PJ Materials Consultants Limited

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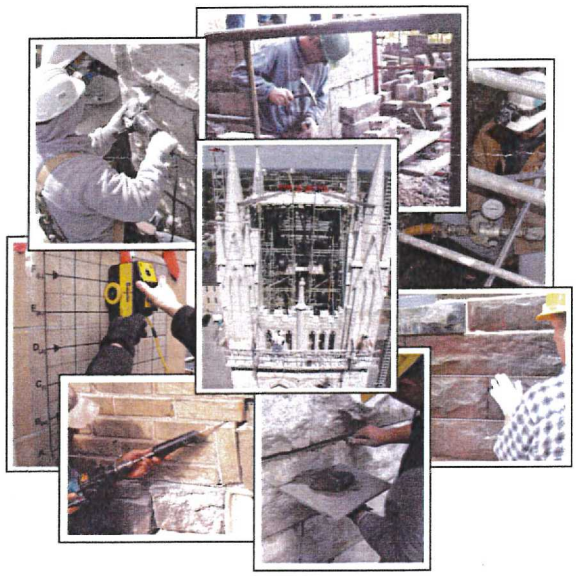
Professional Development Technical Training Courses

Masonry Restoration Projects ~ Case Studies

Heritage Structures & Older Buildings

A two-day course which features case studies of restoration projects that utilised practical strategies based on technical concepts

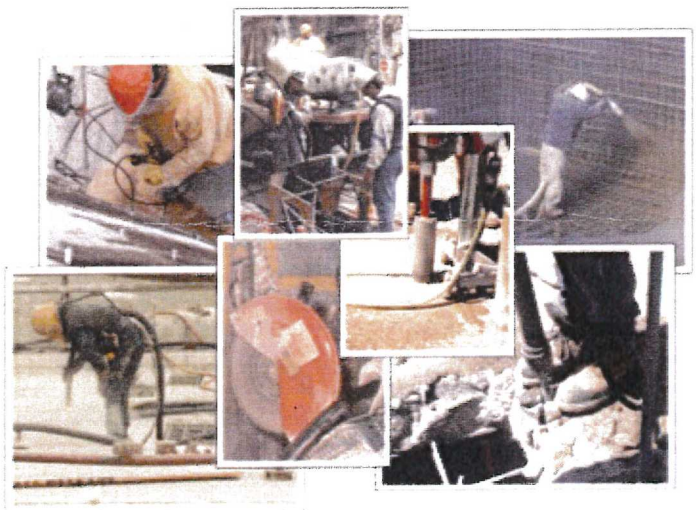


Monday & Tuesday, 4th & 5th April 2016

Concrete Repair and Protection

Getting it Right the Second Time!

A two-day course which focuses on the latest advances and state-of-the-art knowledge for the effective restoration of concrete



Monday & Tuesday, 11th & 12th April 2016

Holiday Inn ~ Hotel & Conference Centre
601, Scottsdale Drive
Guelph, Ontario

Masonry Restoration Projects ~ Case Studies

COURSE TOPICS ~ Monday/Tuesday, 4th & 5th April 2016

The Importance of Investigation, Monitoring and Cause Analysis ~ A compilation of mini-case studies will be used to illustrate where structured investigations formed a critical part of the restoration strategy development process. The studies will feature the use of non-destructive testing techniques - such as Ground Penetrating Radar to investigate hidden conditions - as well as movement and moisture monitoring devices, such as laser measuring equipment, displacement gages, and RH sensors.

Understanding Masonry Construction & How it Influences Durability ~ Several mini-case studies will be used to illustrate the considerable number of different masonry assemblies that can be encountered during condition assessments of buildings and structures. Also discussed will be how the transition from traditional mass masonry construction to modern cavity walls sometimes created buildings that suffered accelerated deterioration and damage due to inappropriate design and detailing.

Masonry Shelf Angle Remediation ~ This presentation features a case study of a medium-rise residential building which suffered from the inappropriate construction of shelf angles. The presentation will discuss the overall restoration scope of work and, in particular, how support of upper levels of masonry was provided while remedial work was carried out to correct the design deficiencies which had resulted in damage to the masonry.

Stabilizing, Repairing & Strengthening Cracked Traditional Masonry ~ Two case studies will be presented to illustrate techniques that may be considered when faced with restoring buildings suffering from severe cracking of masonry components. The causes of the cracking will be evaluated and how this influenced the development of restoration strategies. Below grade waterproofing and the use of core rubble grouting techniques will be presented, together with the installation of retrofit masonry ties and joint reinforcement.

Wall Anchoring, Reinforcing & Stabilizing Systems ~ Guest Presenter, Stephen Franks ~ This presentation utiises actual projects to evaluate the options and considerations that should be considered when faced with the need for stabilizing and/or strengthening heritage structures and older buildings that have suffered from damage caused by overload, differential movement, inner core rubble or collar joint deterioration, missing or corroding wall ties and anchors, etc. Available systems are discussed together with key factors that should be considered.

A Holistic Approach to Conserving Heritage Structures ~ A comprehensive study of how a 100-year old badly damaged art gallery and museum was restored to a durable condition will be presented from investigation to completion. The primary and influencing causes of the damage will be examined, together with some novel techniques that countered what had happened to the building during past restoration and renovation work. The importance of the investigation process and understanding how the masonry assembly can be vulnerable to original design factors will be presented, as well as lessons to be learned when renovation work includes a dramatic change to the gravity load distribution dynamics of a structure.

Cape Race Lighthouse - A History of Restoration ~ Constructed in 1905, Cape Race Lighthouse is believed to be the oldest reinforced concrete lighthouse in North America. Over the decades, it has undergone three major attempts at restoration, each failing to address the cause of the deterioration - with more damage being the result. The history of these attempts is reviewed by the presentation, together with details of the most recent comprehensive and novel restoration project which - hopefully - addressed both the cause and the result.

Considering Structural Aspects & Implications ~ Guest Presenter Gerry Zegarius ~ Damage, deterioration and defects within the exterior fabric of buildings and structures can often be caused by structural inadequacies. For example, a structural deficiency can sometimes cause cracking which subsequently leads to poor durability. For example, sometimes insidious corrosion of hidden metal components can be contributing to problems that may eventually become more serious. Case studies will be used in this presentation to evaluate some of the concerns that should be considered when faced with the potential poor "structural health" of heritage structures and older buildings.

Restoration of Fredericton City Hall ~ Built in 1876, Fredericton City Hall is a National Historic Site. Over the years, restoration work had been carried out to restore cracked masonry - but the cracks either reopened or continued to occur at other locations. This case study will comprehensively review details of the investigation phase which identified several influencing factors that caused the cracks, as well as the restoration work which addressed the causes and restored the building to a durable condition.

A Tale of Two Towers ~ This presentation highlights the award-winning restoration of a National Historic Site in Guelph, Ontario - Church of Our Lady Phase I - Tower Restoration project. Deterioration mechanisms will be discussed, as well as the condition assessment process. Also examined will be the way in which the investigations assisted in the development of a restoration strategy to address the serious damage that had occurred - despite major restoration work carried out just 15-years before.

A Tale of One Tower! ~ The concluding case study highlights major restoration work recently carried out on the Dingle Memorial Tower in Halifax, Nova Scotia, to address the extensive damage that had occurred to both the interior and exterior of the stone tower. The causes of the damage will be discussed, together with the reasons why the masonry had continued to crack - even after previous restoration work had been carried out some years before. The presentation will also highlight the combination of conventional and novel restoration materials and techniques that were used to restore the tower to a durable condition.

COURSE TOPICS ~ Monday/Tuesday, 11th & 12th April 2016

What are the Problems? ~ This opening topic sets the scene by reviewing the major problems that affect the performance of concrete structures. Typical failure and deterioration mechanisms are examined together with their potential impact on the design of restoration strategies.

Cause Analysis ~ In this topic actual case studies are used where the full cause of damage or deterioration was not initially understood. The selected case studies will be used to illustrate the need to investigate the original cause - rather than just the result and the extent of the damage or deterioration. The case studies will also highlight the need to provide ongoing protection to the surrounding concrete, as well as the areas undergoing repair.

Concrete Repair Failures ~ The repair and protection of concrete may appear to be a relatively simple topic. However, there is much evidence that simple repairs can sometimes turn out to be complex failures. In this topic, case studies are used to illustrate repair strategy failures due to inappropriate materials selection, inadequate design and poor workmanship. How further failures can be avoided are also discussed.

Understanding the Investigation Process ~ Key elements of condition assessments, investigation and monitoring programs, together with procedures, testing methods and techniques required to implement a repair and protection strategy - including the latest non-destructive testing methods, such as impact echo, ground penetrating radar, I.R. thermography and remote monitoring ultra lightweight aerial vehicles. Case studies will be used to highlight how an effective investigation can be invaluable for the development of a repair and protection strategy.

Designing a Repair and Protection Strategy ~ The key factors that should form the basis for an effective repair and protection strategy are examined in this topic - together with some of the options that should be considered during the development of strategies.

Repair & Protection Strategies - and their effect on electro- chemical compatibility ~ A variety of different techniques can be used for the repair and protection of concrete structures. However, the effect that each can have on residual corrosion activity is often not considered and the restored structure sometimes continues to deteriorate - often at a faster rate! In this topic, the various systems that are available are evaluated and their impact on the achievement of electrochemical compatibility is examined.

Modern Strengthening Techniques for Concrete Structures ~ The latest developments in materials and techniques for strengthening concrete - including exterior post-tensioning, fabricated jackets, fibre reinforced composite wrapping, supplemental elements, etc. Examples of where these new materials have been used and the benefits they provided will also be reviewed.

What are the Best Techniques for Concrete Removal and Substrate Preparation? ~ Regardless of the sophistication of the repair materials to be used, a basic essential for ensuring the long-term success of any repair project is the effective removal of deteriorated concrete. In this topic, the various types of equipment and the techniques for concrete removal and substrate preparation will be discussed.

Substrate Preparation and Bonding Agents - are they really necessary? ~ Experts' opinions often vary regarding the degree and type of substrate preparation that is required before concrete repair. Opinions also differ regarding whether bonding agents are necessary or, if they are to be considered, which type should be used. In this topic, some of the conflicting theories are examined and the concepts explained. The various types of materials that are used as bonding agents will be discussed, together with their benefits and disadvantages. Test methods will also be reviewed.

Spraying and Forming Repairs - what have we learned? ~ The latest materials and techniques for spraying and forming repairs are reviewed together with a summary of good and bad practices. Dry mix, wet mix and low pressure spray techniques will be included, as well as techniques which use gravity pouring and low pressure grouting. Some of the mistakes that have been made in the past - and are sometimes still made - will be reviewed, as well as the latest advances and trends.

Restoration Case Studies ~ Examples and details of projects that used many of the repair and protection principles discussed over the course of the two days. The projects include bridge bearing pad replacement, gravity pour repairs, low pressure grouting, underwater grouting repairs, column repairs and concrete slab on grade removal and replacement.

Room Reservation Options
Call direct: 519-835-0231
Toll free: 877-660-8550

COURSE LOCATION
Holiday Inn ~ Hotel & Conference Centre
601 Scottsdale Drive, Guelph, Ontario, N1G 3E7

Parking is free
Room rate: $114.99
(please confirm course attendance when booking)

To Register, please see insert Registration Form or register on Line at pjmc.net ~ What's New Page

Professional Development Course Information

COURSE DESCRIPTIONS

Masonry Restoration Projects ~ Case Studies: This course has been developed to provide examples of critical factors that can influence the successful restoration of heritage structures and older buildings. Projects will be visually presented as case studies to highlight key technical and practical aspects. Sometimes the presentations will use an individual project - from the investigation stage through to completion of the restoration - and sometimes a number of abbreviated (mini) case studies will be used to cover specific factors. The projects include institutional, residential and municipal buildings, churches, a masonry memorial tower, museums and more - many of them National Historic Sites. A variety of different types of masonry construction and restoration methods will be illustrated by the case studies.

Concrete Repair & Protection: Over the last decade, professional repair and protection of concrete structures has become recognized as a "stand alone" discipline requiring specialist knowledge and expertise. This course has been developed to cover the latest advances in materials and techniques and the current state-of-the-art. The presenter's own experiences as a concrete materials consultant and a "troubleshooting" investigator will be used for many of the topics that will be covered over the two days. Various concrete deterioration mechanisms will be identified, together with the way in which failure to understand them can impact on the development of a repair and protection strategy. Actual examples will be used to highlight failures, defects or deterioration that can often be caused by the selection of incorrect materials and techniques. Additionally, the program will examine the many advances in technology that have occurred over recent years, together with how they can provide considerable benefit to the concrete repair and protection industry - and ensure that we get it right the second time!

WHY YOU SHOULD ATTEND

In today's business world, reducing risk and avoiding liability are key factors that should be of great concern to everyone. Many of the topics covered within the courses have been designed to facilitate learning from the presenter's own experiences using actual case studies or they are based on sound principles and practices.

SPECIAL FEATURES

The topics will be presented using digital slide projection with extensive use of photographs, charts and graphs. Educational information will be provided without commercial content.

MANUAL & USB FLASH DRIVE ~ A purpose-designed manual for the course ~ containing comprehensive educational information, photographs and technical data ~ will be provided to each registrant, together with a USB flash drive containing the course binder in pdf format. The cost for both the manual and memory stick are included in the registration fee.

CERTIFICATE OF ATTENDANCE ~ A Certificate of Attendance will be provided, which may be used for applying for Professional Development Learning Hour Units where appropriate.

INTERACTIVE TECHNICAL WORKSHOP ~ At the end of the second day of each course there will be an Interactive Workshop Session, at which time attendees will be invited to share their own experiences.

BREAKFAST & LUNCH ~ A hot breakfast and lunch will be provided on each day ~ the cost of which is also included in the registration fee. Registrants are encouraged to use this opportunity to meet and greet other participants and share experiences.

REGISTRATION & SCHEDULE

Registration will take place between 8.00 and 8.30 am on the first day of each course. (Please arrive early for your breakfast) Presentations will be between 8.30 am and 12.00 noon and between 1.00 pm & 4.30 pm each day. Coffee & Conversation breaks will be between 10.00 am & 10.30 am and between 3.00 pm and 3.30 pm

Course Registration

Please photocopy this form and complete for each registrant. Space is limited, so please register early ~ late registrations may be faxed or emailed, with payment mailed or presented at registration

Please make your cheque payable to:
PJ MATERIALS CONSULTANTS LTD
and mail to:
11 Wagoners Trail, Guelph, Ontario N1G 3M9
(Please note that credit card payments are not available)

SINGLE COURSE REGISTRATION FEE
$725.00 + 13% HST ($94.25) = $819.25
Fee includes conference materials, hot breakfasts and lunches

GROUP DISCOUNTS FOR SINGLE TWO-DAY COURSE
5% Discount ~ when two people from the same organization register *at the same time*
10% Discount ~ when three people from the same organization register *at the same time*
15% Discount ~ when four or more people from the same organization register *at the same time*
NOTE: The above discounts cannot be combined ~ Lowest qualified discount only will apply
(Examples of registration fee totals are shown below)

FURTHER DISCOUNT FOR ATTENDING BOTH COURSE
$50.00 per registrant may be deducted for attending both courses
(ie: Second course is $675.00 per person + 13% HST ($87.75) = $762.75 per two-day course)

OVERNIGHT ACCOMMODATION
Please note registrants are responsible for making their own arrangements for accommodation
Holiday Inn have block booked rooms at a rate of $114.99 per night.

All course information - including Registration Forms that may be completed on your computer and emailed - may be downloaded from the "What's New" page of PJ Materials Consultants Web Page on
http://www.pjmc.net

Course Registration Form

Dr.☐ Mr.☐ Mrs.☐ Ms.☐ _____ (Last Name) _____ (First Name) _____ (Initials)

Mailing Address: Business☐ Residence☐ _____

_____

Postal Code: _____ Business Phone: _____

Fax: _____ Email address: _____

Employer: _____ Position: _____

I will attend with ___ other person/s
For two or more registrations, fees need only be detailed on one completed form

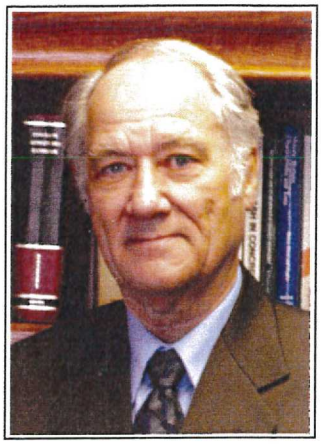
I will attend the following course(s)
Masonry Restoration Projects ☐
Concrete Repair & Protection ☐

Group Discounted Registration Fee Calculations (for one course)
2 people ~ 2 x $725.00 x 95% = $1,377.50 + 13% HST ($179.08) = $1,556.58
3 people ~ 3 x $725.00 x 90% = $1,957.50 + 13% HST ($254.48) = $2,211.98
4 people ~ 4 x $725.00 x 85% = $2,465.00 + 13% HST ($320.45) = $2,785.45

Deduct $50.00 + $6.50 HST = $56.50 per registrant per course for attending an additional two-day course

Total = $_____

Main Presenter



Paul Jeffs

Paul Jeffs (PJ Materials Consultants Limited) has a career spanning over 40 years within the construction industry and has experience from around the world.

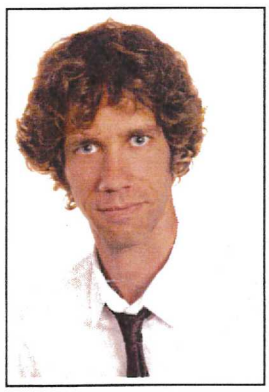
Prior to 1989, Paul was employed for almost 20 years by a UK-based multi-national group. In 1976 he transferred from England to the Middle East, living for three years in Bahrain and Iran. During this time he was involved in many construction projects throughout the Arabian Peninsula, including Bahrain, Saudi Arabia, Kuwait, United Arab Emirates and Qatar.

In 1979 he moved to Japan and established a regional base from where he became involved in projects throughout South East Asia and the Far East, including Japan, the Philippines, the Republic of Korea, Hong Kong, Taiwan, Indonesia, Singapore and Malaysia. Prior to emigrating to Canada in 1983, he was involved in construction projects in South Africa and India.

Paul provides professional technical training in Ontario through PJ Materials Consultants Limited and across other Provinces within Canada through the Continuing Technical College of Dalhousie University. Those who have attended include Engineers, Architects, Authorities, Contractors, Materials Suppliers, etc. He has also been an instructor for the Professional Development Centre of the University of Toronto providing course modules and special event courses as part of their Building Science Certificate Program. Paul has also presented for many organizations, such as the Capital Projects & Design ~ Precinct Properties Branch of the Legislative Assembly of Ontario, the National Capital Commission, the Canadian Society for Civil Engineering, the Canadian Dam Association and the Ontario Building Envelope Council (Toronto & Ottawa Chapters).

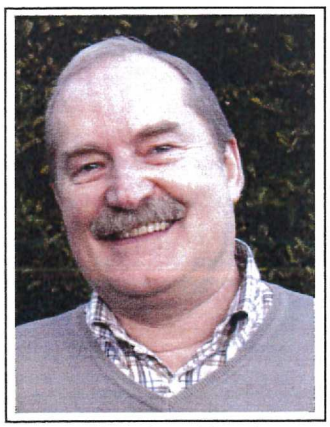
Paul has been a guest lecturer at several Canadian universities, he has authored and presented papers at many national and international conferences and has been a regular presenter of technical training courses in the Middle East. He has also written many technical articles for North American magazines and journals.

Guest Presenters for Masonry Restoration Projects Course



Gerry Zegerius

Gerry Zegerius, Tacoma Engineers ~ Gerry has over 10 years of experience in the construction industry, from both sides of the blueprint. Beginning his career as a carpenter, he comes equipped with a practical mindset to all of his projects. Following his experiences as a tradesperson, Gerry earned a degree in Civil Engineering with a focus on structures from the University of Waterloo. His work experience over the last 5 years as a key member of the structural investigations team at Tacoma Engineers includes many local historical landmarks and buildings. His grasp of technical solutions and mathematical methods, coupled with his passion and enthusiasm for structures of heritage significance, have enabled him to play an integral part on most of the heritage projects successfully completed during his time with Tacoma Engineers. Gerry is an active member of several local heritage groups, including the local branch of the ACO, INTBAU (International Network for Traditional Building, Architecture, and Urbanism), and ICOMOS.



Stephen Franks

Stephen Franks, Blok-Lok Limited ~ Stephen has more than 30 years experience in the construction industry. Graduating as an engineer in England, Stephen spent four years in the Middle East where he established a formwork rental company, and almost twenty years in South East Asia where his business evolved into a design and build construction company specializing in medium rise condominiums, and high rise commercial and industrial buildings. Since 2002, Stephen has been working with Blok-Lok Limited to develop their range of solutions for the restoration market. Drawing on his vast experience of problems encountered during construction, and using his inherent pragmatic approach, Stephen has been responsible for developing economic solutions to the many challenges encountered in a wide spectrum of buildings from historical restorations, to veneer stabilization of hurricane damaged facades.