Anyone for a PhD in Perth for 3 years?

The University of Western Australia, based in Perth, in association with Ramtec and others are cranking up their ongoing rammed earth research and are looking for a student to do a PH D to help the rammed earth research along. It will be studying detailed aspects of rammed earth quite scientifically. It will be the characterization of suitable soils for rammed earth construction. Soils testing. A lot of electron microscope work and so forth. It requires a master's degree in Engineering to start. The salary (called a stipend, said to be tax free) payable is $35,000 per year and the term is 3 years. As I understand it there have been no applicants from Australia and only a couple from overseas, which apparently become administratively difficult. Applicants from NZ are welcome and do NOT suffer the administrative problems of other countries. So if anyone is interested, or knows anyone who is interested, then now is the time to apply. Position is available to be filled and to start immediately.

No previous rammed earth experience is needed but a strong engineering background (Masters Degree Level) in soil mechanics, physics and computing is required.
Full details are on the website of the University of Western Australia's website.
Details follow:

Period:
Three years (full time position, 38 hours/week), starting as soon as possible after 1 February 2011.

Living allowance stipend:
35,000 AUD per year (tax free).

Job description:

The conceptual framework is based on 2 main areas of investigations: 1) Assessment of material properties and 2) Establishment of suitable theory for the structural use of rammed earth.

Assessment of material properties of rammed earth

Guidelines for the assessment of suitability of soil for use in rammed earth construction are relatively broad, making an accurate assessment of soil suitability difficult. These issues will be addressed using two interlinked approaches: 1) an experimental program to quantify the *macroscale* properties of the material and 2) a *microscale* analysis using Environmental Scanning Electron Microscopy and X-Ray Computed Tomography. During the first year of the project, the PhD candidate will become familiar with standard geotechnical testing methods in order to characterise the soil prior to using it in rammed earth samples. This year, the PhD candidate will work at UWA mainly focused on cement-stabilised rammed earth. For the first part of the second year, he/she will work at Durham University under the supervision of PI Augarde, focusing on unstabilised rammed earth. Returning to UWA, the PhD candidate will spend 12 months on the analysis of this data combined with the *microscale* results described below.

During the 3 year of the project, the PhD candidate will identify cement hydrated products and water bridges within the sample. This will permit to study the relative proportion of water suction and aggregate interlocking (classical solid mechanics) responsible for the macro mechanical properties. The PhD candidate will learn to combine different disciplines (physics, mechanics and chemistry) to develop a theory that can extensively explain the observed experimental phenomena. He/She will greatly benefit from a range of new skills in a vibrant multidisciplinary research environment with academic and industry input. This will lead to excellent professional development which will foster independent leadership skills.

Establishment of suitable theory for the structural use of rammed earth

Rammed earth, like concrete, is a brittle material, i.e. it can resist compressive actions but it cracks under the effect of tensile forces. It is mostly employed in load bearing walls and foundations, beams, columns and roof of a house are generally made of other materials, mainly reinforced concrete, timber or steel. The lack of a suitable theory for the structural use of rammed earth means that rammed earth walls are designed using rules of thumb without any engineering fundamentals. Furthermore, the limited use of this material only in load bearing walls denies the potentialities of rammed earth application in other structural parts. This project will address these issues by proposing laboratory and on-site experiments that aim to understand the structural behaviour of rammed earth walls, lintels and foundations.

Requirements:

In order to register for a PhD, the applicant should have a Master degree or equivalent. The applicant should have a strong background in solid mechanics, physics and computing. English is the working language at the lab and good written and communication skills are essential.

Qualification required: Master in Engineering (Civil Eng., Mech.Eng., Chemical Eng.),

If you want more direct information then send an email to mail@ramtec.com.au and they will assist.