

2024 TECHNICAL EXCELLENCE AWARD

Dr. Marolo Alfaro, Ph.D., P.Eng.



Dr. Marolo Alfaro, a geotechnical engineering professor, has made significant contributions to the field. His work spans geosynthetics, ground improvement, and permafrost engineering. Marolo's legacy extends to stabilizing Winnipeg's riverbanks and protecting the city's century-old aqueduct from ground vibrations.

His inventive contributions include developing adaptive methods for Northern infrastructure resiliency, understanding and adapting strategies to address climate-induced permafrost degradation, examining the instability of earth fill dams at hydroelectric generating stations, improving the design, construction, and maintenance procedures of road embankments built on peat foundations and providing design and construction guidelines for rockfill columns for Winnipeg's riverbanks.

Marolo's creative application of engineering and geoscientific knowledge has transformed Arctic transportation infrastructure. His groundbreaking methods, tested on the Inuvik-Tuktoyaktuk Highway, address unique challenges such as: Wicking Geosynthetics and Geofoam-Geogrid Composites, Unprecedented Arctic Highway, and using an innovative approach of combining geofoam insulation and geogrid reinforcement to prevent ice-wedge thaw induced embankment collapse.

Marolo's innovative adaptation methods address the impact of climate warming on northern Canada's transportation infrastructure. These advancements ensure equitable access to resources and reliable, cost-effective services for economic and social development. His research strengthens Canada's Arctic presence by providing an all-season road to the Arctic coast. These projects enhance Canada's capacity to manage permafrost regions amid a changing climate, advancing both research and practice in cold regions engineering.

In southern Canada, Marolo's work yields cost savings in construction and maintenance while enhancing safety and structural integrity. His rockfill column methods stabilize riverbanks, safeguarding critical buried structures like aqueducts. Additionally, his research on clay seals informs safe decommissioning and closure of underground nuclear fuel waste repositories.

Marolo chairs the Canadian Geotechnical Research Board, driving research in geotechnical and geoscience fields. He served as Vice-President of the International Geosynthetics Society (USA and Canada Chapter) and contributed to the Canadian Geotechnical Society.

In recognition of his outstanding knowledge and visionary technical contributions to the fields of engineering and geoscience, Engineers Geoscientists Manitoba is pleased to present the 2024 Technical Excellence Award to Marolo Alfaro, Ph.D., P.Eng.