Website for geotechnical case histories

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Geotechnics, as we know it today, is the branch of civil engineering that deals with materials made by nature through geologic processes, in contrast to materials manufactured by humans under controlled conditions. It includes the processing and modification of these materials to improve their properties for human use, but the most distinctive characteristic is their origins through the natural processes of deposition, erosion, weathering, and similar geomorphic activities.

One of the consequences of their origin is that no two natural deposits are exactly alike with regard to their physical properties and behavior. The engineering properties cannot be specified, they can only be investigated, determined, and coped with under the physical conditions to which they may be subjected, whether in foundations, excavations, embankments, or other engineering works. No two jobs are exactly alike. Yet the engineer must design and oversee the construction of a project that serves its purpose safely and economically. To do so required the application of that elusive quality we call engineering judgment, a quality that is developed through education and, to a great extent by experience.

Yet, one engineer in one lifetime can hardly be exposed to enough experience to develop all the judgment needed. The collective experience of predecessors and colleagues is, fortunately, available in the records and experiences of other engineers who have met similar conditions and problems. But that experience must somehow be made available for general use.

Case histories are one of the tools available for this purpose. The broad principles of design and behavior are assembled in textbooks and taught in universities, but the very process of synthesizing such broad knowledge into general principles and methods limits their application in detail. The textbook syntheses must be supplemented with the many vital details pertinent to the individual jobs and applications met in practice. The budding engineer needs to learn how to assess the details, how to judge what is relevant and what is not, how to sense what is good practice and what is not. This can be developed only through experience – one's own and that of others.

Learning about the experience of others is where case histories play a vital role. Here is where one learns what worked and what did not, what was practical and what was not, what is appropriate to the present situation and what is not. Because practice changes with new procedures, new ideas and equipment, and even because of a new generation of engineers, yesterday's case histories may not be adequate to improve today's practices. Therefore, old, even classical case histories need to be supplemented by current ones. To do this is perhaps the major purpose of the case-history web site. The site could well become the most complete and useful means for updating the knowledge of the geotechnical community and improving its practice.

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