ONTARIO GOOD ROADS ASSOCIATION
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Working for Municipalities

22 March 2013

Katarina Cvetkovic
Program Manager
Transportation Association of Canada
2323 St. Laurent Blvd.
Ottawa, ON
K1G 4J8

TAC Educational Achievement Award Submission

Dear Ms Cvetkovic:

Enclosed is a description of a landmark new education program developed by Ontario Good Roads Association to develop the skills needed to manage the wide-ranging tangible capital assets of the municipal sector.

This program was launched to help municipalities meet the new requirements for asset management announced by the province of Ontario in August 2012. This program is truly the first of its kind, in that it combines the full range of skills required to manage public assets with eight specialty courses that represent the major categories of municipal assets from roads and bridges, to buried infrastructure, public buildings, transit, fleets, solid waste facilities, and parks and recreation facilities. No other asset management education program in the world has taken this approach.

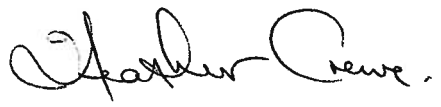
The program was introduced in the fall of 2012 with the Public Sector Finance Fundamentals course. In 2013 we are offering courses in the Asset Management of Road Networks, Asset Management of Buried Infrastructure, Asset Management of Public Buildings, Data Collection and Condition Evaluation, and a repeat of Public Sector Finance Fundamentals. In 2014 we will introduce Asset Valuation and Capital Investment Planning, Asset Management of Bridges, Asset Management of Fleets, and a repeat of the 2013 courses. In 2015 we will introduce Information Technology and Project Management, as well as Asset Management of Public Transit, Asset Management of Solid Waste Facilities, and Asset Management of Parks and Recreation. I have enclosed descriptions for those courses that have already been launched or whose development is currently well underway for implementation this year or early 2014.

Students who successfully complete the four mandatory courses and two of the specialty courses will qualify for a new designation, the Accredited Asset Manager. This accreditation process is administered by an Accreditation Advisory Board, which consists of 2 senior municipal representatives, 1 private sector representative, and 1 academic representative. This Accreditation Advisory Board will set the criteria for accreditation, review and approve applications, and oversee the development of program to ensure its relevancy to municipalities.

Until the full program has been introduced, students who wish to complete their accreditation qualifications earlier, may undertake Independent Research Projects under academic supervision. Guidelines for these research projects are included in this package.

The benefit of this program to the municipal sector is that for the first time there is a program that brings together the diverse skills and knowledge needed to successfully manage the billions of dollars worth of tangible capital assets owned by the municipal sector. And in doing so, the program delineates an entirely new occupational category: the accredited municipal asset manager.

Respectfully submitted for your consideration,



Heather Crewe, M.A.
Manager, Professional Development and Training

Academy for Municipal Asset Management

Academy for Municipal Asset Management

The Vision

Introduction

Until the mid-1990's, much of Ontario's municipal asset management was closely linked to the conditional funding grants administered centrally by the provincial government. In the years since the demise of that program, there has been a succession of short-term funding programs that have required municipalities to commission expensive studies in support of their grant submissions, or to link their capital investment in one category of infrastructure with infrastructure assets of lesser priority in order to qualify for partial funding. As a result, local investment in the construction and maintenance of municipal capital assets has been both sporadic and by and large, woefully underfunded since 1996. The result is a province-wide patchwork quilt of infrastructure that is in an undeniable state of decline.

In August 2012, the government of Ontario announced a new precondition for municipalities seeking funding support for capital works. They must now show sound management of their assets through the preparation of an asset management plan, and demonstrate how the proposed infrastructure project will support their overall asset management plan. The deadline for submission of these municipal asset management plans to the province is December 2013.

OGRA created the **Academy for Municipal Asset Management** accreditation program to develop the skills necessary for our member municipalities to meet these new challenges in the management of their tangible capital assets. The stated goal of the program is *to develop the skills and knowledge required to manage the financial, capital, and operational needs of public infrastructure assets*.

What truly sets this program apart from all other asset management education programs, is that it echoes the realities and conflicting priorities of today's municipalities. Rather than take a silo approach to one category of assets in isolation from others, the Academy purposely brings together several major categories of the most common municipal assets, i.e. roads, bridges, buried infrastructure, transit, public buildings, solid waste facilities, fleet, and parks and recreation facilities, against the backdrop of the universal skills needed for asset management. The program leaves students with a firm grounding in public sector finance, data collection, condition evaluation, asset valuation, capital investment planning, information technology and project management.

The new provincial requirements will result in a new occupational category: the Asset Manager. And this accreditation program will define the requisite skills and knowledge of this new occupation.

The province has provided the impetus, and now it is up to municipalities to take up the challenge and build the skills they need to take their place as mature partners, fully capable of managing the full range of their tangible capital assets. The purpose of this program is to set the occupational standards and to lead the way.

Academy for Municipal Asset Management

The Vision

- Program Objectives
- Target Audience
- Class Size
- Program Synopsis
- Course Instructors
- Instructional Methodology
- Accreditation
- Role of the Accreditation Advisory Board
- Rewrite and Appeal Process

Program Objectives

To develop the skills and knowledge required to manage the financial, capital, and operational needs of municipal infrastructure assets.

Upon certification at the end of the program, students will be able to:

1. Administer the financial requirements of municipal asset management.
2. Collect and analyse data on the extent and condition of municipal assets.
3. Apply the concepts of asset valuation and capital investment planning to municipal assets.
4. Manage the capital and operational requirements of public assets in specialty areas such as road networks, bridges, sewer and water networks, public buildings, municipal fleets, solid waste, and parks and recreational facilities.

Target Audience

This program is intended to meet the professional development needs of middle and senior managers who have responsibility for the management of municipal public assets.

The program will be of greatest benefit to those with responsibility for asset management and related fields such as capital works, management of transportation, management of public works, maintenance and operations, fleet, road networks, wastewater collection and treatment, water distribution and treatment, bridges, solid waste collection, public buildings, and community and recreational facilities, parks, municipal forestry services and landscaping.

Class Size

Class size will be limited to 25 students per course.

Program Synopsis

All courses within the Academy program are currently open to anyone who wishes to take them.

MANDATORY COURSES

All 4 mandatory courses must be successfully completed by accreditation candidates. Some exemptions may apply, as approved by the Accreditation Advisory Board.

1. Public Sector Finance Fundamentals
2. Asset Valuation and Capital Investment Planning
3. Information Systems and Project Management for Municipal Assets
4. Asset Data Collection and Condition Evaluation

In addition, candidates must successfully complete TWO of the following:

SPECIALTY COURSES

1. Asset Management of Road Networks
2. Asset Management of Public Buildings
3. Asset Management of Municipal Fleets
4. Asset Management of Buried Infrastructure
5. Asset Management of Solid Waste Facilities
6. Asset Management of Parks and Recreation Facilities
7. Asset Management of Public Transit

8. Asset Management of Bridges

Course Instructors

Instructors will be drawn from a number of sources, including academic faculty, public and private sectors subject matter experts. Course sessions will also be augmented by guest presenters.

Instructional Methodology

Course instruction will feature a combination of lectures, individual and group assignments, and case studies. There will also be an emphasis placed on applying the skills learned to on-the-job situations. This will be achieved through assigned reports whereby students will research supporting documentation within their own municipality and prepare a report and recommendations on the management of an asset. Such reports should, with little modification, also be suitable for submission to the student's municipal Council or senior management team.

Successful completion of courses may be determined through a combination of marked assignments, comprehensive final report, and/or examination.

Accreditation

Successful completion of the program will lead to the designation, **Accredited Asset Manager** or **AAM**.

Specific criteria for accreditation will be determined by the Accreditation Advisory Board. Candidates will apply for accreditation to Ontario Good Roads Association. Applications will be reviewed by the Accreditation Advisory Board against the approved criteria.

Certification will remain valid for a period of five years from the date of issue.

Exemptions to the courses found within the Mandatory and Specialty series of courses will be determined by the Accreditation Advisory Board.

Recertification will be based on criteria set by the Accreditation Advisory Board. Applications for recertification will be reviewed by the Accreditation Advisory Board against the approved criteria.

Role of the Accreditation Advisory Board

The Accreditation Advisory Board will meet as required, a minimum of twice yearly for the purposes of:

1. Guiding program curriculum development to ensure relevancy to municipal asset management practices.
2. Establishing the criteria for accreditation and recertification.
3. Reviewing and approving applications for accreditation.
4. Reviewing and approving applications for recertification.
5. Considering applications for examination rewrites and appeals of course results.
6. Evaluating the success and relevance of the program based on individual course evaluations and participant satisfaction levels, instructor feedback, aggregated results for each course, proposed content revisions to any courses, and registration levels.
7. Reviewing and approving specialty courses acceptable to meet the professional development component of the recertification requirements.

Rewrite and Appeal Process

Candidates wishing to appeal their final grade on any given course, must submit their request in writing along with an explanation for the appeal of their grade within 120 days of when their course results were sent by OGRA.

The Accreditation Advisory Board will consider their request at their next scheduled meeting and will notify the candidate of their decision. Examination rewrites will be permitted only for those appeals approved by the Accreditation Advisory Board. For those courses featuring a written report assignment as the summative course evaluation, candidates can request that the

Accreditation Advisory Board review their written report as an independent body, i.e. the Accreditation Advisory Board will not have been involved with the original assignment of the course grade and can therefore offer an objective decision.

Decisions of the Accreditation Advisory Board will be final.

OGRA ACADEMY FOR MUNICIPAL ASSET MANAGEMENT

Public Sector Finance Fundamentals

Course Description

Overview

This course introduces the concepts of public sector financial management and legislated reporting requirements as stipulated in the Municipal Act, Financial Information Returns, and Public Service Accounting Board practices. The process of setting and approving municipal budgets will be explored. Other factors such as risk management and performance measurement will also be discussed.

Course Description

This course covers the legislative framework and accepted financial principles for defining and managing capital assets in the public sector.

Recommended References

Christie, T.(2006).*Accounting for tangible capital assets*.Toronto, ON: Canadian Institute of Chartered Accountants.

Public Sector Accounting Group.(2007*). Guide to accounting for and reporting tangible capital assets; Guidance for local governments and local government entities that apply the public sector handbook*.Toronto, ON: Canadian Institute of Chartered Accountants.

Vanier, D.J., Newton, L. and Rahman, S.(2006). *A framework for municipal infrastructure management for Canadian municipalities*.Ottawa, ON: National Research Council of Canada.

---.(2012).*Building together: Guide for municipal asset management plans*.Toronto, ON: Queen's Printer for Ontario

---.(2011).*Public sector accounting handbook*.Toronto,ON: Canadian Institute of Chartered Accountants.

---.(2010).*Start up guide to the Financial Information Return*.Toronto,ON: Queen's Printer for Ontario

---.(2007). *Assessment of tangible capital assets*.Toronto, ON: Public Sector Accounting Board.

---.(2007).*Municipal guide to accounting for tangible capital assets* (version 2).(appendices). Toronto, ON; Ontario Municipal Benchmarking Initiative.

---.(2001).*Municipal Act*.Toronto,ON: Queen's Printer for Ontario

Course Content

- Overview of the Ontario Municipal Act
- Public sector accounting principles
- Defining capital assets
- Assets and the Public Sector Accounting Board
- Municipal capital planning
- Assets and Financial Information Returns
- Assets and performance measures
- Ontario's 10 Year Infrastructure Plan
- Intro to capital investment planning
- Risk management and the Minimum Maintenance Standards
- Budgeting for the maintenance of assets
- Rehabilitate, reconstruct, or decommission?
- You and the auditor
- Municipal budgeting and approvals process
- Budgets from Council's perspective

In-class mini-cases, individual assignments and group assignments will reinforce the reading and class material.

OGRA Academy for Municipal Asset Management

Asset Data Collection and Condition Evaluation

Course Description

Overview

Effective management of public assets depends 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.

Reference Texts

Chong, G.J., Phang, W.A., and Wrong, G.A.(1989).*SP-024 Manual for condition rating of flexible pavements: Distress manifestations*.Toronto, ON: Ministry of Transportation. Available on http://library.mto.gov.on.ca

----.(2008).Municipal DataWorks inventory manual – water networks.Oakville, ON: Ontario Good Roads Association. Available on http://www.municipaldataworks.ca

----.(2008).Municipal DataWorks inventory manual – sewer networks.Oakville, ON: Ontario Good Roads Association. Available on http://www.municipaldataworks.ca

----.(2008).Municipal DataWorks inventory manual – transportation networks.Oakville, ON: Ontario Good Roads Association. Available on http://www.municipaldataworks.ca

Course Content

- Determining asset types
- Assigning categories of assets
- Identifying data gaps
- Tradition 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

In-class mini-cases, individual assignments and group assignments will reinforce the reading and class material.

OGRA Academy for Municipal Asset Management

Asset Valuation and Capital Investment Planning

Course Description

Overview

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.

Reference Texts

Anderson, B. (2011).*A framework for asset management*.Oakville,ON: Ontario Good Roads Association. Available at www.ogra.org

Cowe Falls, L., Haas, R., and Tighe, S. (2005) *A framework for selection of asset valuation methods for civil infrastructure*.Ottawa, ON: Transportation Association of Canada, conference proceedings.

Cowe Falls, L., Haas, R., and Tighe, S. (2004). *A comparison of asset valuation methods for civil infrastructure*.Ottawa,ON: Transportation Association of Canada, conference proceedings

Vanier, D.J. and Rahman, S.(2004) *Municipal infrastructure investment planning (MIIP) and MIIP report: A primer on municipal infrastructure asset management*. Ottawa,ON: National Research Council

---- (2007). *Assessment of tangible capital assets*.Toronto,ON: Public Service Accounting Board

Course Content

- Concepts of asset valuation
- Determining the life cycle of an asset
- Write-downs versus write-offs
- Accounting for asset betterments
- Disposal of assets

- Age-based versus condition-based capital planning
- Determining rehabilitation strategies and priorities
- Estimating rehabilitation costs

For each topic, theory will be augmented with in-class mini-cases, individual assignments and group assignments to reinforce the reading and class material.

OGRA Academy for Municipal Asset Management

Information Systems and Project Management for Municipal Assets

Course Description

Overview

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.

Reference Texts

Hegazy, T.(2001).*Computer based construction project management*. Scarborough, ON: Prentice Hall

Course 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
- Management of tasks, issues and stakeholders to ensure on-time project delivery

For each topic, theory will be augmented with in-class mini-cases, individual assignments and group assignments to reinforce the reading and class material.

OGRA Academy for Municipal Asset Management

Asset Management of Road Networks

Course Description

Overview

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.

Reference Texts

Chong, G.J., Phang, W.A., and Wrong, G.A.(1989).SP-024 Manual for condition rating of flexible pavements: Distress manifestations.Toronto, ON: Ministry of Transportation. Available on http://library.mto.gov.on.ca

Kosmatka, S., Kerkhoff, B., Panarese, W.C., MacLeod, N.F., and McGrath, R.J.(2002).*Design and control of concrete mixtures (Seventh Canadian edition)*.Ottawa,ON: Cement Association of Canada

Miller, J. and Bellinger, W.(2003).*Distress identification manual from the long-term pavement performance program (Fourth revised edition)*.McLean,VA: U.S. Department of Transportation Federal Highway Administration

O"Doherty, J.(2007).*At the crossroads: Preserving our highway investment*.Okemos, MI: National Center for Pavement Preservation

Taylor, P.C., Kosmatka, S.H., Voigt, G.F. et al.(2006).*Integrated materials and construction practices for concrete pavement: A state-of-the-practice manual*.Ames, IA: National Concrete Pavement Technology Center

---.(2008).*Municipal DataWorks inventory manual – transportation networks*.Oakville, ON: Ontario Good Roads Association. Available on http://www.municipaldataworks.ca

Course 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

Format

In-class mini-cases, individual assignments and group assignments will reinforce the reading and class material.

OGRA ACADEMY FOR MUNICIPAL ASSET MANAGEMENT

Asset Management of Public Buildings

Course Description

Overview

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 topics covered in the course include: valuation, need analysis, inspection, performance assessment, international standards (e.g., BOMA 2011), best practices, computer applications, role of data in asset management, deterioration analysis, failure analysis, economics of renewal decisions, life cycle cost analysis, asset prioritization, and green/sustainability aspects. 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 asset's life cycle.

Course Description

This course will enable participants to gain a better understanding of what an Asset Management System is, how it can help government agencies to integrate preventive maintenance and capital renewal into the asset management process, and how to extend the performance of infrastructure assets at the lowest possible cost.

Recommended References

- BOMA International (2011).*Guide to the 2010 ADA standards*. Washington,DC: Building Owners and Managers Association International
- http://www.iisbe.org International Initiative for a Sustainable Built Environment
- http://www.ASTM.org ASTM Standards for Building Sustainability; ASTM E2432 - 05 Standard Guide for General Principles of Sustainability Relative to Buildings; and ASTM E2018 - 08 Standard Guide for Property Condition Assessments.
- LEED for Existing Buildings: Operations and Maintenance: 2009. Canada Green Building Council.
- ISO Standards, ISO14040 Life Cycle Assessment.

- ASHRAE STANDARD 90.1: 2007., Energy Standard For Buildings, ASHRAE: American Society of Heating, Refrigerating and Airconditioning
- Facilities Management software list http://www.thesoftwarenetwork.com/Facilities-Management-Software/

Course Content

- Overview of the Ontario Municipal Act
- Public sector accounting principles
- Defining capital assets
- Assets and the Public Sector Accounting Board
- Municipal capital planning
- Assets and Financial Information Returns
- Assets and performance measures
- Ontario's 10 Year Infrastructure Plan
- Intro to capital investment planning
- Risk management and the Minimum Maintenance Standards
- Budgeting for the maintenance of assets
- Rehabilitate, reconstruct, or decommission?
- You and the auditor
- Municipal budgeting and approvals process
- Budgets from Council's perspective

To reinforce class material, the course will incorporate in-class mini-cases, weekly guest speakers, individual assignments, group discussions, and a project. Case Studies & Computer applications will also be used to illustrate practical applications of course content and give examples of agencies using asset management systems.

Academy for Municipal Asset Management

Asset Management of Buried Infrastructure

Course Description

Overview

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.

Course 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

Who Should Attend

Infrastructure professionals and managers who have responsibility for the management of municipal water and/or wastewater systems.

Format

In-class case studies, individual assignments and group assignments will reinforce the presentations and class material.

Evaluation

Assignments 30%, project 20%, final examination 40%, class participation 10%. Overall grade of 65%. Additionally, students must obtain a minimum of 50% on the final exam.

Academy for Municipal Asset Management

Guidelines for Independent Research Projects

Note: All of the Academy for Municipal Asset Management courses may be undertaken as an Independent Research Project.

1. Register for the course.

Complete a course registration form and submit with payment to Ontario Good Roads Association. The registration form is available on both the Academy website www.OGRAacademy.org and the OGRA website www.ogra.org.

2. Select a topic.

Your project topic should relate directly to the course objectives and topics covered in the classroom version (as applicable). You will gain the most benefit from the project if your topic is also directly relevant to the current and future asset management needs of your municipality. The broad scope of academy makes it impossible to cover all topics in extent or depth which would be desirable. Consequently, an independent research project allows the student to explore an area of particular interest to a depth which is greater than normally possible within the existing program. The student will be expected to submit a well organized, substantiated report that presents the material in a clear and logical manner. There is no restriction on the topic area, but there is on its scope if the following questions can't be answered:

- Is the topic manageable? Can it be done in the time available?
- Is there sufficient information or data available?
- Is the subject area so broad or generalized that a report will provide nothing meaningful?

3. Write a project proposal

Write a proposal describing your topic in detail. Also include the following information:

- relevance of the proposed topic to your municipality's asset management plan
- internal records and staff subject matter experts you expect that you will need to access

4. Submit your project proposal

Send your project proposal to your academic supervisor:

Dr. Susan Tighe
Professor and Canada Research Chair in Pavement & Infrastructure
Dept. of Civil and Environmental Engineering
University of Waterloo
200 University Ave. W.
Waterloo, ON N2L 3G1
sltighe@uwaterloo.ca
519-888-4567 ext 33152

Your project proposal may be e-mailed to Dr. Tighe; please cc: heather@ogra.org.

5. Approval of your project proposal

Your academic supervisor will review your project proposal report and will reply with an approval or may request clarification or have suggestions to guide the direction of your research and report objectives. Once your project proposal is approved, you may proceed with your research and report preparation.

6. Project report format

Your report should be structured as follows:

Abstract
A summary of your project, key findings, and recommendations

Chapter 1 **Introduction**

- Problem statement
- Describe how your chosen topic relates to your municipality's strategic asset management plan

Chapter 2 **Review of Literature**

- Review and analysis of previously published and reviewed academic literature on the topic.
- Minimum of 20 references
- Use the APA format for references within the body of your report.

Chapter 3 **Methodology**

- A description of your research methodology

Chapter 4 **Presentation of Data**

- Present your research findings
- Include budget requirements and funding options

Chapter 5 **Conclusions and Recommendations**

- Summary and interpretation of findings
- Recommendations to Council

Appendices

References Reference citations in your report should follow APA format as per the *Publication Manual of the American Psychological Association*, Washington, DC, 2010, 6th edition.

7. Progress Report

When you have completed Chapters 1 through 3, submit a progress report to your academic supervisor. Include a copy of the completed chapters and an update on your planned approach and progress to date on the remaining chapters.

Incorporate feedback and suggestions offered by your academic supervisor.

8. Completed Report

When you have completed the full report, submit it to your academic supervisor.

9. Notification of Results

You will be notified in writing of your final mark. If you have successfully met the requirements of the research project, you will be sent a Certificate of Completion, which may be used toward achievement of the *Accredited Asset Manager* designation.

OGRA Academy for Municipal Asset Management

Instructor Bio

SUSAN TIGHE

Dr. Susan Tighe, P.Eng, Canada Research Chair and Professor of Civil and Environmental Engineering, University of Waterloo

Dr. Susan Tighe, P.Eng, is a Professor, the Norman W. McLeod Professor in Sustainable Pavement Engineering and the Canada Research Chair in Pavement and Infrastructure Management at the University of Waterloo. She is also a principal founder and the Director of the Centre for Pavement and Transportation Technology (CPATT), where she still manages the central CPATT Pavement Laboratory, CPATT Test Track and over 50 satellite test sections across Canada. Dr. Tighe is very active professionally in Canada and internationally and has over 300 technical publications to her credit. She has over eighteen years of experience and is a licensed professional engineer in the province of Ontario. Her accomplishments have been recognized by various awards, including the highly prestigious *Canada's Top 40 Under 40* in 2006 and the Professional Engineers of Ontario's *Young Engineer Medal* in 2004.

She was the Past Chair of the International Steering Committee for the International Conference on Managing Pavement Assets (ICMPA7) and continued in that role for ICMPA8 in 2011 in Santiago, Chile. She is Past Chair of TAC's Soils and Materials Standing Committee and the TAC Foundation Scholarship Committee. She is also a member of the Pavements Standing Committee. Dr. Tighe has also worked for the Ontario Ministry of Transportation, for Pioneer Road Services in Australia, held an Erskine Fellowship at the University of Canterbury in New Zealand and in July 2010 held a United Kingdom Royal Academy of Engineering Fellowship at the University of Nottingham, in England. She is a recognized national and international expert in Pavement Design and Management and she is currently the project manager of the 2011 Transportation Association of Canada's *Pavement Asset Design and Management Guide.*

OGRA Academy for Municipal Asset Management

CRAIG DAVIDSON

Craig Davidson is the Chief Administrative Officer and Treasurer for the Municipality of Hastings Highlands. Prior to joining the municipality in 2005, Craig worked for eighteen years as an Audit Manager and Advisor for the municipal and not-for-profit sectors with the firm of Collins Barrow Kawarthas, LLP. He is well versed in many aspects of municipal government including emergency management, human resources, and capital planning and budgeting.

Mr. Davidson currently serves as a Director of the Ontario Good Roads Association.

He earned both a Bachelor of Arts and a Master of Arts in Public Administration, through Windsor University, London, England.

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OGRA Academy for Municipal Asset Management

Instructor Bio

TAREK HEGAZY

Dr. Tarek Hegazy, P. Eng., Professor of Construction Engineering and Management, University of Waterloo

Dr. Hegazy has participated in a wide spectrum of new and rehabilitation projects and is internationally renowned for his research on computational construction management and asset management. His recent research uses tools of computational intelligence to efficiently plan and execute municipal infrastructure programs and support contractors' decisions on high risk and constrained projects. Dr. Hegazy is the sole author of the textbook "Computer-Based Construction Project Management" published by Prentice Hall. He has graduated many doctorate and master's students, collaborates with many universities worldwide, and has received several awards of excellence for his research.

In 2004, Dr. Hegazy was acknowledged as one of the world's top five contributing authors to ASCE construction research (ranked third in the period 1997-2002), as reported in the Journal of Construction Engineering and Management article, Vol. 130, No. 3, 2004, page 437. Dr. Hegazy has two patents, a best paper award in 2011 from the Journal of Management in Engineering, ASCE and a top cited paper award from the Advanced Engineering Informatics Journal. He has consulted and advised a number of contractors and government organizations in Canada. He is the founder of OPTEAM Project Management Consultants Inc.

OGRA Academy for Municipal Asset Management

MARK KNIGHT

Mark Knight (PhD, P.Eng.) is Associate Professor and Executive Director at the Centre for Advancement of Trenchless Technologies located at the Department of Civil and Environmental Engineering, University of Waterloo. Dr. Knight has extensive experience in buried infrastructure materials, and condition assessment and renewal techniques. Over the past ten years, Dr. Knight has been actively involved in water and wastewater asset management related research with a number of municipalities, and proposed new and innovative techniques in the market place. He has also contributed to the InfraGuide project (best practices guide to municipal infrastructure) and published and presented on buried infrastructure management at a number of forums.

Dr. Mark Knight
Executive Director
Centre for the Advancement of Trenchless Technology
University of Waterloo
200 University Ave. West
Waterloo, ON N2L 3G1
Tel 519-885-1211 ext 36919
maknight@uwaterloo.ca

OGRA Academy for Municipal Asset Management

RIZWAN YOUNIS

Rizwan Younis (PhD) is Research Associate at the Department of Civil and Environmental Engineering, University of Waterloo. He is also the Technical Director for Education Program for Civil Infrastructure Professionals at the Centre for Advancement of Trenchless Technologies. Dr. Younis has been engaged in the construction and management of large-scale civil infrastructure systems (water, transportation and buried infrastructure) for more than 15 years. He has expertise in pipelines' condition assessment, deterioration modeling, infrastructure finance, risk analysis, optimization, and multi-criteria decision making. As an adjunct faculty, he has designed and taught the engineering and economic data analysis course at the University of Waterloo. Dr. Younis is actively involved in asset management research and has published and presented at Underground Infrastructure Management, NASTT's No-Dig show, Trenchless Technology Road Shows, and ASCE conferences.

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