TAC Educational Achievement Award Nomination

ONTARIO GOOD ROADS ASSOCIATION

MUNICIPAL ASSET MANAGEMENT CERTIFICATION PROGRAM

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ABSTRACT

OGRA's Municipal Asset Management certification program represents a refreshing departure from other asset management training programs. One of the strengths of this program is its holistic approach, which considers individual categories of public assets within the broader context of other assets competing for the same taxpayer dollar. The instructional methodology in each week-long course is firmly anchored in practical application of the skills being taught. Students are held to the highest academic standards, and are evaluated on their ability to demonstrate they can apply the skills, not simply recall knowledge from short term memory.

Assignments are carefully chosen to familiarize students with the resources both human and information that they will need to manage tangible capital assets in their municipality.

Finally, the certification capstone project simulates as closely as possible, the political realities of municipal asset management. Students are asked to prepare a written asset management plan for one category of assets in their community, then to present and defend their plan to members of the Academy's Certification Advisory Board, who will interview the candidate in much the same way that a municipal Council would respond to them in real life.

INTRODUCTION AND OVERVIEW

In August 2012, the government of Ontario mandated all municipalities in the province to have an asset management plan in place by December 2013. Partnership funding support for municipal capital works from the province is now contingent upon the applicant municipality having an asset management plan, and the municipality demonstrating how the proposed project supports that plan.
Ontario Good Roads Association responded to these new requirements by developing a number of technical tools and training initiatives to help municipalities acquire the skills needed to manage their infrastructure assets. Among the training initiatives was the establishment of a comprehensive program of courses covering various aspects of asset management all leading toward a new professional certification for municipal asset managers.

The Academy for Municipal Asset Management addresses those skill sets common to all public sector asset management: finance, data collection, condition assessment, asset valuation, capital investment planning, and data management. Beyond these core skills, the Academy has specialized courses in the major categories of municipal capital assets: roads, bridges, buried infrastructure, fleets, public buildings, solid waste facilities, recreation facilities, and public transit.

DESCRIPTION OF THE ACHIEVEMENT

The Academy certification program represents a new standard for municipal professional development. The program itself has no precedent and has been designed specifically to meet the still evolving needs for skills development among municipal asset managers. The week-long courses are extremely demanding of the students and require research before the course begins, as well as completion of a post-course project that forces them to apply the knowledge gained during class to a real-life scenario based on assets and finances in their own communities. Descriptions of the courses in the program can be found in the Appendix.

Each course culminates with an assignment whereby students must research existing inspection and condition assessment reports, financial information reports, life cycle cost analysis, in order to recommend appropriate investments in rehabilitation treatments, and predict how these investments will extend the life of the asset.
The research required by the post-course projects encourages students to interact with their Treasury or Finance Departments, thus helping to break down two distinctly opposing views on the value of assets. Finance sees assets through the lens of their depreciated value since construction, while Engineering values assets largely by their replacement cost. If left unchecked, this discrepancy can result in skewed values assigned to an asset, and even premature replacement of an asset that has reached the end of its book value, regardless of the service life actually left in the asset. Opening a meaningful dialogue between these two departments can result in saving thousands, even millions of taxpayer dollars.

The Academy program has achieved another noteworthy accomplishment in that the academic standards imposed by the courses is equivalent to fourth year university courses. Reports are completed according to APA standards, and most of the instructors are or have been university professors.

Lastly, the Capstone project required to achieve certification is also unique to the Academy for Municipal Asset Management. Candidates for certification must demonstrate their ability to apply the skills taught during the program by preparing a ten-year asset management plan for one category of assets. Their plan must include specific recommendations to Council for the next fiscal year's budget, and detail the assumptions behind their recommendations.

CONTRIBUTION MADE TO EDUCATION

OGRA's Academy for Municipal Asset Management is Canada's first comprehensive professional development program for managing municipal infrastructure assets. In addition, successful completion of the Academy program leads to a new professional designation, the Accredited Municipal Asset Manager and is helping to shape the skill sets and standards required by this emerging occupation.

In designing the certification program, it was felt that written examinations would be inappropriate as a means of evaluating students after each course. Examinations are a good test of short term knowledge gained, but they do not assess the ability of the student to process that knowledge and apply it. A more accurate evaluation is to have the student demonstrate their ability by assigning a post-course asset management project based on actual assets and finances in their own municipality.

Another contribution to education made by the Academy curriculum is to adopt a holistic view of asset management. Generally speaking, asset management programs take a "silo approach" and focus on one category of assets only. This is unrealistic for municipalities as they must juggle competing priorities from all their infrastructure assets and all within the context of limited fiscal resources that are based on property taxes, development charges, and the borrowing capacity of the municipality.

In addition to the written capstone project, candidates must present and defend their report to the Academy's Certification Advisory Board, who will act as a surrogate municipal Council in their questioning of the candidate. In this way, the certification process prepares students for the political realities of municipal asset management and eases the transition to on-the-job application of their new skills.

BENEFITS

Every aspect of the Municipal Asset Management certification process has been carefully designed to ensure that all assignments, including the final capstone project, are firmly anchored in real world application. The litmus test of all course assignments and the capstone project is that students should be able to take the content of their reports and deliver them directly to Council or senior staff officials as bona fide asset management plans. Our instructors are given clear guidelines to make all assignments practical and immediately applicable. Theoretical exercises are vigorously discouraged. Even the pre-course assignments are carefully selected to familiarize students with relevant legislative frameworks, data sources, and technical tools available within their own municipality to assist in asset management.

This attention to real world application increases the likelihood that students will find immediate use for the new skills they are learning.

VALUE TO CANADIAN TRANSPORTATION COMMUNITY

As more and more jurisdictions adopt the tenets of asset management, the rigorous training represented by this certification program is helping to define the knowledge and skills required by the emerging new profession of municipal asset managers.

In addition, the holistic approach taken by this certification program helps to break down the traditional barriers between Finance and Engineering. And it ensures that the asset management needs of the road network will be properly considered within the larger

context of bridge assets, fleet, and the myriad other tangible capital assets owned by municipalities.

SUMMARY

The Municipal Asset Management certification program offers a unique opportunity for those with responsibility for the management of municipal assets to gain a thorough grounding in all aspects of asset management. The program lays bare the often hidden world of municipal treasurer's priorities; it ensures that the management of overwhelming volumes of data is standardized; and that capital investment planning is based on practical assessments of an asset's remaining service life, and not on book value alone.

The certification process itself ensures that candidates are fully prepared to take their recommendations to Council, and play their part in educating elected officials about the principles of modern asset management , and guiding them away from the more traditional approach of fixing the "worst first".

In short, the Municipal Asset Management certification program is a one of a kind approach to preparing a new generation of asset managers for their responsibilities, and in the process, the program is helping to shape and define the skills of this emerging occupation.

Asset Data Collection and Condition Evaluation

Effective management of public assets relies on instant access to detailed information about their history, location and current condition. This course investigates the data that is required by asset type, various methods for collecting and organizing data into logical categories, and maintaining the data over the life of an asset. Methods for determining the condition of several asset types and assigning a rating will also be covered.

Course Content

- Determining asset types
- Assigning categories of assets
- Identifying data gaps
- Traditional versus mobile data collection
- Integration with web-based data management systems
- Subjective versus objective asset condition evaluation
- Condition rating systems
- Legislated inspections
- Maintenance of asset records

Asset Valuation and Capital Investment Planning

This course details the financial process for capitalizing and amortizing tangible capital assets over their service life in accordance with the Public Service Accounting Board requirements. Strategy options for the preservation of and rehabilitation of assets over their service life are explored and linked to capital investment planning processes. The procedures to account for betterments and rehabilitation are detailed, as are the financial procedures to account for the disposal or decommissioning of assets.

Content

- Concepts of asset valuation
- Determining the life cycle of an asset
- Accounting requirements (e.g. PSAB 3150 and others)
    - Write-downs vs write-offs
    - Accounting for asset betterments
    - Disposal of assets
    - Tangible Capital Assets (i.e. infrastructure) reporting
- Capital plans
    - Age-based vs condition-based capital planning
    - Determining rehabilitation strategies and priorities
    - Estimating rehabilitation costs
    - Growth related infrastructure requirements

- Funding and financing capital plans
    - Life-cycle requirements
    - Alternative financing mechanisms (e.g.P3's, local improvement charges, development charges)
- Managing risks over the asset life cycle
- Selling the capital plan to the public and the decision makers

Public Sector Finance Fundamentals

This course covers the legislative framework and accepted financial principles for defining and managing capital assets in the municipal public sector. The process of setting and approving municipal budgets will be thoroughly explored. Other factors such as risk management, balancing political and operational priorities, determining an appropriate asset management strategy, and performance measurement will also be examined.

Content

- Municipal assets and provincial legislation
- Defining capital assets
- Tangible capital assets and PSAB
- Municipal capital planning
- Capital assets and Financial Information Returns
- Ontario's Infrastructure Plan
- Review Asset Management Best Practices – Financial Perspective
- An introduction to capital investment planning
- Risk management and Minimum Maintenance Standards
- Budgeting for the maintenance of assets
- Rehabilitate, reconstruct or decommission?
- You and the auditor
- A primer on the municipal budgeting and approvals process
- Municipal budgeting 101
- Municipal budgets from Council's perspective

Managing Data for Municipal Assets

This course surveys topics related to the management of municipal asset data including the establishment of data standards and the need for versatility in data platforms, use of GIS technology to pinpoint asset location, and integrating data with asset management plans. Issues such as the benefits and risks associated with enabling public access to

information are explored. Traditional and electronic tendering processes for asset rehabilitation and replacement projects are examined.

Content

- Traditional vs. web-based data management
- Establishing data standards
- Increasing transparency and efficiency through new information systems
- GIS and asset mapping technology
- Data security
- Monitoring and updating asset management plans
- Traditional tendering versus eTendering for asset rehabilitation or replacement

Asset Management of Bridges

The effective management of bridges is paramount to the continuity of road networks, safety of communities, and access to emergency services. With good reason, the province on Ontario identifies the asset management of bridges as one of its top priorities. This course will provide an overview of the structural elements comprising bridges, the legislative framework that safeguards the maintenance of bridges, their life cycle, and recommended best practices for maintenance and operations. Asset management of bridges, capital programming, project development and project delivery will be examined against a backdrop of municipal economics and finances, and the approvals process to be followed. Case studies will be used to explore the real world application of these topics.

Content

- Bridge basics
- Legal and legislative framework
- Life cycle of bridges
- Maintenance and operations
- Principles of asset management
- Capital programming
- Project development
- Project delivery
- Municipal economics and finance
- Approvals

Asset Management of Buried Infrastructure

This course is offered in partnership with the Centre for Advancement of Trenchless Technologies (www.catt.ca) and covers the fundamentals of asset management with

particular emphasis on buried infrastructure (water and wastewater pipelines). It will provide an in-depth knowledge of the essential processes and techniques required to establish an effective asset management program for water and wastewater utilities. The course will also highlight the new developments and future trends in the asset management field.

Content

- Asset inventory of water and wastewater networks
- System components and attributes
- Data collection and management
- Levels of service and key performance indicators
- Pipe materials and failure mechanisms
- Condition assessment techniques for water systems
- Condition assessment techniques for wastewater systems
- Pipeline rehabilitation and replacement technologies for water and wastewater systems
- Pipeline rehabilitation and replacement decision making for water and wastewater systems (multi-criteria decision making and optimization)
- Finance and pricing for water and wastewater systems (financial sustainability)
- New developments in water and wastewater network asset management

Asset Management of Municipal Fleets

This course may currently be completed as an Independent Research Project.

Content

Students will select a suitable research topic based on the overall management of assets pertaining to public works fleet, garage and yard facilities, and fleet maintenance programs in their municipality.

Asset Management of Public Buildings

This course discusses the fundamentals of asset management for a wide variety of public buildings. It covers the entire life cycle of building assets from capital investment to disposal, with particular emphasis on planning and accounting for betterments (renewal). The course will allow participants to carry out various analyses on real life cases from their own portfolio of building assets. The course is aligned with the International Infrastructure Management Manual and other initiatives and best practices from around the world. It provides an opportunity for public infrastructure management professionals to gain in-depth knowledge for managing their assets while keeping up optimal performance over the asset’s life cycle.

Content

- Types of public buildings and identifying categories of assets within a building
- Assigning a value to the asset
- International standards, guidelines and best practices (BOMA, LEED™, ASHRAE, etc.)
- Framework for the management of public building assets
- Data integration and system coordination; data standardization, collection, and record keeping
- Maintenance vs. capital renewal
- Computerized maintenance and facilities management systems
- Condition prediction, rating systems, and inspection scheduling
- Dealing with defects, failure modes, and criticality
- Levels of Service and Key Performance Indicators
- Sustainability requirements and energy management solutions
- Risk assessment and failure modeling
- Budget analysis and developing short and long range plans; financing and alternative funding options
- Decommissioning and disposal of public assets
- Economic justification of capital renewal plans
- Deterioration modeling: deterministic vs stochastic
- Special considerations for key building components: wood, steel, masonry, and concrete structures, HVAC, mould, plumbing and electrical systems
- GIS and BIM applications for facilities management
- Current research on mixed infrastructure systems

Asset Management of Public Transit

Candidates wishing to pursue the Accredited Municipal Asset Management designation will be given credit for providing evidence of successful completion of the **Transit Maintenance and Asset Management** course as their Specialty course requirement. This course is offered by the Canadian Urban Transit Association. Course content, dates, and locations can be found on CUTA's website at www.cutaactu.ca

Asset Management of Recreation Facilities

Candidates wishing to pursue the Accredited Municipal Asset Management designation will be given credit for providing evidence of successful completion of the **Recreation Facilities Asset Management, Week 1** course as their Specialty course requirement.

This course is offered by the Ontario Recreational Facilities Association. Course content, dates, and locations can be found on ORFA's website at www.orfa.com.

Asset Management of Road Networks

This is an overview of the types of road surfaces commonly found in municipalities, road classifications, the material design, composition, and life cycles of gravel, surface treated, flexible and rigid pavements, pavement distresses and condition rating systems. The context and strategies required to preserve public investment in road infrastructure of all types in order to maximize their service life. Strategies and options for rehabilitation treatments will be discussed. Data management and record keeping requirements will be emphasized. The management of road related assets such as traffic control devices and street furniture is also included.

Content

- Classification of roads
- Types of municipal roads
- Managing road related assets
- Determining the life cycle of gravel, surface treated, asphalt, and concrete roads
- Common pavement distresses
- Evaluating condition
- Condition rating systems
- Prioritizing rehabilitation strategies
- Record keeping

Asset Management of Solid Waste Facilities

Note: This course may currently be completed as an Independent Research Project.

Content

Students will select a suitable research topic based on the overall management of solid waste facilities, landfill sites, composting facilities, and recycling and hazardous waste centres in their municipality.