
PJ Materials Consultants Limited

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Condition Assessment, Investigation, Restoration and Protection of Concrete & Masonry Structures



**Specialist Consulting Services for the Construction,
Investigation, Restoration and
Protection of Concrete & Masonry Structures**



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Paul Jeffs
President

Based in Guelph, Ontario, Paul Jeffs is an independent consultant who since 1989 has specialized in providing technical advice and services for the design, construction, restoration and protection of concrete and masonry structures. He has considerable experience with investigations of concrete and masonry structures. Prior to forming PJ Materials Consultants Limited he was employed for over 25 years within the construction industry around the world. 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 Gulf, including 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, including the Philippines, the Republic of Korea, Hong Kong, Taiwan, Indonesia, Singapore and Malaysia. Prior to emigrating to Canada in 1982, he was involved in construction projects in South Africa and India

Paul currently serves on the Canadian Standards Association Technical Committee (Associate) and the High Performance Sub-Committee for New Parking Structures (CAN/CSA S-413); he served on the CSA 266 series of Admixture standards, and is a past director of the Concrete Restoration Association of Ontario. He also served as a member of the Technical Advisory Committee to the Ontario Ministry of Housing for the deterioration and repair of existing parking structures, was a member of the Ontario Ministry of Transportation technical advisory committee for the development of restoration standards and is a current member of the National Research Council's Working Group on Repointing Mortars. He has provided materials related expertise as a consultant for numerous industries.

Paul provides courses across Canada on such topics as concrete practice and technology, concrete and masonry structure condition assessments, concrete repair and protection, the restoration of heritage and masonry structures and the construction of concrete slabs on grade. He also regularly presents public and in-house courses in the Middle East. Paul has been a guest lecturer for several Canadian universities, the Canadian Society for Civil Engineering, the Canadian Dam Association, a speaker at many conferences and has authored or co-authored numerous technical articles.

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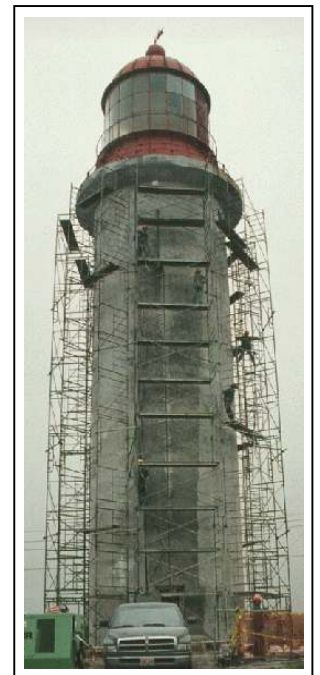
CONSULTING SERVICES

The projects detailed below are just two examples of restoration projects for which PJ Materials Consultants were the Consultants
(Please check out our web site for additional examples)

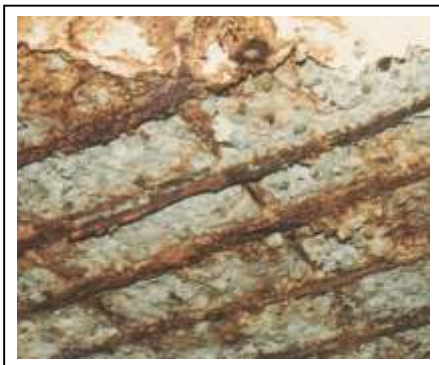
Cape Race Lighthouse

Constructed in 1905 and situated in Newfoundland, Cape Race Lighthouse is the oldest reinforced concrete light-tower in North America. The tower underwent three major attempts at restoration in 1937, 1969 and 1983 - all of which failed to address the original causes of the accelerated deterioration and damage. Instead, the tower continued to suffer the effects of cracking, freeze-thaw damage and corrosion of embedded reinforcing steel.

In 1996, PJ Materials Consultants carried out a detailed investigation of the tower's condition and devised and implemented a new restoration strategy on behalf of the Canadian Coast Guard. The restoration work, which was completed in 2000, included the installation of joints to better accommodate differential movement, the installation of helical stainless steel masonry ties, the repair of deteriorated concrete and the application of a breathable, waterproof coating. The strategy also included a monitoring programme which determined the appropriateness of coating the concrete after a period of forced drying.



Underground Concrete Vault Restoration



More than 40 underground reinforced concrete vaults housing steam distribution control equipment had suffered from the ingress of de-icing salt laden water. In some cases the 12-in thick walls had deteriorated the full thickness due to severe corrosion of the embedded reinforcing steel - in other vaults over 50% of the 12-in thick roof slabs had been lost.

The major problem was how to repair the concrete from within the vaults, as carrying out complete removal and re-construction work within the busy city streets was not desirable - as well as the fact that several utility services were buried in the backfill above the vaults.

PJ Materials Consultants devised a strategy which provided for permanent support of the roof slabs and low-pressure grouting techniques to repair the deterioration using a highly fluid but durable concrete mix - followed by protection of all the concrete using a penetrating sealer and techniques that reduced the effects of water infiltration. A specialist contractor was selected after a pre-qualification program and most of the disruptive work was carried out during evenings and night-times.

Consulting Services

- **Investigation & Analysis**

- Troubleshooting
- Cause Investigation
- On-site Testing
- Laboratory Analysis

- **Recommendations**

- Materials
- Methods
- Applications



- **Project Management**

- Budget Review
- Specifications & Bid Documents
- Contract Documents
- Inspection & Testing

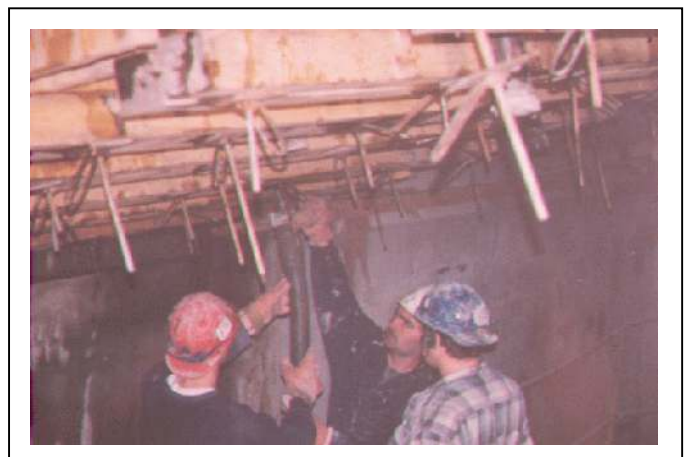
- **Specialist Services**

- Expert Testimony
- Dispute Resolution
- Insurance Investigation

- **Specializing in:-**

- Construction Materials Technology
- Concrete Repair & Protection
- Durable Concrete Mix Design
- Restoration of Masonry Structures
- Restoration of Heritage Structures
- Special Materials Technology
- Concrete Slabs on Grade
- Specialist Grouting Applications

Structural Review, Analysis & Engineering and
Specialist Computer-aided Testing and Monitoring
Services can be supplied through associated companies



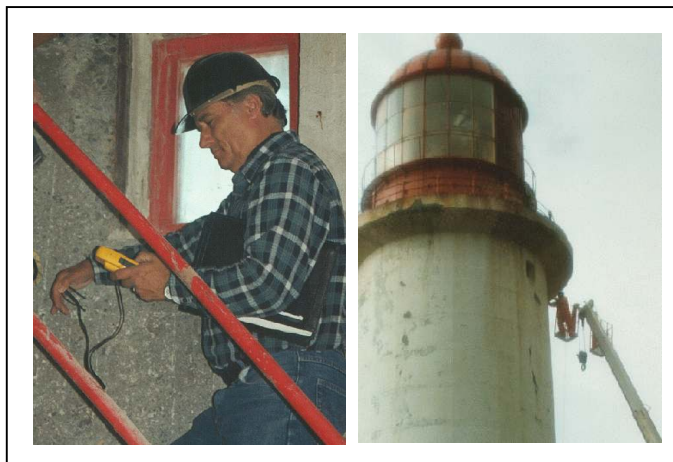
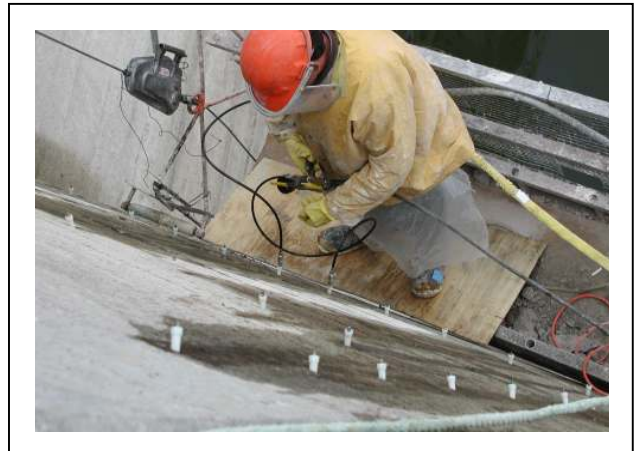
Technical Training



Special seminars and training courses, which feature the design, specification, construction, protection and restoration of concrete and masonry structures, are provided across Canada in association with the Continuing Education Division of Dalhousie University and throughout the Middle East with Promis Project Management Engineering Systems, Dubai, United Arab Emirates. Courses in other countries are available by arrangement.

For information regarding the latest courses please visit our web site at www.pjmc.net and click on "What's New".

- **Technical Training Courses**
- **Technical Workshops and Seminars**
- **In-House Presentations**
- **On-Site Training**



- **Customized Courses**
- **Conference Presentations**
- **Corporate Seminars**

All topics are presented using digital projection and customized manuals are provided to all attendees.

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TECHNICAL TRAINING COURSES

The courses detailed below are offered as public courses - or they can be provided
as customized in-house courses

(Please check out our web site for future course topics, dates and locations)

**Concrete Practice
& Technology**

Provided as one-day
separate modules up
to five-days total



Designing, Specifying and Constructing
Concrete Slabs on Grade

A one or two-day
course



**Investigating
& Monitoring
Concrete Problems**

A one or two-day course



Designing & Implementing Effective
Strategies for
**Concrete Repair
& Protection**

(Getting it Right the Second Time!)

A two-day course



**Modern Concrete
Materials & Practices**

Mistakes, Mis-Uses
& Misconceptions

A two-day course



**Condition Assessment
of Concrete Structures**

Maintenance, Monitoring, Investigation
and Testing of Concrete Structures

The second two course
in a series



**Restoration,
Reconstruction &
Maintenance of
Masonry Structures**

A two-day course



The Latest Materials, Techniques
& Practices for the
**Restoration &
Conservation of
Heritage Structures**

A two or three-day course



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Partial List of Clients

PJ Materials Consultants are proud to have served the following companies and organizations

Halifax Regional Municipality	Windsor Mold Company, Ontario
CN Rail, Toronto	Collins & Aikman, Ingersoll, Ont
City of Toronto,	Carlton Group, Sarnia, Ont
Region of Peel, Brampton, Ontario	Place Des Jardins, Montreal
Royal Bank, Montreal	Marathon Realty, Toronto
Public Works Canada, Hull, Quebec	Westcoast Energy, Fort St John, B.C.
Toronto Real Estate Board, Don Mills	E.S. Fox Ltd., Niagara, Ont
Toronto District Heating Corporation	Dubrick Property, Kitchener, Ont
Consultants BPR, Quebec	Graham Construction, Saskatoon
M.S. Yolles & Partners, Toronto	Laskey Properties, London, Ont
Inzola Const'n (1976) Ltd., Brampton	N.B. Dept of Transportation,
County of Lambton, Ontario	Mount Allison University, NB
Atlas Specialty Steel, Welland, Ontario	Autoport Ltd., Halifax
Strait Crossing Inc., P.E.I.	Canadian Coast Guard, NF
Kimberley-Clark, Terrace Bay	Harbour Station, Saint John, NB
National Capital Commission, Ottawa, Ont	Sze Straka, Waterloo, Ont
Ellis-Don Construction, London, Ont	Design Alaska, Fairbanks, Alaska
Unit Part Company, Oklahoma City	Saint Louis Church, Waterloo, Ont
Beaverbrook Art Gallery, Fredericton, NB	Arthur Arseneau Architect, Sackville, NB
Duschenes & Fish Architects, Montreal	Architecture 2000, Moncton, NB
Omers Realty Management Corporation	Stackpole Limited, Stratford, Ont
Avenor Inc., Gatineau, Quebec	Professional Arts Building, Moncton, NB
Regional Municipality of Ottawa-Carleton, Ont	SaskWater, Saskatchewan
Grand River Conservation Authority, Ontario	McCormick Rankin, Kingston, Ontario
Beaverbrook Art Gallery, New Brunswick	B.C. Ministry of Transportation

For examples of past projects, please
visit our web site on www.pjmc.net
and click on "Case Studies"



For more information, please contact:-

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