

SECTION II

TABLE OF CONTENTS

II – NONAGRICULTURAL INTERPRETATIONS

Introduction

Building Site Development Rating

Construction Materials Ratings

II – NONAGRICULTURAL INTERPRETATIONS

INTRODUCTION

General

The purpose of these interpretive ratings is to help engineers, planners, and others understand how soil properties influence behavior when used for nonagricultural uses such as building site development or construction materials. Soils are rated for the uses expected to be important or potentially important to users of soil survey information. Ratings for proposed uses are given in terms of limitations and restrictive features; suitability and restrictive features; or only restrictive features. Only the most restrictive features are listed. Other features may need to be treated to overcome soil limitations for a specific purpose.

Soils are rated in their “natural” state, that is, no unusual modification of the soil site or material is made other than that which is considered normal practice for the rated use. Even though soils may have limitations, it is important to remember that engineers and others can modify soil features or can design or adjust the plans for a structure to compensate for most degrees of limitations. Most of these practices, however, are costly. The final decision in selecting a site for a particular use generally involves weighing the costs for site preparation and maintenance, with the benefits of the intended use.

Limitation Ratings

SLIGHT – is the rating given soils that have properties favorable for the use. The degree of limitation is minor and can be overcome easily. Good performance and low maintenance can be expected.

MODERATE – is the rating given soils that have properties moderately favorable for the use. This degree of limitation can be overcome or modified by special planning, design, or maintenance. During some part of the year, the expected performance is less desirable than for soils rated slight.

SEVERE – is the rating given soils that have one or more properties unfavorable for the rated use, such as steep slopes, bedrock near the surface, flooding, high shrink-swell potential, a seasonal high water table, or low strength. This degree of limitation generally requires major soil reclamation, special design, or intensive maintenance, which in most situations is difficult and costly.

Suitability Ratings

GOOD – means the soil has properties favorable for the use. Good performance and low maintenance can be expected.

FAIR – means the soil is moderately favorable for the use. One or more soil properties make these soils less desirable than those rated good.

POOR – means the soil has one or more properties unfavorable for the use. Overcoming the unfavorable property requires special design, extra maintenance, or costly alteration.

This subsection contains discussions and tables on *Building Site Development* and *Construction Materials*.

II – NONAGRICULTURAL INTERPRETATIONS

BUILDING SITE DEVELOPMENT RATING

General

Soil properties influence development of building sites, including the selection of the site, the design of the structure, construction, performance after construction, and maintenance. Soil limitation ratings of slight, moderate, and severe are given in tables in published soil survey reports, for shallow excavations, dwellings with and without basements, small commercial buildings, local roads and streets, and lawns, landscaping, and golf fairways.

Shallow Excavations

Shallow excavations are trenches or holes dug in the soil to a maximum depth of 5 or 6 feet. They are used for pipelines, sewerlines, telephone and power transmission lines, basements, open ditches, and cemeteries. The excavations are most commonly made by trenching machines or backhoes. The ratings are based on the soil properties that influence ease of digging and resistance to sloughing.

Dwellings and Small Commercial Buildings

These are structures built on shallow foundations on undisturbed soil. The load limit is the same as that for single-family dwellings no higher than three stories. Ratings are made for small commercial buildings without basements, for dwellings with basements, and for dwellings without basements. The ratings are based on soil properties and site features affecting soil strength and settlement under a load, and those that affect excavation and construction costs. These properties and features include high water table, flooding, shrink-swell potential, organic layers, depth to bedrock or to a cemented pan, and large stones.

Local Roads and Streets

Limitation ratings are given for the use of soils for construction of improved local roads and streets that have all-weather surfacing, commonly of asphalt, gravel with binder in it, or concrete, and that are expected to carry automobile and light truck traffic all year. These roads and streets are graded to shed water, and conventional drainage measures are provided. With the probable exception of the hard surface, roads and streets are built mainly from the soil at hand.

Lawns, Landscaping, and Golf Fairways

The soils are rated for their use in establishing and maintaining turf for lawns and golf fairways and ornamental trees and shrubs for residential type landscaping. The ratings are based on the use of soil material at the location with some land smoothing. Irrigation may or may not be needed and is not a criterion in rating. Traps, trees, roughs, and greens are not considered as part of the golf fairway. The properties considered are those listed that affect plant growth and trafficability after vegetation is established.

See the *USDA-NRCS National Soil Handbook*, Part 620, for criteria used in rating specific uses.

II – NONAGRICULTURAL INTERPRETATIONS

CONSTRUCTION MATERIALS RATINGS

General

Soils are rated as sources for roadfill, topsoil, sand, and gravel. Suitability ratings of good, fair, or poor are given for soils used as a source of roadfill and topsoil. Ratings of probable and improbable are given for sand and gravel. A rating of probable means that on the basis of the available evidence, the source material is likely to be in or below the soil. A rating of improbable means that the source material is unlikely to be in or below the soil. The ratings for sand and gravel do not consider the quality of the source material because quality depends on how the source material is to be used. These ratings can be found in selected tables of the published soil survey report.

Roadfill

Roadfill consists of soil material that is excavated from its original position and used in road embankments elsewhere. The evaluations for roadfill are for low embankments that generally are less than 6 feet in height and are less exacting in design than high embankments such as those along superhighways. The rating is given for the whole soil, from the surface to a depth of about 5 feet, based on the assumption that soil horizons will be mixed in loading, dumping, and spreading. Soils are rated as to the amount of material available for excavation, the ease of excavation, and how well the material performs after it is in place.

Sand

Sand as a construction material is usually defined as particles ranging in size from 0.074 mm (sieve #200) to 4.75 mm (sieve #4) in diameter. Sand is used in great quantities in many kinds of construction. Specifications for each purpose vary widely. The intent of this rating is to show only the probability of finding material in suitable quantity. The suitability of the sand for specific purposes is not evaluated. If the lowest layer of the soil contains sand, the soil is rated as a probable source regardless of thickness. The assumption is that the sand layer below the depth of observation exceeds the minimum thickness.

Gravel

Gravel as a construction material is defined as particles ranging in size from 4.76 mm (sieve #4) to 76 mm (3 inches) in diameter. Gravel is used in great quantities in many

kinds of construction. Specifications for each purpose vary widely. The intent of this rating is to show only the probability of finding material in suitable quantity. The suitability of the gravel for specific purposes is not evaluated. If the lowest layer of the soil contains gravel, the soil is rated as a probable source regardless of thickness. The assumption is that the gravel layer below the depth of observation exceeds the minimum thickness.

Topsoil

The term "topsoil" has several meanings. As used here, the term describes soil material used to cover an area so as to improve soil conditions for establishment and maintenance of adapted vegetation. Generally, the upper part of the soil, which is richest in organic matter, is most desirable; however, material excavated from deeper layers is also used. In this rating, the upper 40 inches of soil material is evaluated for use as topsoil. In the borrow area, the material below 40 inches is evaluated for its suitability for plant growth after the upper 40 inches is removed. The soil properties that are used to rate the soil as topsoil are those that affect plant growth, the ease of excavation, loading, and spreading, and those that affect the reclamation of the borrow area.

See the *USDA, NRCS National Soil Handbook*, Part 620, for criteria used in rating specific uses.