews conducted between April and July 1997 with 200 municipal management staff in 102 municipalities across Ontario. The % indicates the number of times the 'cluster' was identified as one of the top three choices.

Source: Association of Municipal Clerks & Treasurers of Ontario and Ontario Ministry of Agriculture, Food & Rural Affairs, Rural Municipal Management Staff Needs Assessment (1997), p. 13.

4.3 Training Availability

According to most of the municipal administrators interviewed for this study, availability of training is not a major problem. Every province maintains a variety of professional associations -- for clerk administrators, public works managers, professional engineers, building inspectors, planners, water operators, etc. -- which serve as clearinghouses of information or actual providers of training. The Ontario Goods Roads Association (OGRA), the largest municipal association in Canada which provides training, works very closely with the Ontario Municipal Engineers Association to coordinate and determine educational needs for municipal public works staff. Despite its name, OGRA offers courses in a variety of fields beyond roads and pavement, including general public works inspection, municipal health and safety, and public works administration (e.g. contract law and contract dispute resolution).

³² Association of Municipal Clerks & Treasurers of Ontario and Ontario Ministry of Agriculture, Food & Rural Affairs, Rural Municipal Management Staff Needs Assessment (1997), p. 11.

OGRA's increased offering of courses over the last few years, in concert with professional associations, is indicative of the decline in public works training offered by provincial governments. While provinces continue to certify particular public works operators, there is a greater willingness to delegate accreditation to various associations. In Alberta, for example, the local branch of the Canadian Public Works Association recently developed a Certified Public Works Supervisors Program, which involved developing a competency profile and collaborating with a community college to determine an appropriate training program.

While there is sufficient *availability* of public works courses, their *accessibility*, however, appears to be problematic. The necessity of leaving the municipality for training was cited as a major impediment by several of those interviewed. Travel from small centres in western Ontario to the Greater Toronto Area (where most coursework is held) can take up to two days with return travel, which may render training prohibitive. In response, organizations are increasingly developing techniques for long distance learning, largely via teleconferencing the internet. (On-site learning, however, will likely remain the preferred method of learning in the short-term.) In general, while administrators and managers in small and rural municipalities across Canada are cognizant of the importance of staff training, time and distance often conspire against ample training of employees.

5. Conclusions

5.1 General Observations

One of the most important findings of this study is the similarity of trends faced by large and small municipalities in the area of public works. These issues include provincial downloading of responsibilities, growing use of public-private partnerships and user fees, problems of technology transfer, increased citizen expectations in service quality, and limited resources (time and funding) for staff training. What differentiates small and rural municipalities from larger ones is the acuteness of these challenges. The remoteness of these communities, for examples, further hampers adoption of innovative technology or the range of private companies willing to engage in public works partnerships with the local government.

It is worth noting several of the key observations regarding public works management in small communities that arise from this study.

Access to long-term capital for capital infrastructure is less secure in small municipalities

Since small communities are typically not rated by bond granting agencies, acquisition of debentures at reasonable rates of interest is difficult when acting alone. To offset this problem of debt issuance, a variety of means have been used to access long-term financing, including provincially-backed debentures, bond banks, and (recently in some provinces) direct lending from chartered banks. As with municipalities of any size, limits to long-term financing are strictly controlled by the respective provincial government.

Small municipalities are increasingly forced to be more self-reliant in public works financing

User fees in small and rural communities are now commonplace for water and sewage operations (e.g. yearly household consumption or metered rates), solid waste collection and disposal (e.g. tipping fees) and recreational facilities. Administrative costs associated with these payment systems are easily offset by the gains in efficiency, lowering of demand, and increased contracting out of these services to the private sector.

Engineering consultants are commonly required

Few towns with populations of 5000 or less can sustain the cost of a full-time professional engineer. As such, contracted firms are commonly retained for specific projects or time frames given their expertise in infrastructure design and repair. This arrangement requires transparent contracting procedures (with communication between the public works administrators and elected council) and the building of longer-term

relationships with individuals or companies who will be able to understand the unique public works specifications of the community (e.g. age of infrastructure, topological features).

Elected council oversight of public works is important

Council's interest in public works issues should not be under-estimated in small communities. Their involvement extends to land use planning, short- and long-term capital planning, tendering, and channeling citizen concerns regarding the state of municipal infrastructure. Evidence suggests that their direct involvement in public works management, particularly financial oversight, will continue to grow. This should be viewed as a positive development, particularly as a means of maintaining accountability over the increased use of private service delivery of municipal public works.

Citizens expectations are growing for improved service quality and planning for public works

Improved customer service in the private sector has heightened citizens' demands for quality in the public sector, particularly in highly "visible" services such as garbage collection and road maintenance. Despite a greater sense of "community" in small towns relative to larger centres, residents are also demanding more meaningful forms of political participation beyond venting concerns in town halls or responding to phone surveys. Many municipal administrators also caution that government officials should not create undue expectations of service quality. Building large-scale water or sewage treatment plants may simply not be feasible in certain smaller communities.

There is no optimal way of administering public works

While small towns (population 1000 or less) typically maintain a chief administrative officer, public works manager and support staff, there is no evidence to suggest that there is one correct way of organizing the administration of public works. The size and growth of the community, the range of public works functions, the complexity of operations and other unique local conditions are typically the most important considerations when administering a public works department.

Small municipalities must be open to joint servicing arrangements with neighbouring communities

Except in very remote communities (typically in the territories), the vast majority of small municipalities in Canada share some public works with contiguous communities, special purpose bodies, or regional governments. The most common shared service is land use planning, though water delivery and treatment, building inspection, and trash disposal are also common. Obviously, inter-municipal agreements -- which extend to sharing the services of a single private contractor -- are an excellent means to obtain economies of scale in service provision where otherwise absent.

There is agreement that training for public works managers and staff is needed given the diversity of their responsibilities

Training of public works managers and staff assumes added importance given the diversity of skills commonly required, the increasing use of technology, and the important health and safety considerations of public works functions. For managers, generalist knowledge of administrative and legal affairs is becoming as important as technical understanding of engineering practices. In terms of training delivery, efforts need to be made to overcome the lack of time and funding available to undertake courses. Increased attention must be given to technologies that will facilitate and ease the discomfort of distance learning.

5.2 Implications for First Nations

Several observations regarding the management of public works in First Nations arise out of this study, keeping in the mind the differing constitutional status of aboriginal communities relative to Canadian municipalities. One of the most striking differences between these communities is the network of support for public works in small Canadian municipalities, components of which are largely absent in First Nations. The most important institutions include provincial governments (which, among other services, provide training, accreditation, financial oversight, inspection, and redress mechanisms) and regional governments (which, in small municipalities, are integral to land-use planning and building inspection). Professional associations and colleges also play an important role in support of public works learning and training for small municipalities. It is unclear at this point, however, to what extent aboriginal communities are taking advantage of these memberships and services.

Financing

One of the chief restrictions of Canadian municipalities (and one of its greatest strengths) is the tight restriction on capital borrowing. This has permitted municipal governments to remain the least indebted level of government in Canada. Like small municipalities, however, self-governing (and ultimately self-financing) First Nations will also likely face difficulties in accessing long-term capital for financing capital works projects, more likely a result of capital markets rather than legislative prohibitions. Organizations that share capital financing and therefore minimize risk -- such as the Municipal Finance Authority of British Columbia -- will likely be emulated in the future.

User fees, which are the fastest growing source of revenue in small Canadian municipalities, may be difficult to implement in self-governing First Nations, given negative perceptions of taxation. Failure to adopt user fees will likely render management of demand for certain public works more difficult and will also result in quicker deterioration of physical infrastructure (water pipes, sewers, public housing, refuse sites).

Citizen Expectations & Participation

There are three essential features that must be considered by self-governing First Nations under this heading:

- i) ensuring adequate redress and adjudication mechanisms for aggrieved citizens in such areas as assessments (property taxes), debt financing, building permits, planning and zoning decisions, expropriation procedures, and public utility charges.
- ii) allowing for effective public participation in such areas as land-use planning, budgeting, economic development, and political restructuring.
- iii) managing expectations about the levels of service quality. One of the most important components of infrastructure planning relates to defining present and future demand for public works services. The construction of a large-scale water treatment plant, for example, may not be economically feasible without sufficient scale. Accordingly, elected and appointed officials must carefully balance the demands of citizens with the realities of infrastructure construction and rehabilitation.

Service partnerships

Like small and rural municipalities, First Nations would be well advised to consider service partnerships with neighbouring communities as a means of capturing economies of scale, sharing expertise and training, and assisting in technological diffusion. There presently exists many instances across Canada of joint partnerships between aboriginal communities and local municipalities in the provision of services such as potable water, sewage treatment, and fire inspection.

Building Staff Capacity

Given the generally small size of Aboriginal communities, public works managers will require a variety of skills, including technical engineering abilities, financial management skills and basic understanding of contracting. Public works staff will also require a mix of general and technical skills, many of which will be acquired on-the-job. Allowance will also need to be made for highly technical training, in the absence of direct provincial training for certified public works officials (chiefly water operators and building inspectors).

Consideration must be given to retain staff for a sufficient period of time to facilitate learning and application of skills. This can be facilitated by adequately remunerating public works staff and avoiding undue reshuffling of staff responsibilities on the First Nation. As in small municipalities across Canada, public works managers (or senior administrators) should endeavour to set aside adequate funds for staff training and to encourage staff to become members of applicable professional associations.

Planning at the regional level

The general absence of two-tier government in self-governing First Nations poses some challenges in coordinating land-use planning in these communities. Effective land use planning requires considerable expertise of staff as well as maintenance of up-to-date data on the social, economic and environmental situation of a given area. It is unlikely that a small community will be able to support this expertise alone. First Nation councils will likely be required to either coordinate planning between various communities or delegate authority upwards to an elected or appointed agency with responsibility over planning.

Role of Council

In small and rural municipalities in Canada, management of public works is often the predominant responsibility of both elected council and appointed officials. As explained above, evidence suggests that their direct oversight will continue to grow. In First Nations, by contrast, the vast range of responsibilities (extending to health, education, and economic development) renders public works a smaller priority on the council's agenda. The "invisibility" of many public works also conspires against drawing council's attention to the community's physical infrastructure.

Proposed Technical Guide for Urban Infrastructure for Canada

This proposed guide, expected to be completed within five years, will function as a national code for physical infrastructure much in the same as the National Building Code operates for building safety. Self-government agreements may wish to make allowance for future reference of this document.

Appendix 1 - List of Questions

General

- Can you briefly describe your municipality (geographic size, population, local government structure, budget for the public works function)?
- How do you structure or organize your public works function? How is land use planning undertaken? How does it report or relate to the community council?
- To what extent does your municipality directly manage or contract out its public works (as defined above)?
- Is your municipality involved in any partnerships or co-management arrangements with adjacent municipalities in the provision of public works? If so, what are the ingredients for their success?
- Do you have any involvement with First Nations in your province?

Regulation/Inspection/Enforcement

- What is the most important regulatory concern for a small community in the area of public works (e.g. potable water from wells, inspection of septic tanks, inspection of roads)? What public work is most prone to failure (i.e. fall below certain standards)?
- Is inspection of public works handled by the community or contracted to an outside party? Is there sufficient separation of operational and inspection personnel -- is this a consideration?
- What are the most prevalent issues brought for adjudication to the provincial oversight body (e.g. Ontario Municipal Board)? How frequently are such bodies used?

Financial Management

- Are user fees associated with any of the above public works (e.g. fees for inspection, toll roads, water use, waste collection/disposal)? If so, what are the administrative costs associated with this? Are there any downsides (e.g. garbage left in ditches, etc.)?
- How frequently are large infrastructure projects undertaken -- i.e. those requiring some long-term financing? How are these financed (e.g. provincial loans, provincially backed debentures, bond banks à la BC Municipal Finance Corporation, etc.)?

- What is the longer term direction regarding the financing of public works?

Capacity Development

- What types of background are most pertinent to a public works manager in a small municipality (e.g. engineering background, financial management)?
- What public work practitioners [in the above areas] require licensing or accreditation?
- How are training needs met for practitioners? What role, if any, do municipal associations play?
- Are there mechanisms to involve the public in decision-making at the local level (e.g. in setting municipal standards, in the process of expropriating land for road building, in park boards or public utilities)?

Appendix 2 - List of Individuals Contacted

- Michael Allain, Clerk Administrator, Town of Dalhousie, NB
- Rod Amy, Chief Administrative Officer, Town of Deloraine, MB
- Larry Bagnell, Executive Director, Association of Yukon Communities
- Chuck Boker, Community Leadership Specialist, Ontario Ministry of Agriculture, Food and Rural Affairs
- Dwayne Climenhaga, Superintendent of Municipal Services, County of Lethbridge, AB
- Heather Crewe, Manager of Professional Development and Training, Ontario Good Roads Association
- Hedley Crowther, Chief Clerk and Municipal Engineer, District of Lillooet, BC
- Colin Dean, Chief Administrative Officer, Village of Haines Junction, YK
- Roger Dennis, Executive Director, Government Support Services, Manitoba Department of Rural Development
- Aaron Deschene, Saskatchewan Association of Rural Municipalities
- Anne Dudman, Executive Administrator, Canadian Council for Public-Private Partnerships
- Guy Félío, P.Eng, Institute for Research on Construction, National Research Council
- Yvonne Gibb, Executive Director, Union of Municipalities of New Brunswick
- David Gilroy, Town Administrator, Town of Truro, NS
- Barry Glencross, Clerk Administrator, Village of Rexton, NB
- Larry Goodhope, Executive Director, Alberta Association of Municipal District and Counties
- Patricia Hempstead, Executive Director, Newfoundland and Labrador Federation of Municipalities
- Leslie Ireton, Canadian Association of Municipal Administrators
- Mark Locking, Director, Engineering and Public Works, City of Airdrie, AB
- Jerome Mauws, Executive Director, Association of Manitoba Municipalities
- Maureen McCauley, Town Engineer, Town of Richmond Hill, ON
- Pat Moyle, Executive Director, Association of Municipalities of Ontario
- Conrad Nicholson, Chief Administrative Officer, Town of Morris, MB
- Robert Potter, Chief Administrative Officer, Town of Stonewall, MB
- Gordon Power, President, Canadian Public Works Association (Newfoundland Chapter)
- Marilyn Price, Clerk Administrator, Village of Doaktown, NB
- Sheila Richardson, Executive Director, Ontario Good Roads Association
- Eric Seaward, Newfoundland Department of Municipal and Provincial Affairs
- Tom Szalay, Chief Administrative Officer, Town of Oliver, BC
- Joan Taylor, Chief Administrative Officer, Town of Birtle, MB
- Richard Taylor, Executive Director, Union of British Columbia Municipalities
- Judy Webber, Executive Director, Union of Nova Scotia Municipalities
- Margrit Wozniak, Chief Administrative Officer, Village of Mayo, YK