QUICK FACTS: SB 102

TEX-100-E

Sampling Soils and Base Materials

Why

Tests procedures require Tex-100-E for sampling soils for acceptance testing.

- Tex-101-E, Parts I, II, & III
- Tex-110-E
- Tex-114-E
- Tex-120-E
- Tex-121-E
- Tex-128-E
- Tex-129-E
- Tex-148-E

When

Material may be sampled at any time before compaction throughout the duration of the project to assure specification compliance.

How

Equipment

- The equipment needed to sample depends on different factors.
  - Sample bags and moisture cans for disturbed samples
  - Moisture content bags, boxes for packing undisturbed cores
  - Power drill rig, with core and/or auger attachments
  - Measuring tape
  - Post hole digger, shovel, prospector's pick, other hand tools
  - Sample splitter or quartering cloth
  - Ruler (minimum 6 ft.)
  - Soil auger
  - Square-tip shovel

Sampling Embankment Soil and Non-select Backfill

- Obtain a representative sample from undisturbed or disturbed material in the same proportion as they exist.
- Use single-color, single-texture materials in samples. Avoid mixing different materials, unless intending to achieve a uniform blend in specific proportions.
- Sampling soil that will be treated, sample from the depth of treatment shown on plans.
- Coring, obtain a core of soil with as little disturbance as possible to the natural density and moisture content.
- Obtaining a fully undisturbed sample from the earth is impossible due to soil removal and pressure release, but a soil core serves as a satisfactory undisturbed sample.
- Label and properly secure for transportation to avoid any loss of material.

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Sampling Flexible Base Stockpiles

- Identify four locations representing approximate quarter-points of the stockpile perimeter. When space is limited, use four equally spaced locations instead of obtaining them from the entire perimeter.
- Clean and level the ground at these four locations to prevent contamination.
- Cut approximately at the ground level to the top edge of the stockpile until a clean face is exposed. The exposed vertical face should be perpendicular to the top edge. Discard the material cut away while exposing the clean face.
- Build a sample pad by cutting into the vertical face at the ground level to the full height of the stockpile in one motion. Lower the bucket as close to the ground as possible and empty the bucket in one motion.
- Use the bucket to strike and level the material to make the sample pad.
- Divide the sample pad into four equal quadrants. Sample equal amounts from each quadrant.
- Fully insert the square-tip shovel vertically, then roll back and lift slowly to prevent coarse aggregate from falling off the sides.
- Spade-tip shovels are NOT allowed.
- Collect shovelfuls from various quadrants of the sampling pad, avoiding previous shovel holes. Fill one sample bag or container with material from each quadrant.
- Place samples into clean sample bags or containers. Seal and label properly.
- Minimum of 100 lbs. from each sampling pad and minimum of 400 lbs. of material from each stockpile.

Sampling Flexible Base Windrows

- Material from windrows can only be tested for acceptance using the following test procedures: Tex-104-E, Tex-105-E, Tex-106-E, Tex-110-E.
- When testing wet ball mill (Tex-116-E) or compressive strength (Tex-117-E) for acceptance sample MUST be from stockpile.
- Refer to test procedure for sample size.
- Choose two locations that are more than 500 ft. apart, avoiding 10 ft. from the end of the windrow.
- Choose locations that look uniform.
- Remove one foot material from the top and sample from the flattened area using a square-tip shovel.
- Avoid sampling the side or any segregated areas of the windrow.
- Place samples into clean sample bags or containers. Seal and label properly.

Preparing Flexible Base Samples for Testing

- Either air dry the material or use an oven at a maximum temperature of 140°F for at least 4 hours to dry the material.
- Lay out material on a clean floor or clean trap and quarter the material. You can also use a mechanical quartering device or sample splitter to quarter the material.
- Thoroughly mix material using a shovel or when using a trap, you may use the ends to mix the material.
- Evenly spread the material into a circular shape with consistent thickness and no segregation
- Visibly trace lines into the material to outline four evenly sized quarters using straightedge or shovel.
- Use one quarter for test procedures: Tex-101-E, Part 1, Tex-104-E, Tex-105-E, Tex-106-E, Tex-110-E.
  - If material passing the No. 200 sieve test is required, sample this quarter before proceeding Tex-101-E.
  - Quarter or split the material to obtain the minimum required sample weight for Tex-111-E.
- The remaining three quarters are for test procedures: Tex-101-E, Part 2, Tex-113-E, Tex-116-E, Tex-117-E.

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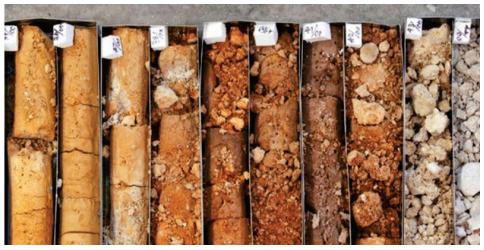
Soil Samples

- Conduct a survey while sampling to identify and visualize the material collected from various depths.
- Clearly specify the location, including the highway, station number, mile marker, direction, lane position, and distance from the nearest intersection.
- Identify the materials sampled in accordance with Tex-141-E
- The following information MUST be in the survey documentation.
    - Depth, location, each type of soil or rock in the subsurface.
    - Moisture and density of subsoils at which embankments will be constructed at.
    - Location and selection of usable material for fills, sub-grade treatment and backfill adjacent to structures.
    - Properties from laboratory testing from liquid limit (Tex-104-E), plastic limit (Tex-105-E), plasticity index (Tex-106-E), and soil classification (Tex-142-E).



Sampling

- A representative sample of disturbed soil consists of proportions as they exist in the natural ground, roadway, or pit.
- The proper method of obtaining a sample will depend on the place, the quantity of material, the proposed treatment, and tests to be performed in the laboratory.
- Unless different types of materials are to be uniformly mixed in certain proportions, samples should contain only materials of like color and texture and should not be composite of materials apparently different in character.
- The intent of sampling is to obtain a core of soil from the earth with as little disturbance as possible to the natural density, moisture content, and structural arrangement of the particles.
- Soil cores can be classified as an undisturbed sample of soil.

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