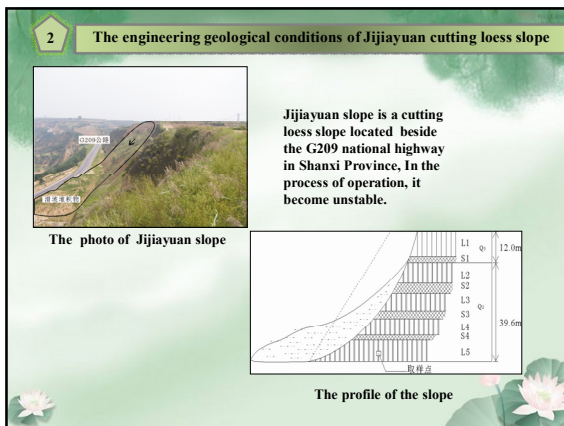
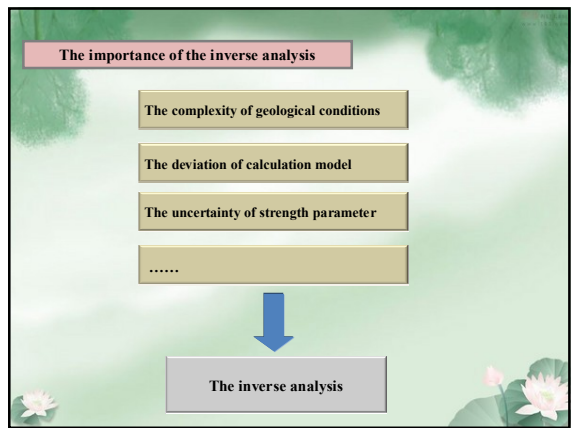
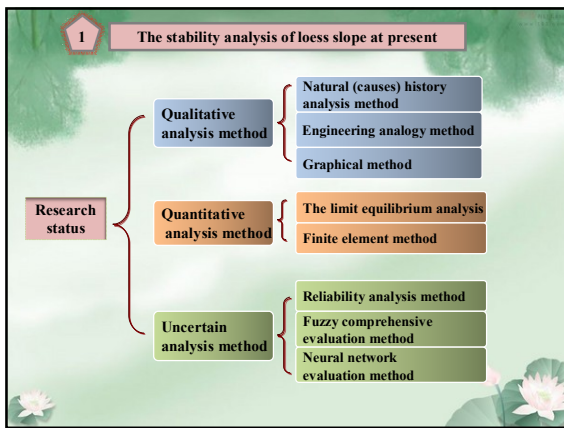


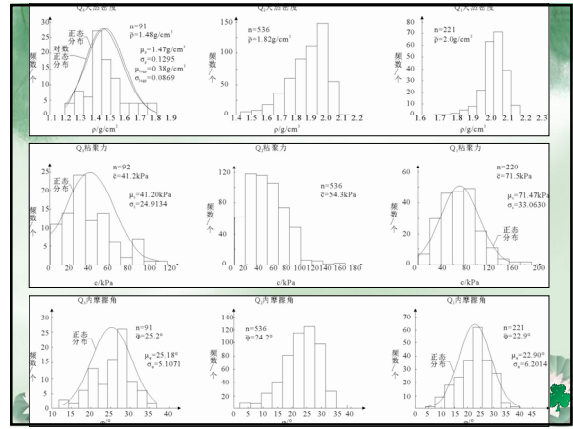
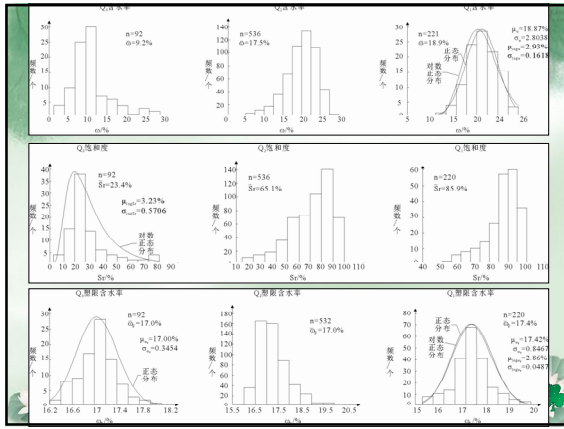
Content

- 1 The stability analysis of loess slope
- 2 The engineering geological conditions of Jijiayuan cutting loess slope
- 3 The physical and mechanical index test of L5 loess
- 4 The inverse analysis of strength parameter
- 5 Conclusions



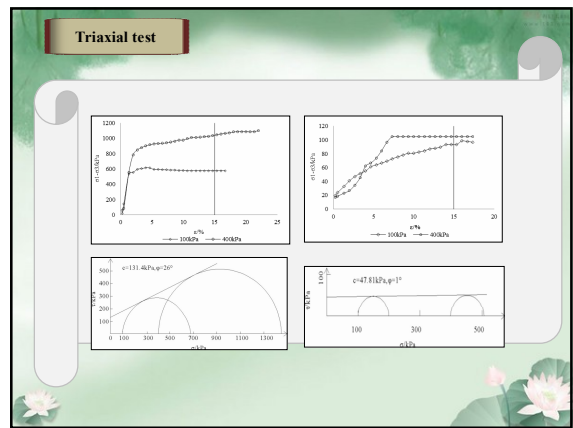
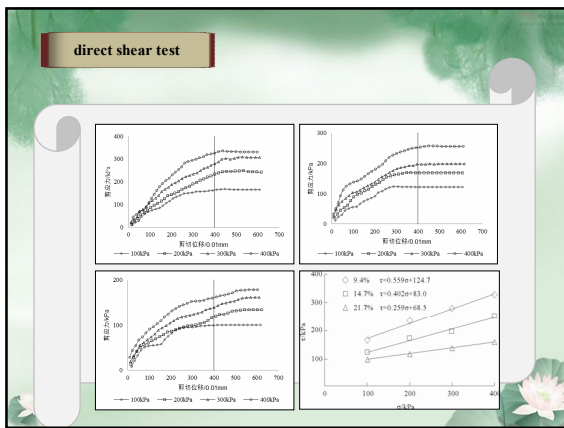
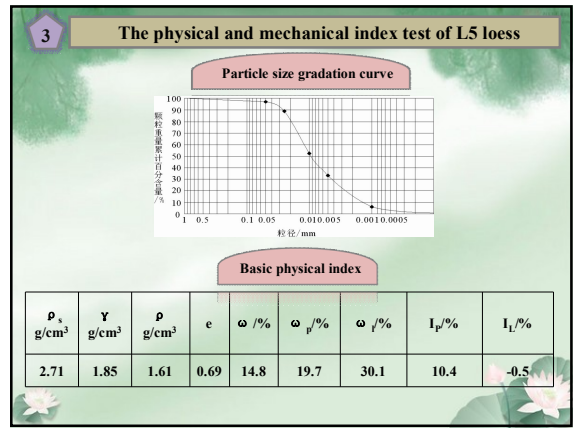
Statistical process

Count the physical and mechanic indexes of Q_3 , Q_2 and Q_1 loess, draw into histogram, then conduct the hypothesis testing of normal distribution and lognormal distribution 0.05 level of confidence



the statistical of the physical properties

参数	Q ₃	Q ₂	Q ₁
ω	9.2%	17.5%	18.9%
S _r	23.4%	65.1%	85.9%
ω _p	17.0%	17.0%	17.4%
ρ	1.48g/cm ³	1.82 g/cm ³	2.0 g/cm ³
c	41.2kPa	54.3 kPa	71.5 kPa
φ	25.2°	24.2°	22.9°



test results

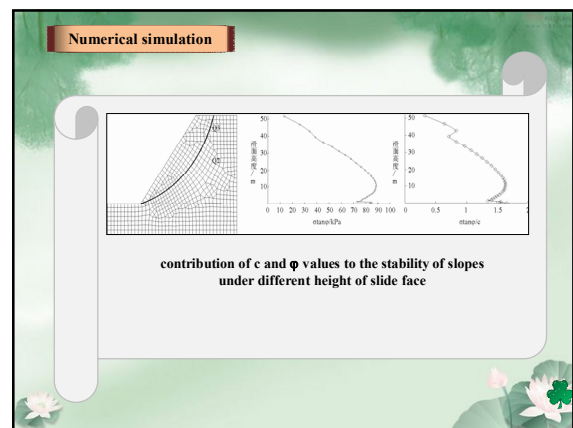
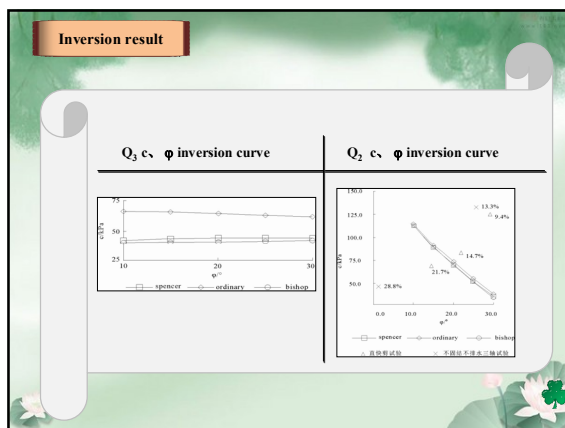
Soil samples state	Test method	ω /%	c/kPa	φ /($^{\circ}$)
Undisturbed soil	Direct fast shear test	9.4	124.7	29.2
		14.7	83.0	21.9
		21.7	68.5	14.5
	UU Triaxial test	13.3	131.4	26
		28.8	47.8	1.0

4 The Inverse Analysis of Strength Parameter

The process of inverse analysis

Control $F_s=1$

- The value of c, φ of Q_3 , select corresponding value of tab.1. Setting the value of φ of Q_3 between $10^{\circ} \sim 30^{\circ}$, selecting 5 points $\varphi = 10, \varphi = 15, \varphi = 20, \varphi = 25, \varphi = 30$, and start the inverse analysis of c ;
- The value of c, φ of Q_2 select corresponding value of tab.1. Setting the value of φ of Q_2 between $10^{\circ} \sim 30^{\circ}$, selecting 5 points $\varphi = 10, \varphi = 15, \varphi = 20, \varphi = 25, \varphi = 30$, and start the inverse analysis of c ;



5 Conclusions

If the normal stress of sliding surface increased, the value of φ will control the stability of slopes ; If the normal stress is small, the value of c will control the stability of slopes. In the example of Jijiyuan slope, when the depth of sliding surface is about 20m, the value of c, φ have equivalent affect on stability of slopes. So when we calculate stability of slope in practical project , for the lower slope, we should consider mainly the value of c , for the higher slope, we should consider mainly about the value of φ .

Through comparing the inversion results and test results of soil samples, we found that plastic limit moisture content is the start moisture content of loess landslide , its corresponding strength to startup strength. In practical project, we can select strength parameters obtained through the direct and quick shear under the conditions that the soil sample's moisture content is plastic limit moisture content for evaluation the slope stability.

