

OF CURVES – ONE-POINT METHOD FOP FOR AASHTO T 272 (07)

Scope

This procedure provides for a rapid determination of the maximum density and optimum moisture content of a soil sample utilizing a family of curves and a one-point determination in accordance with AASHTO T 272. This procedure is related to FOP for AASHTO T 99/T 180.

One-point determinations are made by compacting the soil in a mold of a given size with a specified rammer dropped from a specified height. Four alternate methods – A, B, C, D – are used and correspond to the methods described in FOP for AASHTO T 99/T 180. The method used in AASHTO T 272 must match the method used in FOP for AASHTO T 99/T 180.

Apparatus

See the FOP for AASHTO T 99/T 180.

Sample

Sample size determined according to the FOP for AASHTO T 310. In cases where the existing family can not be used a completely new curve will need to be developed and the sample size will be determined by the FOP for AASHTO T 99/T 180.

Procedure

See the FOP for AASHTO T 99/T 180.

Calculations

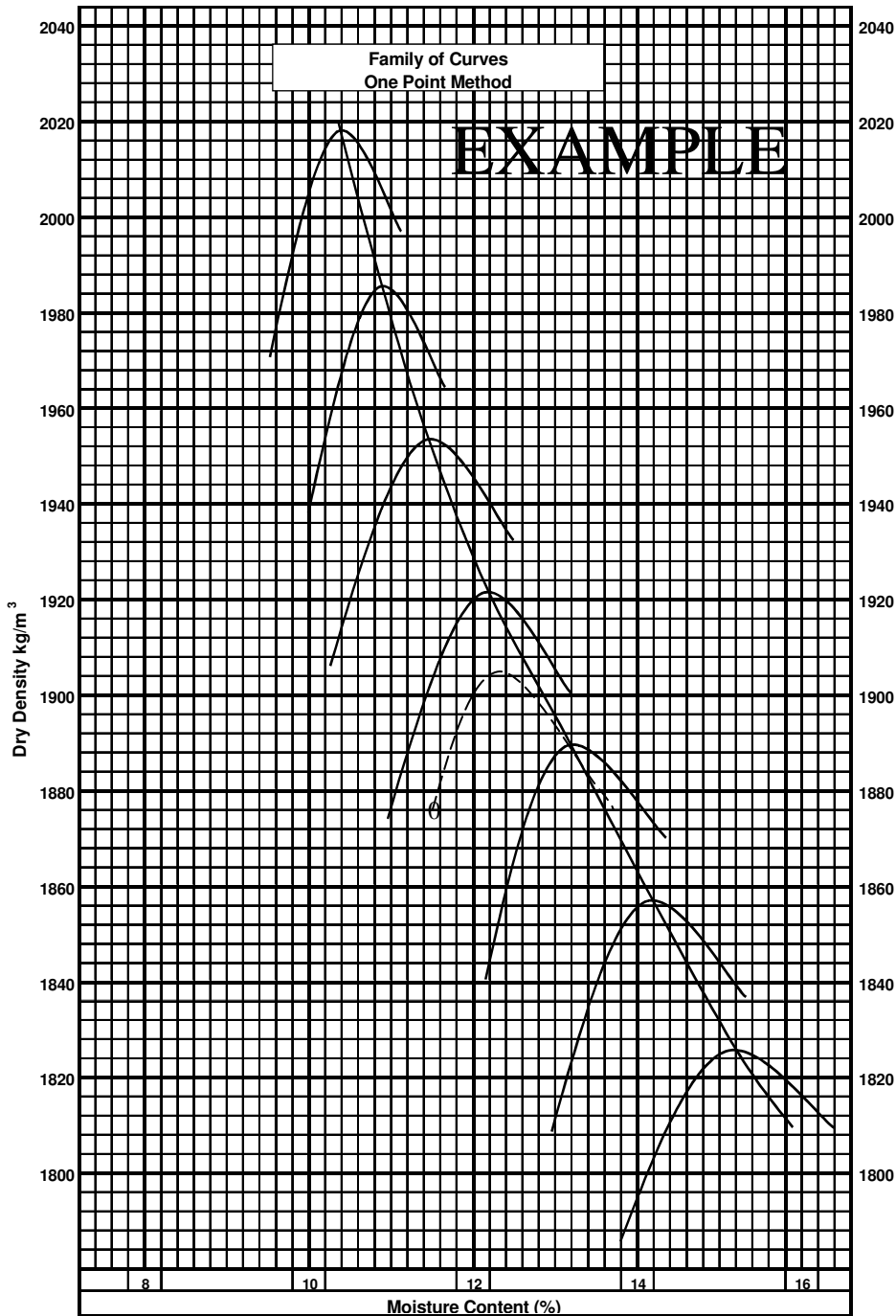
See the FOP for AASHTO T 99/T 180. .

Maximum Dry Density and Optimum Moisture Content Determination

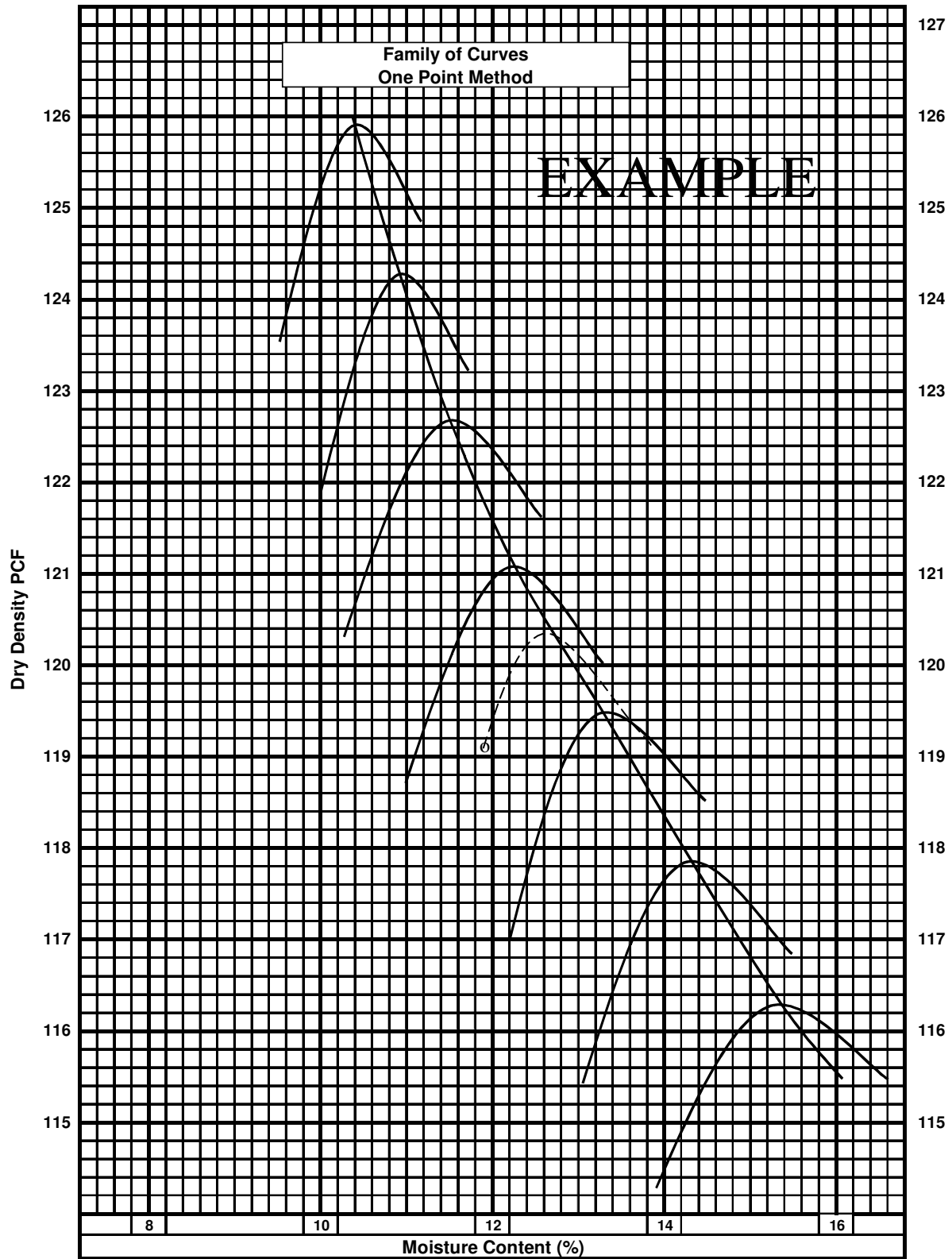
1. If the moisture-density one-point falls on one of the curves in the family of curves, the maximum dry density and optimum moisture content defined by that curve shall be used.
2. If the moisture-density one-point falls within the family of curves but not on an existing curve, a new curve shall be drawn through the plotted single point parallel and in character with the nearest existing curve in the family of curves. The maximum dry density and optimum moisture content as defined by the new curve shall be used.

Note 1: If the one-point plotted within or on the family of curves does not fall in the 80 to 100 percent of optimum moisture content, compact another specimen, using the same material, at an adjusted moisture content that will place the one point within this range.

3. If the family of curves is such that the new curve through a one-point is not well defined or is in any way questionable, a full moisture-density relationship shall be made for the soil to correctly define the new curve and verify the applicability of the family of curves.



Note 2: New curves drawn through plotted single point determinations shall not become a permanent part of the family of curves until verified by a full moisture-density procedure following the FOP for AASHTO T 99/T 180.



Example

A moisture-density procedure (FOP for AASHTO T 99/T 180.) was run. A dry density of 1885 kg/m^3 and a corresponding moisture content of 11.5 percent were determined. This point was plotted on the appropriate family between two previously developed curves. For the English units family curve example the dry density and corresponding moisture content were 119.1 lb/ft^3 at 11.9 percent.

The “dashed” curve beginning at the moisture-density one-point was sketched between the two existing curves. A maximum dry density of 1915 kg/m^3 and a corresponding optimum moisture content of 12.4 or 120.4 lb/ft^3 and 12.7 percent moisture were estimated.

Report

Results shall be reported on standard forms approved by the agency. Report maximum dry density to the closest 1 kg/m^3 (0.1 lb/ft^3) and optimum moisture content to the closest 0.1 percent.

