Geocells for Construction

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Why in News?

Recently, CSIR-Central Road Research Institute (CSIR-CRRI) and Bharat Petroleum Corporation Limited (BPCL) were recognized by the India Book of Records and Asia Book of Records.

- **Reason** – Using technical textile Geocell made from End of life plastic for construction of First Roadblock section.
- **Development of** - Technical textile geocells manufactured from processed end-of-life plastic waste, which is typically difficult to manage or recycle.
- **Demonstration –** Near Delhi**,** On DND–Faridabad–KMP Expressway
- **Supported by** - National Highways Authority of India (NHAI).
- **Aligned with -** India's Circular Economy goals by reducing environmental burden of plastic disposal & converting waste into high- value infrastructure material.
- **Features of Geocells -** A 3-dimensional, honeycomb-like cellular confinement system used to improve Load bearing capacity & soil stability.
- **Materials used –** High density Polyethylene (HDPE) ot Polyester.. However, recent innovations (like the CSIR-CRRI project) utilize recycled plastic or even jute (developed by NIT Karnataka in 2025).
- **Functions -** When expanded and filled with materials (soil, sand, or aggregate), the cells provide lateral confinement. This creates a rigid "mattress" effect that distributes loads over a wider area.

CSIR-Central Road Research Institute (CSIR-CRRI)
• **Established in -** 1952 • **National laboratory** - Under the Ministry of Science and Technology. • It conducts high-end research and consultancy in road transportation, highway engineering, bridge design, and traffic safety.