



Concrete Pavement Mastery: Design, Maintenance, Repair, Testing and Joint Integrity

MEETING AGENDA

I.	REGISTRATION	8:30am – 9:30am Breakfast
II.	Rigid Pavement Assessment and Design for Rehabilitation, Reconstruction and New Construction	9:30am – 10:45am Presented by: M. Alauddin Ahammed, Ph.D., P.Eng.
III.	BREAK	10:45am – 11:00am
IV.	Concrete Joints Deteriorations: Causes and Mitigations	11:00am – 12:00pm Presented by: Tim J Smith, P.Eng., MSc. Eng.
V.	LUNCH BREAK	12:00pm – 1:15pm
VI.	Sustainable Concrete in the Pavement Industry	1:15pm – 2:15pm Presented by: Gregory E. Halsted, P.E.
VII.	BREAK	2:15pm – 2:30pm
VIII.	Concrete Testing: Challenges and The Effect of Improper Testing on The Concrete Pavement Industry	2:30pm – 3:30pm Presented by: G. Terry Harris Sr., FACI
IX.	Closing Remarks	3:30 – 4:00pm

Rigid Pavement Assessment and Design for Rehabilitation, Reconstruction and New Construction.

(M. Alauddin Ahammed, Ph.D., P.Eng.)

Summary: Manitoba has been using the AASHTO 1993 design guide procedure for the design of jointed reinforced and plain concrete pavements. The AASHTO 1993 design recommended design inputs resulted in a thick layer of portland cement concrete (PCC) than that generally considered to be adequate. Available other alternative pavement design software/guides also could not provide satisfactory outcomes for Manitoba. As such, the thickness of a PCC layer had been typically selected based on local experience and comfort, regardless of the outcomes from the pavement design software/guides. The selected PCC layer thickness varied from 250 to 300 mm for jointed plain concrete pavement (JPCP), 200 to 250 mm for composite, and 200 mm for jointed reinforced concrete pavement (JRCP).

Over the last three decades, Manitoba conducted extensive research on PCC pavement performance to refine the design and construction practices and to develop new materials and construction specifications. The findings from these research works facilitated the development of new design inputs for the AASHTO 1993 design guide. This new design inputs resulted in a reasonable variation of design outcomes for the variation of design inputs based on site specific traffic loads, base/subbase quality and subgrade stiffness for PCC rehabilitation, reconstruction and new construction projects. This presentation will provide an overview of new design inputs and pavement assessment practices, demonstrate the design of jointed plain concrete pavement (JPCP) and provide an overview PCC pavement rehabilitation practices and design.



Dr. Alauddin Ahammed, Ph.D., P.Eng., is a registered Professional Engineer in Manitoba. He earned his Ph.D. degree in Civil Engineering from the University of Waterloo, Ontario. Dr. Alauddin possesses over 27 years of working experience with government entities, contractors and consultants in Bangladesh, Saudi Arabia and Canada. He is currently working with Manitoba Department of Transportation and Infrastructure as the Manager of Pavement and Materials Engineering Section. Dr. Alauddin's professional expertise includes pavement and materials design, research, investigation and analysis, construction and materials specifications development, construction inspection and quality assurance, seasonal axle weight management, pavement management, technical supervision, project management, etc. He developed and recently released the first public version of the Manitoba's Pavement Assessment and Design Manual.

Concrete Pavement – Evaluation, Maintenance and Repairs

(Tim J Smith P.Eng., MSc. Eng.)

This presentation will review the following:

- Understanding and identifying typical distresses that occur in concrete pavements
- Pavement Evaluation process to determine distresses and causes of defects
- Identify how distresses can be prevented or mitigated through design, construction and proper maintenance
- Understand the maintenance actions required for concrete pavements to address the various deficiencies (including precast and fast track concrete for slab replacement)
- Identify some key technical resources to help with pavement preservation



Tim J Smith, P.Eng., MSc. Eng., is the Senior Technical Director, Infrastructure and Specifications for the Cement Association of Canada (CAC) responsible for providing technical expertise and promotional support to internal and external customers on cement and concrete products related to transportation infrastructure. Tim is a technical expert on concrete pavements, roller compacted concrete pavement, engineered soils and brownfield remediation.

Tim has also worked for Lafarge Canada, New Brunswick Department of Transportation, Marine Atlantic, Englobe and Stantec Consulting Ltd.

Additionally, Tim is a member of several technical committees, including the Transportation Association of Canada, ACI, Canadian Airfield Pavement Technical Group (CAPTG) and a member of the Ontario Good Roads Association – Municipal Concrete Liaison Committee.

Tim holds a B.Sc. Eng. and M.Sc. Eng (Transportation) from the University of New Brunswick..

Sustainable Concrete in the Pavement Industry

(Gregory E. Halsted, P.E.)

Summary: Despite common belief, concrete is a very sustainable building material, but its ease of construction and widespread use certainly contributes to carbon emissions. To become even more sustainable, the North American cement and concrete industries are developing and implementing sustainable materials and practices. This presentation will focus on these initiatives and report on progress and what we can expect in the future.



Gregory E. Halsted, P.E., is a Senior Director for Local Paving with the National Ready Mixed Concrete Association (NRMCA). He is responsible for increasing the paving market share for ready mixed concrete products through promotion, design, technical services, and construction activities at the local, regional, and state level.

Halsted has nearly 30 years of experience in the use of cement and concrete in the pavements and geotechnical industry. He has knowledge of planning, design, materials testing, construction, and sustainability; has participated in numerous training and construction workshops involving State and Provincial transportation agencies, Public Works departments, Universities, material suppliers, and consulting firms; and has authored several publications related to cement and concrete construction. He currently serves as a voting member of several Transportation Research Board (TRB), American Concrete Institute (ACI), and ASTM International (ASTM) standing technical committees.

Halsted holds a Bachelor of Science in Civil Engineering Technology from Southern Polytechnic State University and is a licensed engineer in the state of Georgia. Prior to joining NRMCA, he held civil and geotechnical engineering positions with the Portland Cement Association, the Concrete Reinforcing Steel Institute, and the Georgia Department of Transportation.

Concrete Testing: Challenges and The Effect of Improper Testing on The Concrete Pavement Industry (G. Terry Harris Sr., FACI)

Summary: Improper Testing in the concrete industry has long been a challenge and has impacted the industry additional cost, quality and sustainability. In this presentation we will examine the standards that we all should live by and the impact of failing to follow each aspect of the standard. Case studies will be used to highlight the key failures in testing.



G. Terry Harris Sr., FACI, is the Senior Director, Technical Service & Ductilcrete Slab Systems at Chryso Inc – Formerly GCP Applied Technologies. Terry started in the concrete industry in 1979 and has enjoyed 45 years of experience with ready mix, precast, masonry, testing labs and admixtures. Terry is an active participant in ACI, ASTM, NRMCA, NPCA, ACPA, ACI Concrete Innovation Council and the RMC Foundation Advisory Council. Past Chair of ACI Certification Committee, ACI 305 Hot Weather and the Fellows Nominating Committee. And past member of ACI Board. Current Chair of ASTM C09.23.03, Chemical Admixtures and Chair of ACI 212 Chemical Admixtures. Terry is a member of numerous ASTM, ACI, NPCA committees and the NRMCA

RES Committee. Terry has a degree in Concrete Technology from Daytona State College and is an ACI Fellow.

Terry has been married to Amy for 44 years, they have 4 sons, 15 grandkids. Terry and Amy have both been very active in children's ministry through their local church.

Company: Chryso Inc – Formerly GCP Applied Technologies (27 Years)
Title: Senior Director, Technical Service & Ductilcrete Slab Systems

ACI Committee Membership:

- C601 New Certification Programs
- C620 Laboratory Certification
- 211 Proportioning
- 212 Chemical Admixtures (Secretary)
- 229 Controlled Low Strength
- 232 Flyash in Concrete
- 237 Self Consolidating Concrete
- 305 Hot Weather Concrete
- Concrete Innovation Council

ASTM:

- C0923 Chemical Admixtures – Chair
- C0924
- C0940
- C0945

NRMCA:

Research, Engineering & Specification Committee
2024 Winner of the NRMCA Shydrowski – Turner Materials Leadership Award

NPCA:

Research & Engineering Committee