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*PR-Misc Notice  
Reg. Guide*

Secretary of the Commission  
U.S. Nuclear Regulatory Commission  
Washington, D. C. 20555

Attention: Docketing and Service Branch

Dear Sir:

Subject: NRC Regulatory Guide 1.138  
Comments for Early Revision

We have reviewed Regulatory Guide 1.138, "Laboratory Investigations of Soils for Engineering Analysis and Design of Nuclear Power Plants", issued in April, 1978. The attached comments are offered for your consideration in improving subsequent revisions of this guide.

The opportunity to review and comment on regulatory guides is appreciated. If additional discussion is desired, please contact the writer.

Very truly yours,

*David R. Antes*

David R. Antes  
Manager, Geotechnical Engineering  
Section

DRA/sam

Attachment



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*PDR PR 000-000 780630*

Acknowledged by card. *7/18/78*

REGULATORY GUIDE 1.138

COMMENTS

Note: Suggested additions given below are underlined.

1. Page 1.138-1

Title: "Laboratory Investigations of Soils and Rocks  
for Engineering Analysis and Design of Nuclear  
Power Plants"

Comments: Reg. Guide 1.138 obviously describes  
laboratory investigations and testing  
practices for determining both soil and  
rock properties and characteristics (see  
first, third and fourth paragraphs of  
Part A - Introduction).

2. Page 1.138-1 - Part A - Introduction - 4th paragraph, 1st sentence

It is suggested that the word "Criteria" be  
changed to "Guidelines" since it appears that  
the regulatory position is not intended to  
establish minimum requirements (criteria)  
but to promulgate investigations and practices  
currently acceptable to the consulting industry  
and the Commission. The same comment applies  
to the use of the work criteria in the  
Item 4 title on Page 1.138-8.

3. Page 1.138-6 - Figure 1

On Figure 1a, Field Tests, the effective range  
of shear strain for the inhole Menard Pressuremeter,  
from about  $10^{-1}$  to about 4 percent, should be  
added.

On Figure 1b, Laboratory Tests, the effective range of shear strain for the resonant column should be extended to  $10^{-5}$  percent.

4. Page 1.138-8, Item 3(b) - 1st paragraph, 2nd sentence

It is recommended that this sentence be deleted. Since it is not always possible to obtain undisturbed samples of cohesionless soils (e.g., very loose, very dense, and gravelly sands) the Standard Penetration Test (SPT) should be used to determine relative densities. In fact, Appendix B of Reg. Guide 1.132 indicates that one application of the SPT is determination of relative density.

5. Page 1.138-9, Item 5

Text: Add Item 5.d as follows: "It is recommended that color photographs of all undisturbed soil specimens before and after testing in unconfined and triaxial compression should be preserved as a permanent record."

Comment: Since the strength characteristics of soil are determined by destructive type tests, establishment of a visual record is important. Knowledge of any anomalous weak surfaces (e.g., those induced by the presence of very thin sand seams, shells or gravel) and the shape of the specimen after testing, as depicted by photographs, could be important in evaluating the reasonableness of the mode of failure indicated by the raw laboratory data.



6. Page 1.138-10, Appendix A

Comments: In order to provide a common basis for mutual understanding of terminology, Appendix A contains several definitions of terms for the convenience of the user. A problem arises in that several of the terms presented in Reg. Guide 1.138 were previously defined in Reg. Guide 1.132 using different wording or symbols. For example, in the definition of "Inside clearance ratio", the inside diameter of the sample tube or liner is identified as  $D_s$  in Reg. Guide 1.138 and as  $D_i$  in Reg. Guide 1.132.

To avoid confusion and disagreement, it is recommended that definitions of terms for Disturbed sample, Inside clearance ratio, Representative sample, Soil structure, and Undisturbed sample be revised to conform with the exact words and symbols previously established in Reg. Guide 1.132. In the event the Commission is of the opinion that the wording and symbols used in Reg. Guide 1.138 are more suitable, then definitions for the referenced terms in Reg. Guide 1.132 should be revised accordingly to conform to those adopted in Reg. Guide 1.138.

7. Page 1.138-11, Appendix B

- a. Under "Remarks" column for Water Content Test add the following: "Other test methods would be suitable provided they are correlated on a daily basis with results from ASTM D2216."

- b. Under "Remarks" column for Relative Density Test delete first sentence which is extraneous. Same comment is applicable to remark for Resonant Column Test.

8. Page 1.138-12, Appendix B

- a. For Permeability Test, add Reference 16 under "Other References" column.
- b. Under the Shear Strength Tests, only the Triaxial Compression, Consolidated Drained Test is described as providing parameters for long-term loading conditions. To be complete, the parameters for short-term or long-term loading derived from the other triaxial tests should be added.