
(:)

... *

(// : // :)

GIS

GIS

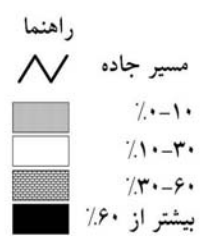
()

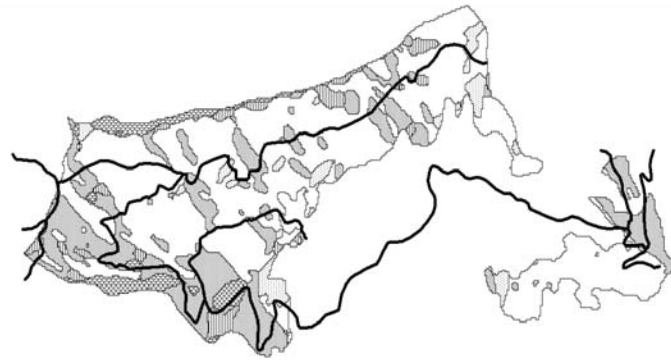
()

()

DEM^x ()
DEM ()
3D
Arcview Microstation

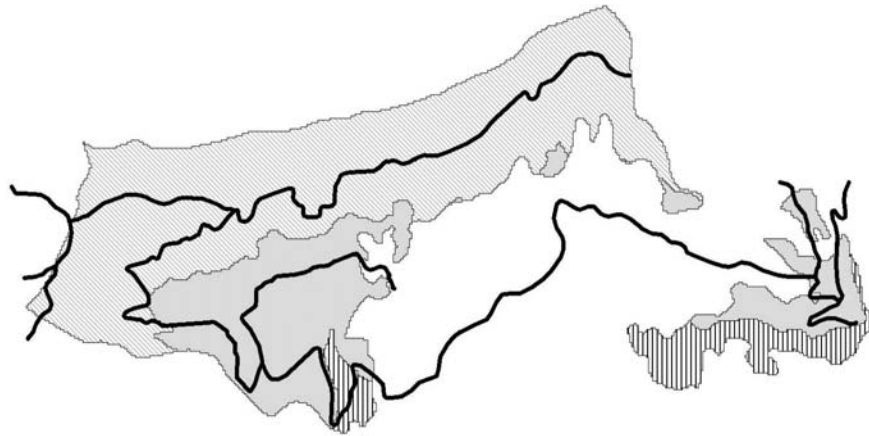
×
% %
() > % %
()
()
()
()





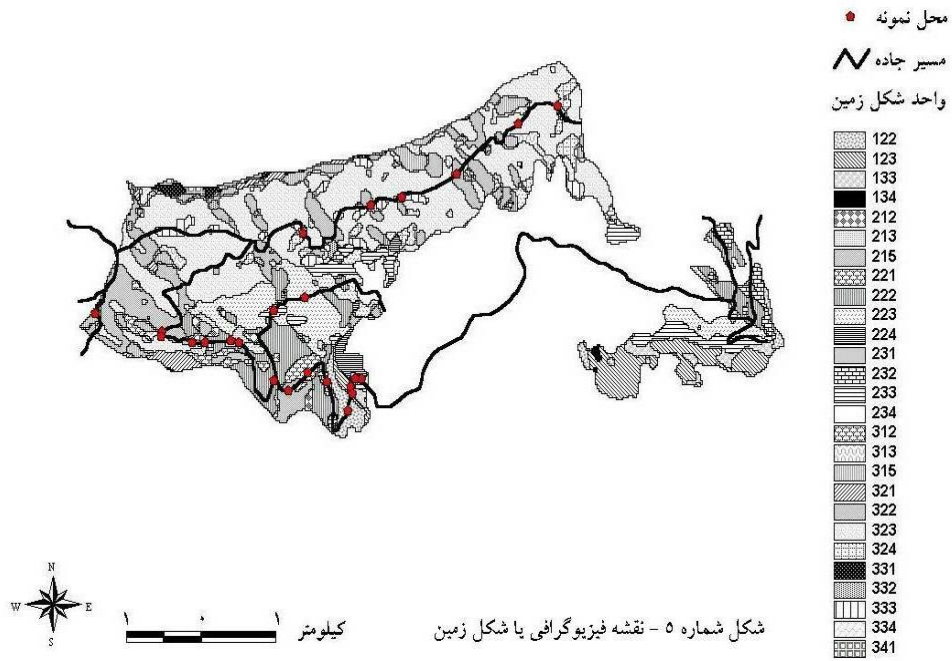
کیلو متر ۱

- راهنما
- مسیر جاده
 - شرق
 - جنوب
 - غرب
 - مسطح



کیلو متر ۱

- راهنما
- مسیر جاده
 - ۲۵۰-۴۵۰
 - ۴۵۰-۶۵۰
 - بیشتر از ۶۵۰



شکل شماره ۵ - نقشه فیزیوگرافی یا شکل زمین

:

()

()

$$P.S\% = 100 - \left(\frac{B.d}{P.d} \right) * 100$$

()

:

:P.S%

-

:B.d

:P.d

GPS

P.d

:

% :P.d = /

> % :P.d = /

< % :P.d = /

% :P.d = /

()

/ ()

/

/

/

/ ()

/

/

/

/

/ ()

/

/

.()

...

| | W % | | Clay% | Silt% | Sand% | B.D. | P.D. | P.S. |
|--|------------|--------------------|--------------|--------------|--------------|-------------|-------------|-------------|
| | / | sandy loam | / | / | / | / | / | / |
| | / | clay loam | / | / | / | / | / | / |
| | / | loam | / | / | / | / | / | / |
| | / | loam | / | / | / | / | / | / |
| | / | clay loam | / | / | / | / | / | / |
| | / | sandy loam | / | / | / | / | / | / |
| | / | loam | / | / | / | / | / | / |
| | / | clay | / | / | / | / | / | / |
| | / | clay loam | / | / | / | / | / | / |
| | / | sandy loam | / | / | / | / | / | / |
| | / | loam | / | / | / | / | / | / |
| | / | clay loam | / | / | / | / | / | / |
| | / | clay loam | / | / | / | / | / | / |
| | / | loam | / | / | / | / | / | / |
| | / | loam | / | / | / | / | / | / |
| | / | sandy loam | / | / | / | / | / | / |
| | / | clay loam | / | / | / | / | / | / |
| | / | clay loam | / | / | / | / | / | / |
| | / | sandy loam | / | / | / | / | / | / |
| | / | clay loam | / | / | / | / | / | / |
| | / | sandy clay loam | / | / | / | / | / | / |
| | / | silt loam | / | / | / | / | / | / |
| | / | clay loam | / | / | / | / | / | / |
| | / | clay loam | / | / | / | / | / | / |

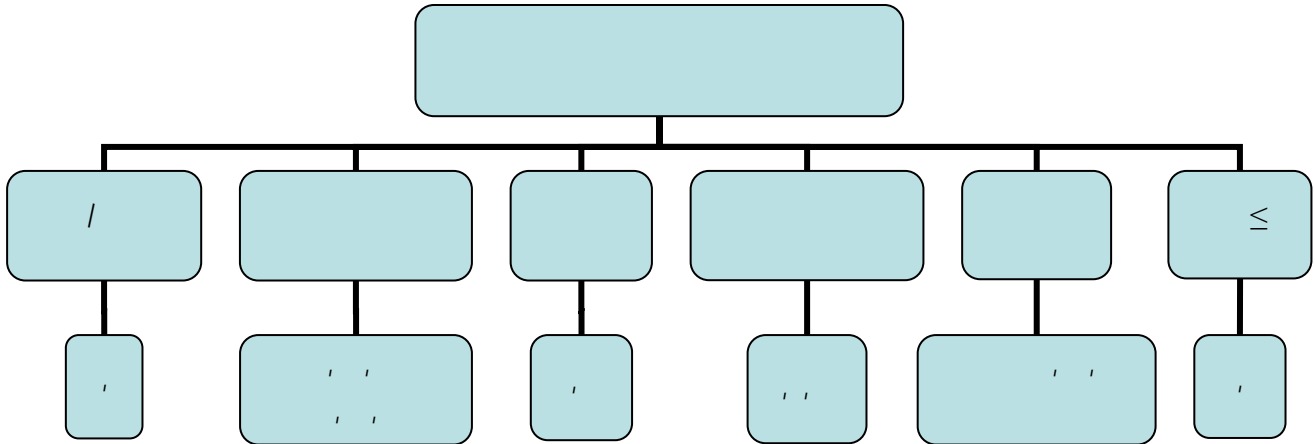
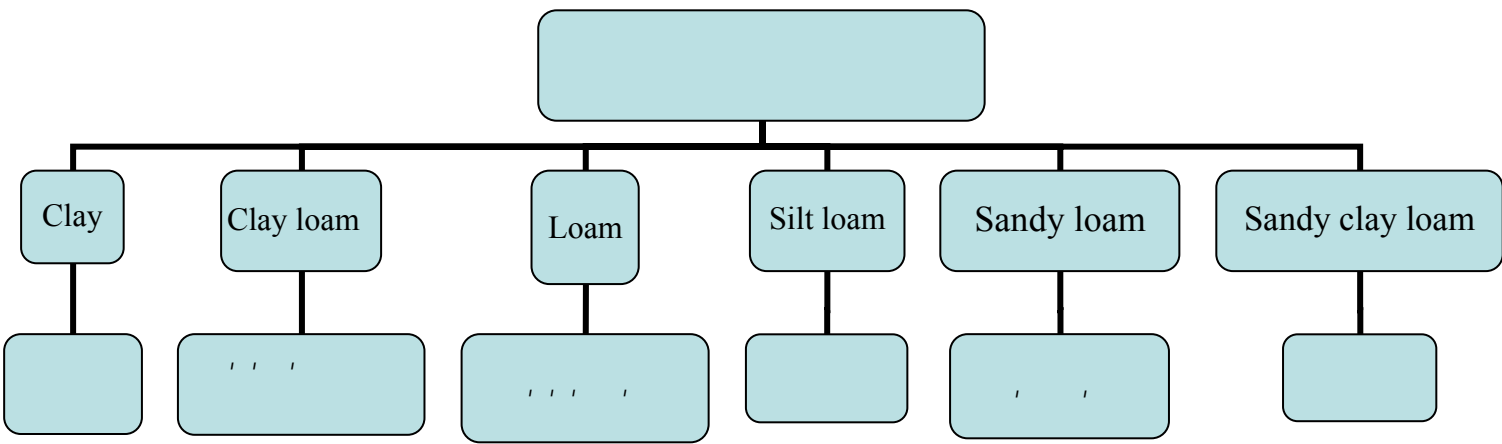
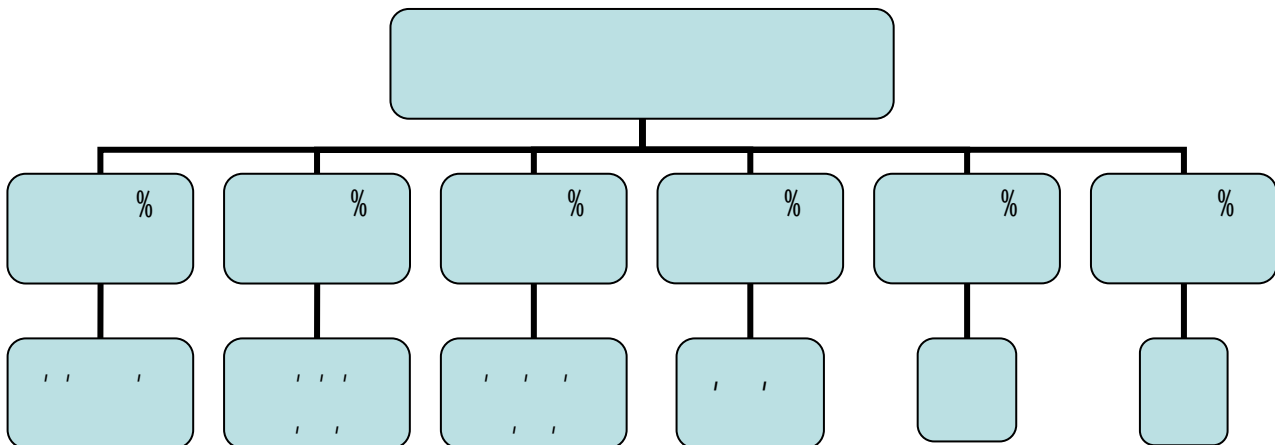
| | | | | | | | | | | | | | |
|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |



()

(....)

()



Forest soil classification to reduce costs of mechanical capability study for roadway and transportation (Case study: Agh- Mashhad Forest)

A. Jamshidy¹, B. Majnounian^{*2}, Gh. Zahedi Amiri² and S. A. Hoseini³

¹ MSc. student, Faculty of Natural Resources, University of Tehran, I.R.Iran

² Associate Prof, Faculty of Natural Resources, University of Tehran, I.R.Iran

³ Assistant Prof, Faculty of Natural Resources, Mazandaran University, I.R.Iran

(Received: 16 December 2005, Accepted: 28 October 2008)

Abstract

Sustainable development and optimum implementation of forest management planning requires forest road network (main and secondary roads). However, road construction in mountainous area is interference in unknown and virgin forest which leads to ecosystem disturbance. So, knowing of geological, geomorphological properties and soil mechanics from which road passes, is of great importance in properties decision making in order to lower the cost of road construction. Soil is the main constructive materials in forest roads and of course forms forest bed. It is possible to understand the engineering soil properties through studying the soil mechanics. Due to expenses of soil analysis, reducing soil samples to its minimum and maintaining its validity are of great importance in soil mechanics in forest roads. In this research, based on geomorphological properties such as slope, aspect, altitude, etc, zonation of study area was done and divided into homogenous units based on landform using GIS. After preparing landform map, one soil sample and totally 24 samples were taken in units from which road passes. Then soil properties like normal moisture (%), bulk density and soil texture were analyzed. By grouping soil analysis and their classification based on moisture (%), texture and porosity new homogenous regions were formed that are equal in characteristics such as geomorphology and soil. So it can be a base for soil sampling and soil mechanics studies. Based on this study, sample number decreased to 13 and costs of analysis have been reduced due to creating homogenous regions.

Keywords: Forest roads, Soil sampling, Soil zonation, Landform map, Soil mechanics