



4370 Contractors Common
Livermore, CA 94551
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Sampling and Shipment of Soil/Backfill for Thermal Analysis

Undisturbed Tube Samples

- If cohesive soils (clayey or silty) are encountered, samples should be taken in nominal 3" diameter Shelby tubes or large diameter California sampler with brass liners (no rings), otherwise, standard split spoon samples or auger cuttings should be taken (see bulk soil section below).
- Please do not extrude sample from Shelby tube. Cut the bottom 6" section (+/- 1/2") of the tube, seal both ends with plastic caps and tape it to prevent any moisture loss.
- Identify the samples with Project Name, Location, Bore Hole, Depth, Date samples taken, etc
- The samples should be representative of the soil at the cable (or ductbank) burial depth. If the soil above this elevation is different, it should be sampled as well.
- Please include a copy of the borehole logs.
- Email the details of the shipment - courier name, tracking number, etc. to info@geothermusa.com and lab@geothermusa.com
- If **bedrock** is encountered, take core samples (minimum 2" diameter by 5" long) or block samples of about 5" cube of irregular shape.

Bulk Soil or Backfill Samples

- Send ~10 pounds of each sample, contained in double heavy-duty plastic (Ziploc) bags, identified with Project Name, Sample Location, Bore Hole, Depth, Date samples taken, etc...
- Email the details of the shipment - courier name, tracking number, etc. to info@geothermusa.com and lab@geothermusa.com
- For all foreign shipments
 - declare a value of \$10 for the entire package and send it via **FedEx or UPS** overnight service (or 2nd day air service).
 - Mark the package "**Aggregate samples for laboratory testing only**".
 - Request import permit instructions to info@geothermusa.com
- Provide the Proctor (Standard or Modified) density, starting moisture content and percent compaction effort.

COOL SOLUTIONS FOR UNDERGROUND POWER CABLES
THERMAL SURVEYS, CORRECTIVE BACKFILLS & INSTRUMENTATION

Serving the electric power industry since 1978



Purpose for testing (in-situ vs. construction phase), the following apply:

For thermal resistivity measurements to determine in-situ values

- For soils that are cohesive
 - Undisturbed tube samples
 - bottom 6-inches of Shelby tube or
 - brass/stainless steel liner (minimum diameter of 2-inches)
 - must be continuous and NOT ring samplers
 - Disturbed samples
 - Provide us a Proctor Density Curve (Standard or Modified)
 - Provide percent (%) compaction (i.e. 95%, 90% or 85%)
 - Provide starting moisture content (i.e. in-situ, optimum or %)

For thermal resistivity measurements to determine construction phase (materials to be used around cables)

- Disturbed samples
 - Provide us a Proctor Density Curve (Standard or Modified)
 - Provide percent (%) compaction (i.e. 95%, 90% or 85%)
 - Provide starting moisture content (i.e. in-situ, optimum or %)

1. Provide soil descriptions or borehole logs, a business card or contact information with the samples in a separate Ziploc bag.
2. Please issue a PO or a charge to number with the samples
3. Email the tracking number to info@geothermusa.com and lab@geothermusa.com
4. Turnaround time is about 10 days after we receive all the necessary information

Ship all samples to:

**GEO THERM USA
ATTN: Lab Manager
4370 Contractors Common
Livermore, CA 94551
Tel: 925-999-9232**



Chain of Custody Form

Please include this form in a Ziploc bag for each sample submitted:

Company Name: _____

Contact Name: _____ Contact Number _____

Project Name: _____

Project Location: _____

Company to Invoice: _____ PO Number: _____

Report Submittal email: _____

Sample Location/ID: _____

Sample Collection Date: _____ Sample Depth: _____

Soil Description: _____

Does the sample require recompaction?

____ Yes (Continue below) **OR** ____ No (Tube Sample test "as is")

If the sample requires recompaction:

- a. What is the Proctor Maximum Dry Density (pcf): _____
- b. Is this Standard or Modified Proctor: _____
- c. Specify compaction effort? (i.e. 85%, 90 or 95%): _____

2. What is the starting moisture content?

____ As Received/In-situ? **OR** ____ Optimum?