

STUDY ON THE BEHAVIOUR OF SINGLE GEOCELL (STATIC LOADING)



भारतीय प्रौद्योगिकी संस्थान जम्मू
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- ❖ Location: Jammu University
- ❖ Special case : Loss of cohesion is also analysed.
- ❖ Results enhances the understanding on the behaviour of geocell-confined local soil.



Fig1. Location of the site from where soil samples are collected

Table showing the results of laboratory investigation

Laboratory Investigation

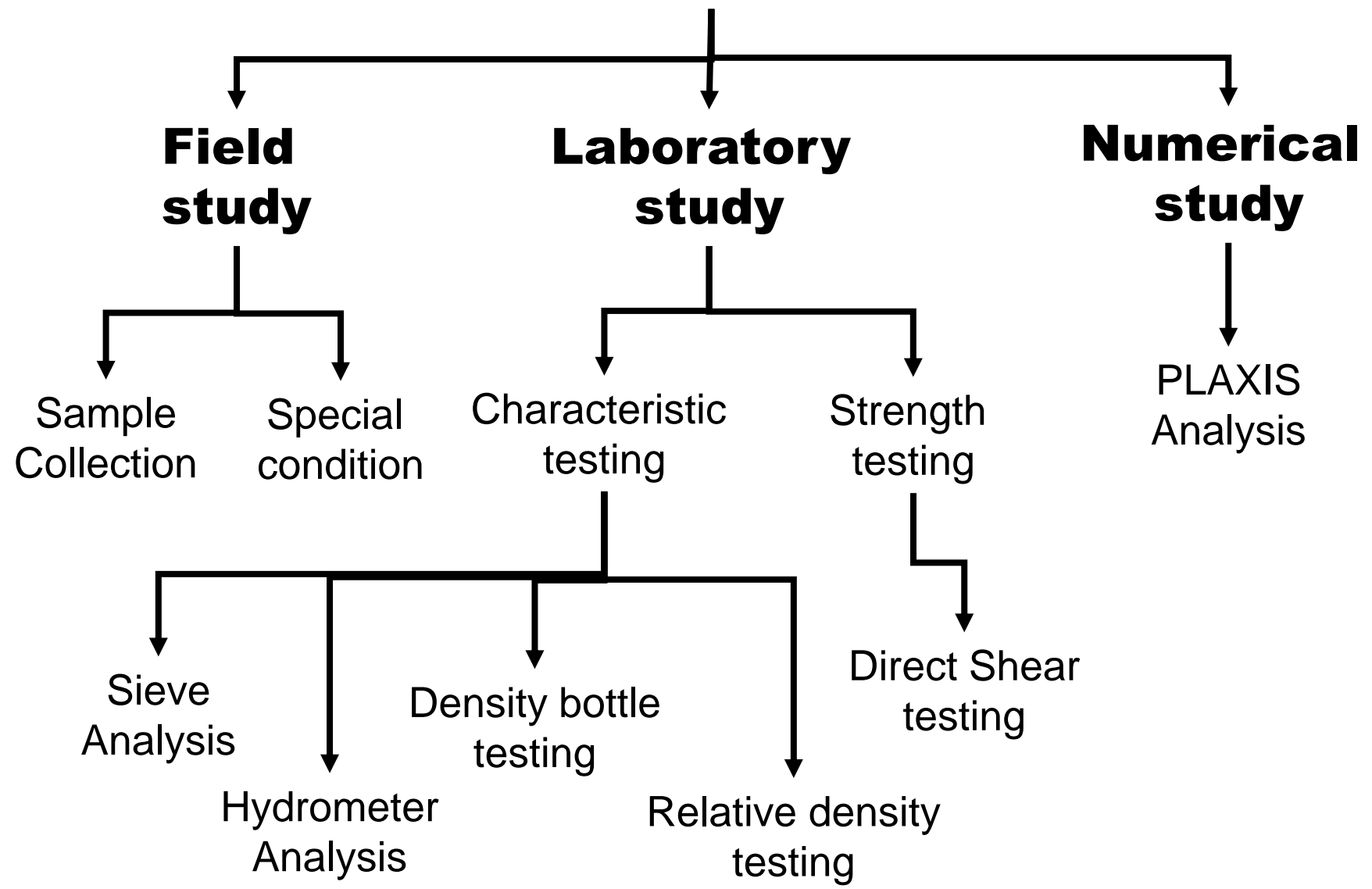
Index properties

- ❖ Sieve Analysis
- ❖ Specific Gravity
- ❖ Relative density

Soil strength properties

- ❖ Direct shear testing
- ❖ Triaxial testing

METHODOLOGY



Properties	Sample 01	Sample 02
Gravel (%)	10.07	16.65
Sand (%)	79.33	75.88
Silt (%)	9.13	6.14
Clay (%)	1.47	1.33
Coefficient of curvature (C_c)	1.21	0.84
Coefficient of uniformity (C_u)	5.7	7.37
Maximum density, γ_{max} (g/cc)	1.60	1.64
Minimum density, γ_{min} (g/cc)	1.22	1.35
Specific gravity (G_s)	2.57	2.57
Cohesion, c (kPa)	24.67	20.35
Angle of internal friction, ϕ (°)	34.3	37.4

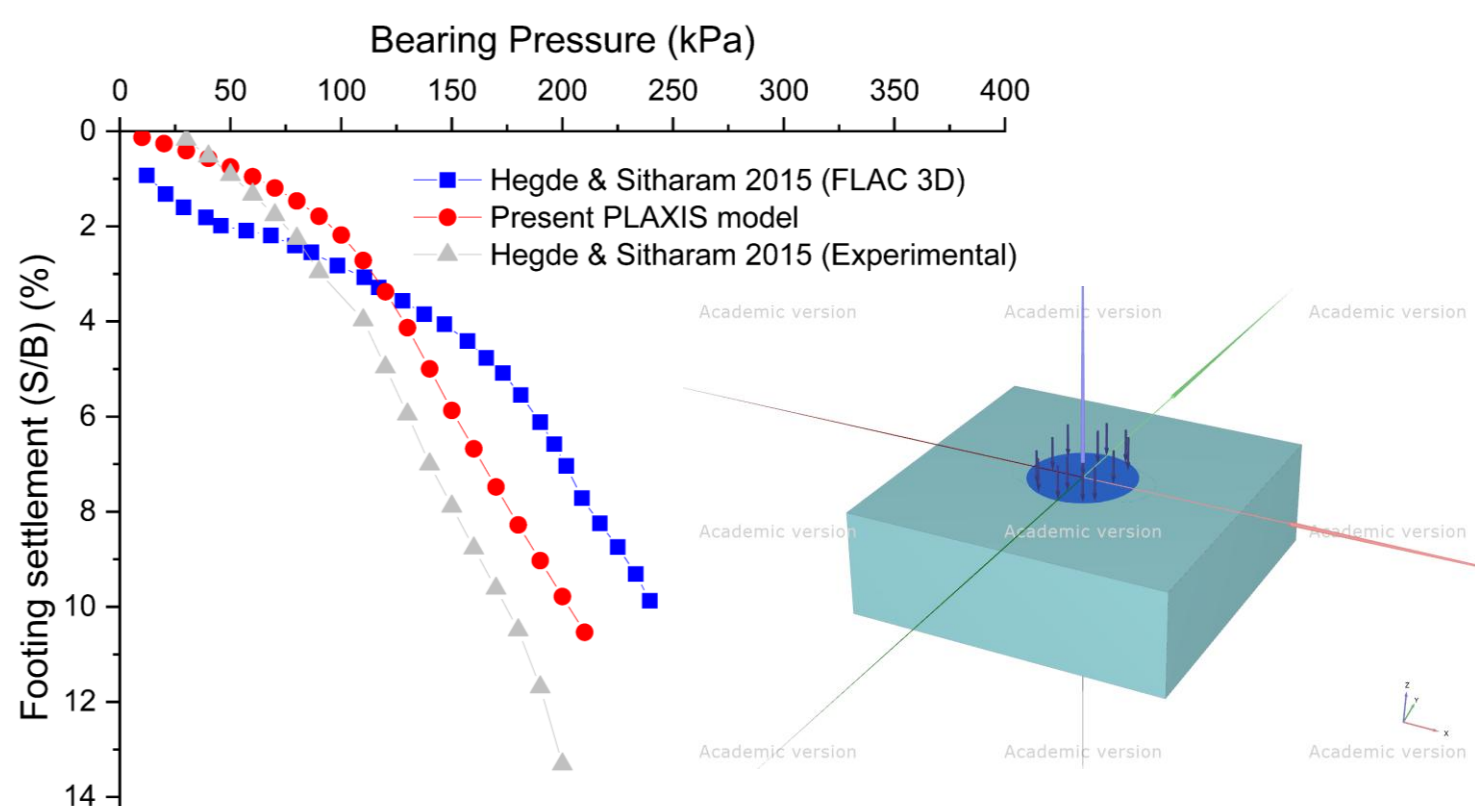


Fig 2. Validation curve with the Hegde and Sitharam (2015) model

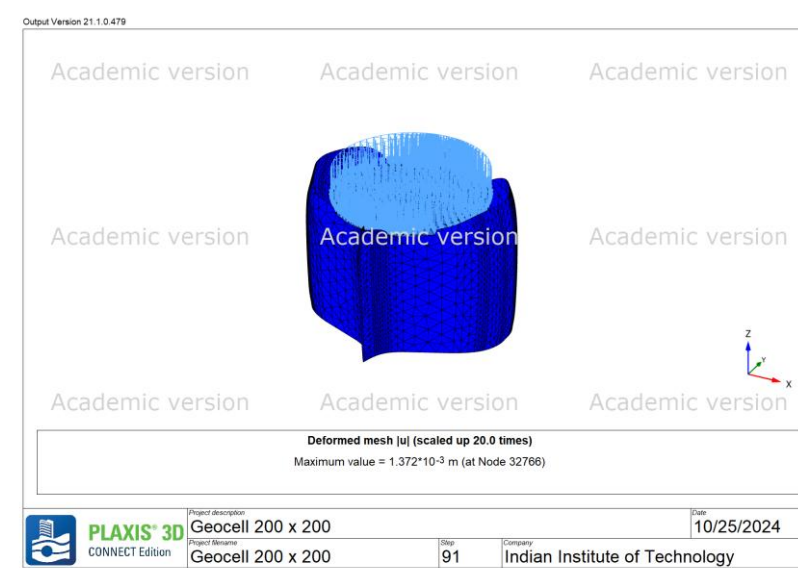


Fig 3. Numerical model of actual shape of geocell using PLAXIS-3D

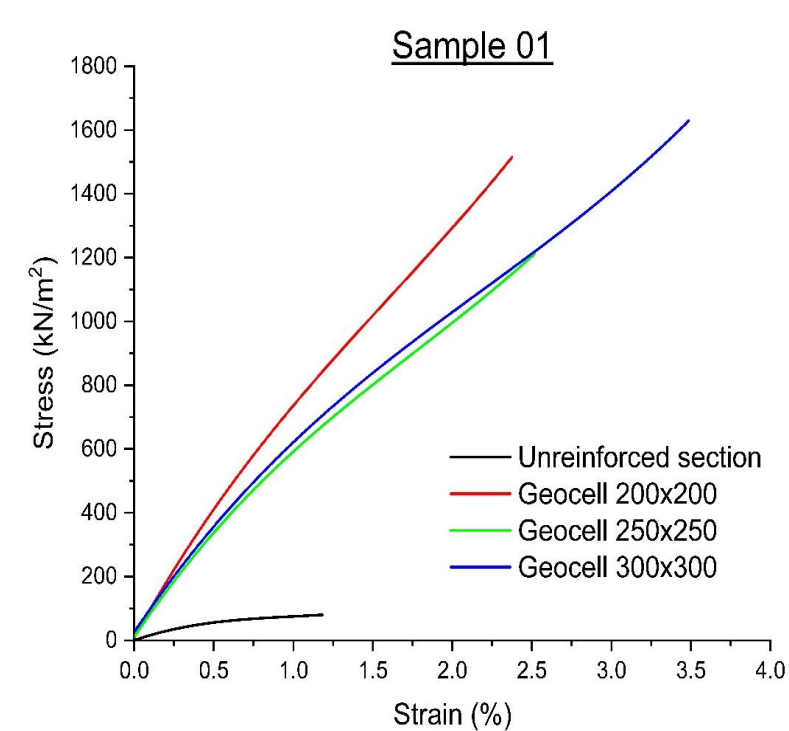


Fig 4. Numerical results of soil sample 01 using PLAXIS-3D

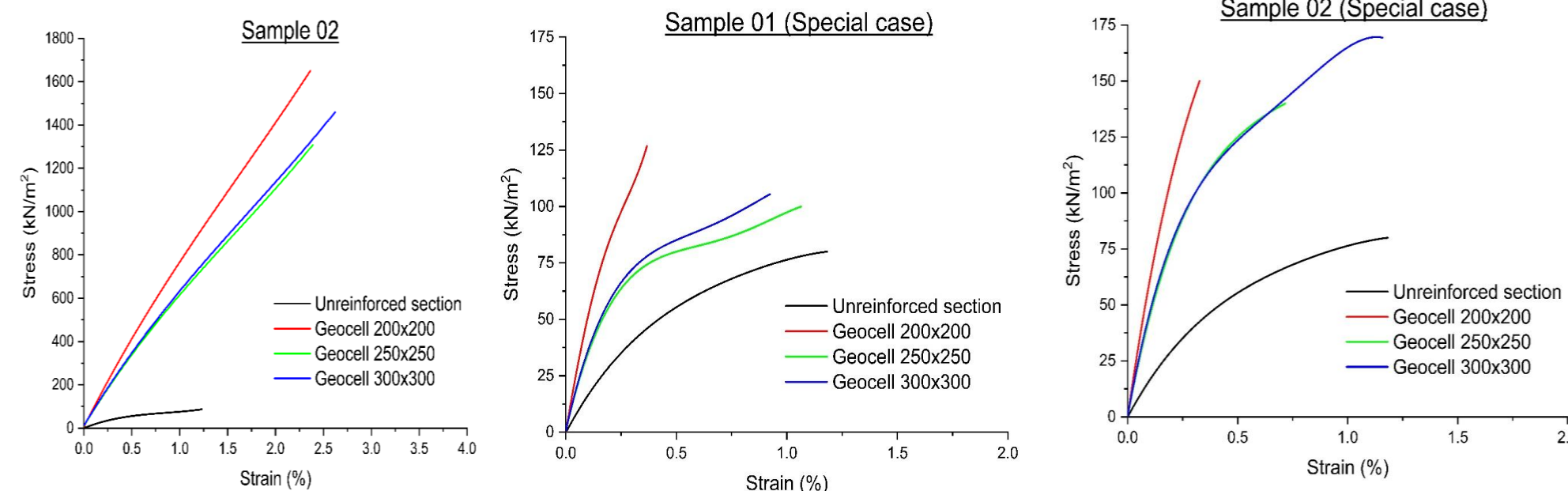
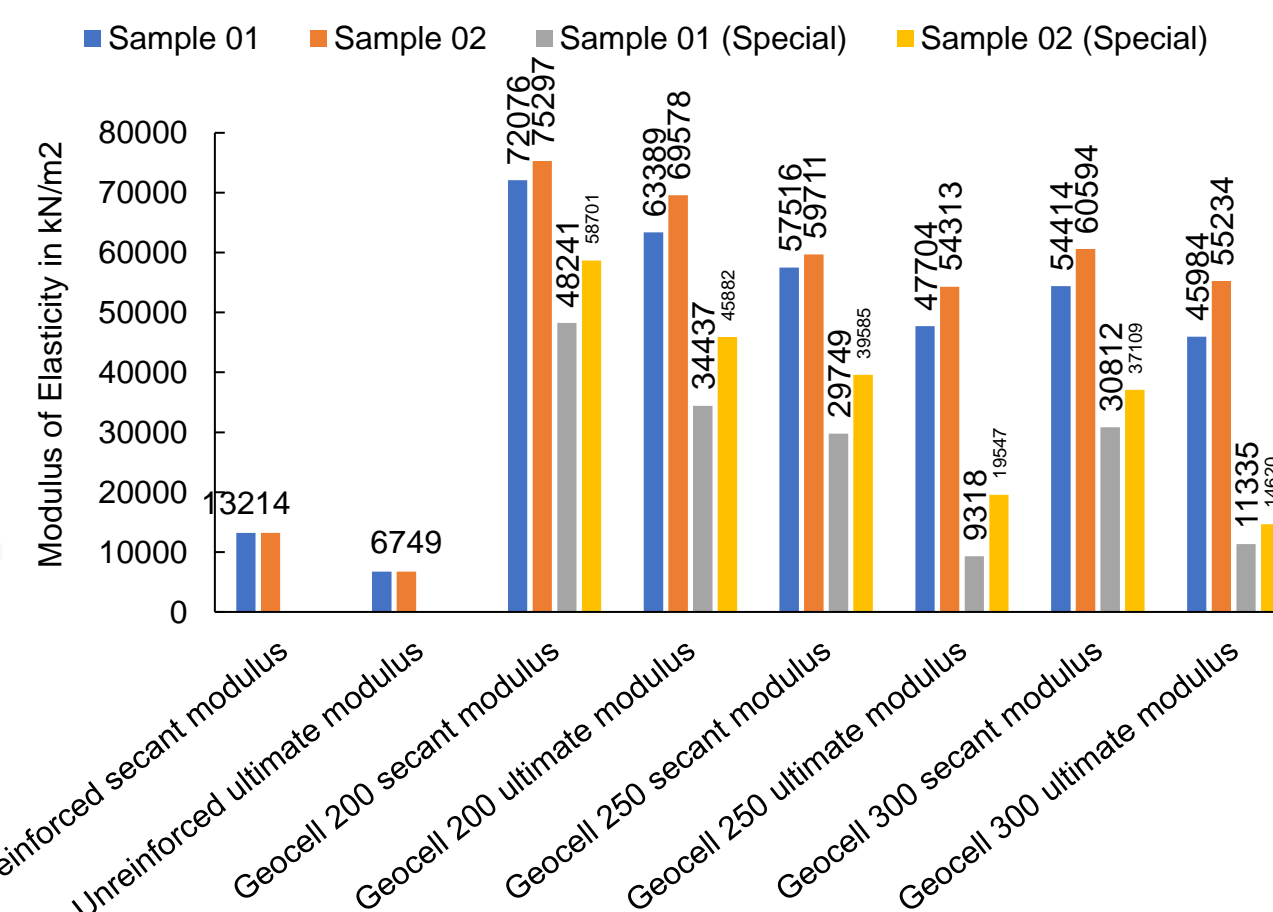


Fig 5. Numerical results of soil sample 02 along with special case of both samples using PLAXIS-3D



Publications:

Conference

1. "Towards enhancing durability of hill roads: numerical investigations on modulus improvement of geocell confined Jammu soil", submitted in proceedings of NGS International Conference series (Geomandu 24)