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ASTM Task Group on Data Automation
Questionnaire for Geotechnical Laboratories

1. Name ___________________________ Position ____________________________
   Company __________________________ Type of Organization: University ____
   Address ___________________________ Government _______ Consulting ______
   List testing or standards organizations in which you participate __________________________

2. With regard to the general laboratory: Number of staff devoted to lab ______ Floor area in sq. ft. ______
   Which do you have on staff? ___ Machinist ___ Mechanical engineer ___ Electronic specialist ___ Instrumentation Specialist ___ Software engineer ___
   Which of the following do you have? ___ Temperature Control ___ Dust Control ___ Emergency Power ___

3a. Please complete the following table for soil tests performed in your facility:

<table>
<thead>
<tr>
<th>Soil Tests</th>
<th>Gradation (D2415)</th>
<th>Limits (D4518)</th>
<th>Consolidation (D2445)</th>
<th>UC (D2166)</th>
<th>UU (Q) (D2850)</th>
<th>CU (R) (D4785)</th>
<th>CD (S) (D4785)</th>
<th>Direct Shear (D3086, D3521)</th>
<th>Permeability (D2434, D3084)</th>
<th>Other (D2664, D3296, D2938, D3467)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of tests per year</td>
<td>Check if you automatically record data</td>
<td>Check if you use computer for data reduction</td>
<td>Check if you use computer for graphs or tables</td>
<td>Estimated cost savings per test from automation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* describe other test

4. Please complete the following table for rock tests performed in your facility:

<table>
<thead>
<tr>
<th>Rock Tests</th>
<th>Strength (D2664, D3296, D2938, D3467)</th>
<th>Elastic Modulus (D2845, D3348, D3467)</th>
<th>Permeability (D4525)</th>
<th>Creep (D4345, D4405, D4466)</th>
<th>Sonic (D2845)</th>
<th>Thermal (D4535, D4611, D4612, D5334, D3335)</th>
<th>Other (D4664, D3240, D5312, D5313)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of tests per year</td>
<td>Check if you automatically record data</td>
<td>Check if you use computer for data reduction</td>
<td>Check if you use computer for graphs or tables</td>
<td>Estimated cost savings per test from automation</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* describe other test
ASTM Task Group on Data Automation
Questionnaire for Geotechnical Laboratories

5. If you have a data acquisition system, please answer the following questions (use a separate copy for each system)
   - Type __________________
   - Number of Input Channels ____________
   - Number of tests you monitor at once _______
   - Maximum Number of Readings per second you use_____
   - Total Cost of hardware, excluding sensors________
   - Total cost of sensors ________
   - How are data stored? __printed __tape __floppy disk __hard disk __other _______
   - Describe what you use the system for ________________________________________________________________________________
   - Does the system control the test __ Describe how ________________________________________________________________________
   - How much time required to train a new user ______
   - Frequency of breakdown ______
   - Describe reliability _______________________________________________________________________________________
   - Did supplier offer service contract __ Did you take it __ Cost of service contract as percent of original system purchase price ______
   - Describe experience with service ______________________________________________________________________________
   - Is system rugged __ Give examples ____________________________
   - Has system been cost effective? __ Give example ______________________________________________________________________
   - Are you considering additional equipment __ If yes please answer #7.
   - How do you charge your clients for use of the system ____________________________________________________________________
   - Would you buy the same system again __ Why _______________________________________________________________________

6. If your data acquisition system uses software to collect and reduce data, please answer the following:
   - Function of software: __collect data __sort data for test from master data file __reduce data __plot results __show real-time graphs of test
   - control test __place data in master data base __perform statistical and/or engineering evaluations of data
   - Programming language used ______
   - Operating system used ____________
   - How much time to train new user ______
   - Who corrects deficiencies __________
   - Can you modify software ________
   - Is software flexible enough for your needs __________
   - Describe software problems you have had __________________________________________________________________________
   - Would you buy same system again __ Why ________________________________________________________________________
   - Is your software available to others __________________________________________________________________________________

7. If you have no data acquisition equipment or are considering expansion of your present system
   - Do you plan further automation in the near future? __ Why __________________________________________________________________
   - Which tests do you plan to automate? __ collect data __reduce data after test __plot results for report __provide real-time graph as test runs __control test __other _______
   - Will you __purchase software __develop software in-house __________________________________________________________________
   - What information is most helpful in selecting a new system (please rank by importance with 1 as highest) __manufacturer's literature __specs __example results __reliability of system
   - __experience of another with system __ other (specify __)

8. Does your company use data acquisition equipment in field applications? __ Describe __________________________________________________________________________

9. What standards would be helpful to you in regard to using your data acquisition equipment? __________________________________________________________________________

10. Please comment on your experiences with data acquisition systems, positive and negative.

Thank you for your time and help. Please mail the completed questionnaire to: D18.95 Data Automation Survey, c/o Bob Morgan, ASTM, 1916 Race Street, Philadelphia, PA 19103-1187. Phone any questions to Dr. Marr at (508) 635-0012.
Additional Information for Authors

The Geotechnical Testing Journal (GTJ) is a quarterly publication sponsored by ASTM technical committee D-18 on Soil and Rock, with support from D-35 on Geosynthetics, D-4 on Road and Paving Materials, and D-34 on Waste Management. Each published paper and technical note has been peer-reviewed. Papers and technical notes are open to brief written comments in the Discussion section of the Journal, which also includes authors' written responses.

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The decision as to whether a manuscript is published as a paper or a technical note resides with the Technical Editor.

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References

References shall be cited in the text by author's last name and date of publication. References shall be listed together at the end of the text in alphabetical order by author's last name. They must contain enough information to allow a reader to consult the cited material with reasonable effort.

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Howard J. Pincus, Ph.D., P.E., C.P.G.
Technical Editor
<table>
<thead>
<tr>
<th>From</th>
<th>To</th>
<th>Multiply by</th>
</tr>
</thead>
<tbody>
<tr>
<td>atmosphere (760 mm Hg)</td>
<td>pascal (Pa)</td>
<td>1.013 25 x 10^5</td>
</tr>
<tr>
<td>board foot</td>
<td>cubic metre (m³)</td>
<td>2.359 737 x 10^-3</td>
</tr>
<tr>
<td>Btu (International Table)</td>
<td>joule (J)</td>
<td>1.055 056 x 10^2</td>
</tr>
<tr>
<td>Btu (International Table)/h</td>
<td>watt (W)</td>
<td>2.930 711 x 10^-1</td>
</tr>
<tr>
<td>Btu (International Table)/in./ft² °F</td>
<td>watt per metre kelvin [W/(m•K)]</td>
<td>5.192 204 x 10^-2</td>
</tr>
<tr>
<td>(k, thermal conductivity)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>calorie (International Table)</td>
<td>joule (J)</td>
<td>4.186 800*</td>
</tr>
<tr>
<td>centipose</td>
<td>pascal second (Pas)</td>
<td>1.000 000* x 10^-3</td>
</tr>
<tr>
<td>centistokes</td>
<td>square metre per second (m²/s)</td>
<td>1.000 000* x 10^-3</td>
</tr>
<tr>
<td>circular mil</td>
<td>square metre (m²)</td>
<td>5.067 075 x 10^-10</td>
</tr>
<tr>
<td>degree Fahrenheit</td>
<td>degree Celsius</td>
<td>t°C = (t°F - 32)/1.8</td>
</tr>
<tr>
<td>foot</td>
<td>metre (m)</td>
<td>3.048 000* x 10^-1</td>
</tr>
<tr>
<td>ft²</td>
<td>square metre (m²)</td>
<td>9.290 304* x 10^-1</td>
</tr>
<tr>
<td>ft³</td>
<td>cubic metre (m³)</td>
<td>2.831 685 x 10^-2</td>
</tr>
<tr>
<td>ft•lbf</td>
<td>joule (J)</td>
<td>1.355 818</td>
</tr>
<tr>
<td>ft•lbf/min</td>
<td>watt (W)</td>
<td>2.259 697 x 10^-2</td>
</tr>
<tr>
<td>ft/s²</td>
<td>metre per second squared (m/s²)</td>
<td>3.048 000* x 10^-3</td>
</tr>
<tr>
<td>gallon (U.S. liquid)</td>
<td>cubic metre (m³)</td>
<td>3.785 412 x 10^-3</td>
</tr>
<tr>
<td>horsepower (electric)</td>
<td>watt (W)</td>
<td>7.460 000* x 10^-2</td>
</tr>
<tr>
<td>inch</td>
<td>metre (m)</td>
<td>2.540 000* x 10^-2</td>
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<tr>
<td>in.²</td>
<td>square metre (m²)</td>
<td>6.451 600* x 10^-4</td>
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<tr>
<td>in.³</td>
<td>cubic metre (m³)</td>
<td>1.683 706 x 10^-5</td>
</tr>
<tr>
<td>inch of mercury (60°F)</td>
<td>pascal (Pa)</td>
<td>3.376 85 x 10³</td>
</tr>
<tr>
<td>inch of water (60°F)</td>
<td>pascal (Pa)</td>
<td>2.488 4 x 10²</td>
</tr>
<tr>
<td>kip (1000 lbf)</td>
<td>newton (N)</td>
<td>9.806 650* x 10^4</td>
</tr>
<tr>
<td>kip/in.² (ksi)</td>
<td>pascal (Pa)</td>
<td>4.448 222 x 10^4</td>
</tr>
<tr>
<td>ounce (U.S. fluid)</td>
<td>cubic metre (m³)</td>
<td>6.894 757 x 10^4</td>
</tr>
<tr>
<td>ounce-force</td>
<td>newton (N)</td>
<td>2.957 353 x 10^-1</td>
</tr>
<tr>
<td>ounce (avoirdupois)</td>
<td>kilogram (kg)</td>
<td>2.780 139 x 10^-1</td>
</tr>
<tr>
<td>oz (avoirdupois)/ft²</td>
<td>kilogram per square metre (kg/m²)</td>
<td>2.834 952 x 10^-2</td>
</tr>
<tr>
<td>oz (avoirdupois)/yd²</td>
<td>kilogram per square metre (kg/m²)</td>
<td>3.051 517 x 10^-1</td>
</tr>
<tr>
<td>oz (avoirdupois)/gal (U.S. liquid)</td>
<td>kilogram per cubic metre (kg/m³)</td>
<td>3.390 575 x 10^-2</td>
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<tr>
<td>pint (U.S. liquid)</td>
<td>cubic metre (m³)</td>
<td>7.489 152</td>
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<tr>
<td>pound-force (lbf)</td>
<td>newton (N)</td>
<td>4.731 765 x 10^-4</td>
</tr>
<tr>
<td>pound (lb avoirdupois)</td>
<td>kilogram (kg)</td>
<td>4.448 222</td>
</tr>
<tr>
<td>lbf/in.² (psi)</td>
<td>pascal (Pa)</td>
<td>4.535 924 x 10^-1</td>
</tr>
<tr>
<td>lbf/ft³</td>
<td>kilogram per cubic metre (kg/m³)</td>
<td>6.894 757 x 10^-1</td>
</tr>
<tr>
<td>quart (U.S. liquid)</td>
<td>cubic metre (m³)</td>
<td>2.767 990 x 10^-4</td>
</tr>
<tr>
<td>ton (short, 2000 lbf)</td>
<td>kilogram (kg)</td>
<td>1.601 846 x 10^-1</td>
</tr>
<tr>
<td>torr (mm Hg, 0°C)</td>
<td>cubic metre (m³)</td>
<td>9.465 529 x 10^-4</td>
</tr>
<tr>
<td>W•h</td>
<td>joule (J)</td>
<td>9.071 847 x 10^-3</td>
</tr>
<tr>
<td>yard</td>
<td>metre (m)</td>
<td>1.333 22 x 10^2</td>
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<tr>
<td>yd²</td>
<td>square metre (m²)</td>
<td>3.600 000* x 10^-3</td>
</tr>
<tr>
<td>yd³</td>
<td>cubic metre (m³)</td>
<td>9.144 000* x 10^-1</td>
</tr>
</tbody>
</table>

*Exact