Advantages of lime stabilization of expansive soil vs geogrid uses
Talking points

	Lime	Geogrids
Working principles	Lime reacts with clay in a pozzolanic reaction to permanently improve soil properties	Mitigate the symptoms. Constrains the base layer but does not permanently change the soil properties, risk of subgrade movement
Soil types	Especially effective for mid and high expansive soils	Typically, ineffective long-term on its own in expansive soils
Benefits	Change the soil nature and improves its overall properties such as bearing capacity and reduce swell/shrinkage	Geogrid tensile strength can help in restraining the resistance of pavement tensile stress
Design Criteria	Lime stabilized layers are assigned a structural layer coefficient, under design guidelines. It decreases the required amount of aggregates	Still requires significant aggregate layer. No structural layer coefficient can be applied.
Homogenous subbase	Lime treatment changes the chemical nature and mechanical properties of the soil, resulting in a strong and uniform subbase	Subbase remains a mixture of expansive soils, different stretches of the road will behave differently, creating longitudinal stresses
Regulations and practices	Transparent and normalized process. Many DOT and ASTM specifications for the product and procedures to ensure performance	Nontransparent model owned by geogrid vendors. Who is liable if it fails?
Aggregates	Wide range of suitable aggregates sizes	Aggregates sizing must be carefully matched to the geogrid specifications
Equipment required	Standard equipment for chemical additions. Normal industrial practices	Manual labor, alignment of the mesh is challenging in curves or uneven terrain. Standard grid width, welding can be required
Application	One application of the lime product. Standard subbase treatment	How many layers of geogrid are required? Where in the section the geogrid should be placed? Might be different for every job
Performance issues	Poor design criteria or application, inaccurate identification of the active zone depth	Poor design, incorrect layout, particularly for corners and junctions. Expansive soil remains expansive and will continue to shrink and swell
Durability	Highly durable due to permanent changes in soil properties, e.g. DFW airport and Austin Bergstrom airport 50+ years	Limited long-term experience. Unknown impact of plastic aging
Flexibility	Homogeneity of the soil, easy to modify later, e.g. utilities repairs, rehabilitation, reconstruction, etc.	Not compatible with later changes. Damaging the geogrid impacts performance. The work will be difficult and expensive to remedy
Recycling	Easy reclamation due to material homogeneity	Highly complicated; mixture of aggregate, native soil and plastic grid
Environmental	Lime is highly compatible with the environment. It is used for food processing (tortilla), drinking water and pollution remediation	Plastic legacy waste in the soil - potential source of microplastics ?