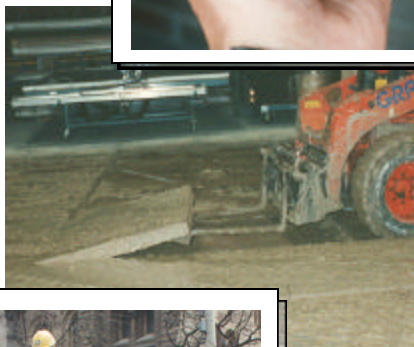


PJ Materials Consultants Limited

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

Please Visit Our Web Site:
<http://www.pjmc.net>

Technical & Educational Consulting Services



Specialist Consulting Services for the Restoration and Protection of Concrete & Masonry Structures



Paul Jeffs
President

Paul Jeffs is a member of the American Concrete Institute and the Canadian National Research Council's Working Party on Repointing Mortars. He is a past director of the Concrete Restoration Association of Ontario and served as a member of the Technical Advisory Committee to the Ontario Ministry of Housing for the deterioration and repair of existing parking structures. He has also served as a member of the Canadian Standards Association's Technical Committee for Parking Structures (Advisory Committee) and Concrete Admixtures.

Paul is a member of the Canadian Society for Civil Engineering's Technical Committee on the Restoration of Canadian Infrastructure and Co-Chairman of the sub-committee working on repair and protection materials. He was a member of the Ontario Ministry of Transportation's Technical Advisory Committee which develops provincial standards specifications for concrete restoration.

Paul is a lecturer for the Continuing Technical Education Division of Dalhousie University and has presented for many organizations, such as the National Capital Commission, the Canadian Dam Association, the Department of National Defence and the Canadian Society for Civil Engineering. He provides training courses and technical seminars on such topics as Restoration, Reconstruction & Maintenance of Masonry Structures; Restoration & Conservation of Heritage Structures & Older Buildings, Modern Concrete Materials & Practices, Concrete Repair & Protection; and, Designing, Specifying & Constructing Concrete Slab on Grade. He has been a guest lecturer at universities, he has authored and presented papers at many conferences and is a regular presenter of technical training courses in the Middle East.

Prior to forming PJ Materials Consultants in 1989, Paul Jeffs was employed for over 25 years within the construction industry around the world. For the last eighteen years of this time he was employed by a multi-national group headquartered in the United Kingdom. In 1976 he transferred from England to the Arabian Gulf, living for three years in Bahrain and Iran. During this time he was involved in many 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.

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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 website for additional examples)

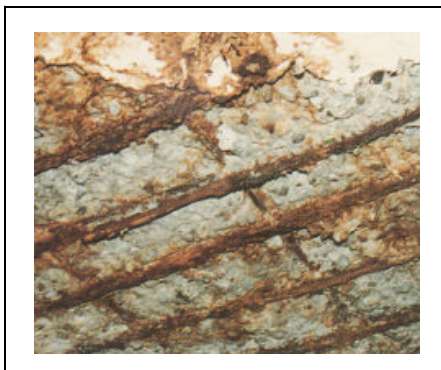
Cape Race Lighthouse

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 program 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 slab 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



- **Technical Training Courses**
- **Technical Workshops and Seminars**
- **In-House Presentations**
- **On-Site 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 website at www.pjmc.net and click on "What's New".



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

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



Specialist Consulting Services for the Restoration and
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Partial List of Clients

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

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

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