



Flexible Pavement Design - Principles & Practices

as of May 20, 2017

Venue to be advised

A one day short course ideal for road operatives, par technical personnel, consultants and contractors. This course is ideal for those involved in non-highway roads engaged primarily in local government work.

Course Overview (1 Day) - 2018

(\$995.00 regular - \$850.00 IPWEA members incl. GST)

(Group discounts for 5 or more available)

Intended to inform on the basic principles & practices associated with flexible pavement design, the course program will closely follow the content in the appropriate Chapters of the Austroads Guide to Pavement Technology - Part 2: Pavement Structural Design, a principal reference for delegate attending the course.

The materials content will however cover more information than is in the current Guide, as the selection of materials is critical to producing a road/pavement design that will deliver both structural and functional performance. The course concentrates on unbound pavements as these are significant in the local government environment especially in non-metropolitan areas.

Topics Covered

- Pavement Design Systems
- Construction & Maintenance Considerations
- Road Environment
- Subgrade Evaluation
- Unbound Pavement Materials
- Design Traffic and Case Study
- Structural Thickness of Unbound Flexible Pavements
- Design Exercise - unbound pavements
- Workshop on Unbound Pavements



Guide to Pavement Technology
Part 2: Pavement Structural Design



Course supported by:



Course Presenters

Geoff Webb, Principal, GR Webb Consulting Pty Ltd Course Core Presenter

Geoff is the Principal of GR Webb Consulting Pty Ltd, an independent Tasmanian based consultancy providing technical services in Pavement Technology, Infrastructure Asset Management and Maintenance Management. The Company also delivers training in Pavement Management Systems, Road Condition Assessment, and Asset Management & Maintenance Management Systems.

Prior to establishing the consultancy in 1996, Geoff was the Technical and Quality Manager for Roadways Pty Ltd, (1986-1996), and has over twenty years' experience in the civil construction industry, specialising in pavements and surfacing, having held various technical positions in the resources and construction industry sector. Between 1998 and 2008 GR Webb Consulting was commissioned as Maintenance Auditor for the Maintenance Contractor for the Tasmanian Long Term Performance Based Road Maintenance Contract for the Tasmanian State Government. The company was also engaged as Consultant Pavement Engineer providing network analysis, pavement investigation and treatment selection and design services.

Geoff is a member of The Road Engineering Association of Asia and Australasia, REAAA. He is a member of the Institute of Public Works Engineering Australia, IPWEA, and is a Consultant Supporter of the IPWEA National Asset Management Strategy (NAMS.AU) committee. He is an ARRB Associate with ARRB Group Ltd serving in Tasmania and is a member of the Australian Asphalt Pavement Association, AAPA. Geoff has contributed to Standards Australia committees, and has held NATA signatory positions.

This course is supported by:

Austrroads: Austrroads is the Association of Australian and New Zealand road transport and traffic agencies and its members are the six Australian state and two territory road transport and traffic authorities, the Department for Infrastructure, Transport, Regional Development and Local Government, the Australian Local Government Association (ALGA), and the N Z Transport Agency.



AustStab: The Australian Stabilisation Industry Association is a national organisation set up to educate and inform the civil engineering industry of the environmental and economic advantages of road recycling and all types of stabilisation. Its members are contractors, binder suppliers, government road authorities and plant manufacturers.



Roads Australia: Roads Australia is a not-for-profit, non-political industry association. Members are drawn from all corners of the Australian road sector, and we champion the interests of a vital national asset - Australia's road transport system - and provide a forum for policy development, networking and communication. Further, we seek to draw attention to the importance of Australia's road network to the economic and social fabric of the nation, and to ensure that information and decision-making in relation to roads and road transport is well informed and reflects an appropriate level of priorities.



SRA: State Road Agencies are responsible for the management of the road network, which includes planning, designing, construction and maintaining road use through registering vehicles, licensing drivers and traffic management, and providing information and other road user services. SRAs also provide quality assured integrated investigation, testing and design services in the pavement technology and geotechnical engineering disciplines, and provides support to CPEE in developing expertise and undertaking education in all aspects of the flexible pavements industry.



IPWEA - NSW: Roads and Transport Directorate



The Roads and Transport Directorate has been set up to meet the demand from members of IPWEA (NSW) to act as a focus for research activities and to provide technical advice. It's main purpose is to assist Local Government in NSW in the area of road infrastructure and transport related activities by Assisting members in discharging their road management roles in the most effective manner consistent with current legal obligations and the most recent technical practices Assisting the IPWEA (NSW), Local Government NSW, individual Councils and Members in lobbying for a higher priority to be placed on road infrastructure provision and maintenance and for a more equitable share of resources and funding; Providing for IPWEA members and Local Government a powerful technical and research resource on transport issues at regional, state and national level. The Directorate commenced operation in October 2004.

8.10 Registrations Open			
8.30	0	Setting the Scene	Welcome and Official Introductions
9.00	1	Pavement Design Systems-Unbound Pavements	<ul style="list-style-type: none"> Terminology and Definitions used in Pavement Design Hierarchy of pavement design documents Pavement design inputs and outputs <ul style="list-style-type: none"> Types of unbound pavements Brief description of design philosophy used for unbound pavement types
9.40	2	Construction and Maintenance Considerations	<ul style="list-style-type: none"> Availability of materials Traffic and environment considerations Construction under traffic Drainage and subgrade improvement <ul style="list-style-type: none"> Pavement layering considerations Special treatments Long term maintenance considerations Limitations of road surfacings
10.30 Morning Tea Break			
10.50	3	Road Environment	<ul style="list-style-type: none"> Austrroads Pavement Design Guide Moisture Environment – prevention of moisture entering the pavement <ul style="list-style-type: none"> Removing moisture from the pavement Determination of Weighted Mean Average Pavement Temperature (WMAPT)
11.10	4	Subgrade Evaluation	<ul style="list-style-type: none"> Methods of subgrade evaluation Laboratory Tests particularly CBR, %Swell, Atterberg limits and permeability. In situ CBR tests (DCP and CPT) Relationship between CBR, Density and Moisture Assessment of Laboratory and in situ CBR Test Results <ul style="list-style-type: none"> Assigning a CBR strength Lime stabilisation Expansive subgrade materials and use of capping layers Presumptive CBR values for subgrade soil types Worked examples of how to determine a design CBR from a set of laboratory and in situ CBR tests
12.00		Workshop Exercise – Subgrade	<ul style="list-style-type: none"> Determine sub-grade CBR from a set of DCP and Laboratory Test Results
12.30 Lunch			
1.15	5	Unbound Pavement Materials	<ul style="list-style-type: none"> Unbound pavement materials and test properties Laboratory tests for of unbound materials
1.45	6	Design Traffic – #1	<ul style="list-style-type: none"> Various axle configurations and concept of Equivalent Standard Axles (ESAs) Description of heavy vehicle classes and determination of the average number of heavy vehicle axle groups per heavy vehicle <ul style="list-style-type: none"> Average annual traffic total (AADT), direction factor, lane distribution factor and cumulative traffic growth factor Calculation of Design Traffic in ESA for unbound flexible pavements Estimating or calculation of Design Traffic for Light Duty Pavements
2.45		Workshop Exercise – Traffic (Unbound Pavements)	<ul style="list-style-type: none"> Calculation of the number of heavy vehicle axle groups over the design period Calculation of Design Traffic in ESAs
3.15 Afternoon Tea Break			
3.35	7	Structural Thickness of Unbound Flexible Pavements	<ul style="list-style-type: none"> Flow chart for design of unbound pavements Empirical Design Chart and SRA charts <ul style="list-style-type: none"> Worked example of calculation of the thickness of base, and sub-base layers using the granular pavements design chart
		Workshop Exercise – Unbound Design	<ul style="list-style-type: none"> Empirical design chart used for light duty unbound pavements Determination of Design CBR for the subgrade Calculation of Design Traffic <ul style="list-style-type: none"> Determination of Pavement Base Thickness Determination of overall pavement thickness Determination of sub-base thickness
4.45		Review and Close	
5.00		Close	

Note: Delegates are requested to bring a calculator and a copy of the **Austrroads Guide to Pavement Technology, Part 2 : Pavement Structural Design** to use as a reference during the course. Local Government delegates are able to access this guide free of charge through the Austrroads website at <https://www.onlinepublications.austrroads.com.au/items/AGPT02-12>

CPEE Professional Development (CPD)

This course, with content based on the relevant CPEE postgraduate distance learning study Unit is facilitated and delivered by recognised practitioners in the field and is of such technical content that the number of hours involved should be fully acceptable toward Continuing Professional Development (CPD) standing.



Course Organisers

Centre for Pavement Engineering and Education (CPEE): This course is presented by CPEE, a non-profit, specialist private provider (roads and pavements) of tertiary education, founded by AUSTRROADS and the Australian Asphalt Pavement Association (AAPA). CPEE offers Graduate Certificate, BE (Hons) and Master of Technology qualifications in roads, pavement engineering and infrastructure asset management, and has formal links to the University of Tasmania.



IPWEA - NSW: The Institute of Public Works Engineering Australia is a professional not for profit organisation providing member services and advocacy for those involved in and delivering public works and engineering services to the community. Previously known as the Institute of Municipal Engineering Australia (IMEA), the organisation has expanded its traditional local government engineering focus to public works and thereby covering all levels of government and private practice. IPWEA is a Technical Society of Engineers Australia.



**IPWEA (NSW)
Roads & Transport
Directorate**

Course Size, Enquiries & Management

Due to its practical nature, numbers are limited for this course so it is advisable that you register quickly to avoid missing out. Its unique and targeted content means this course is unlikely to be offered again in this location for some time.



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Cancellation Policy: If you are unable to attend this event a substitute attendee may take your place, without penalty. However, if you wish to cancel your registration, a refund, less a \$125 (Inc GST) service fee, will be given provided you have notified us in writing, at least 10 days before the start of the event. No refund is available for cancellations under 10 days. CPEE reserves the right to cancel or reschedule any course. wherebv a full refund or course transfer will be provided.