

A Large-Scale Demonstration of Soil Carbonation for Subgrade Stabilization

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1. Background

Soil carbonation- Reaction mechanism for soil strength improvement



2. Methodology

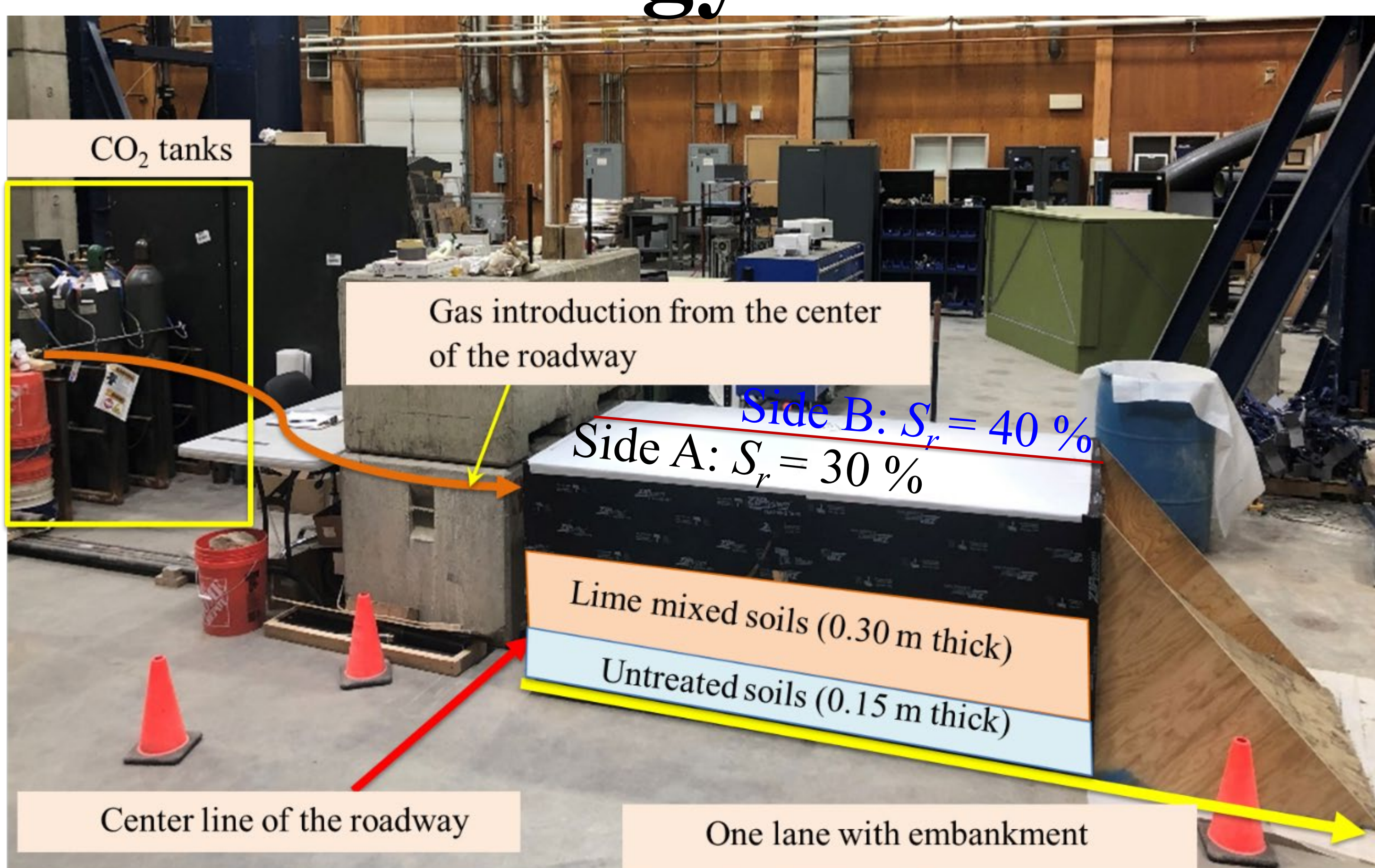


Fig 1.) A novel soil carbonation method

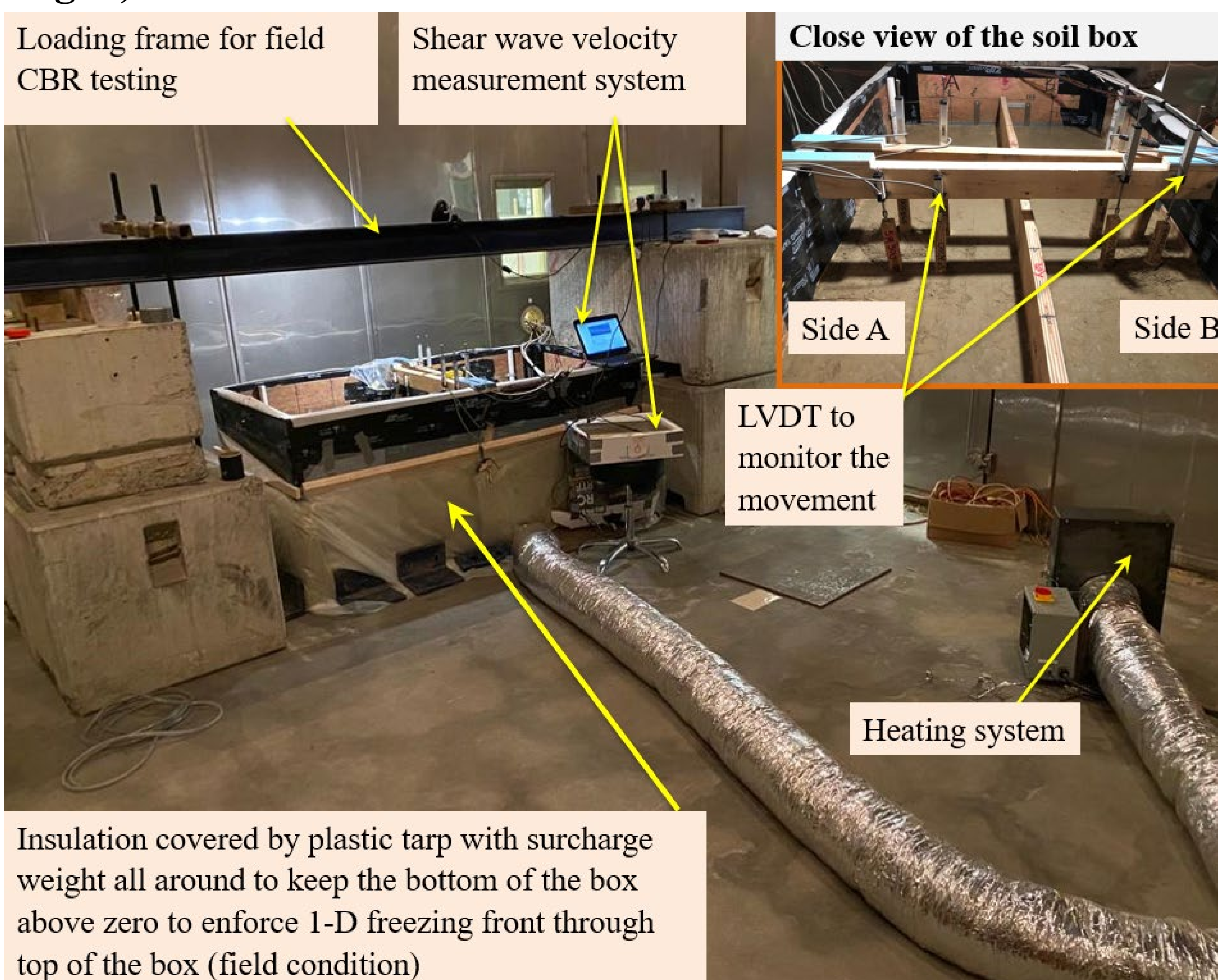


Fig 2.) Freeze-thaw durability testing in an environmental chamber

3. Results

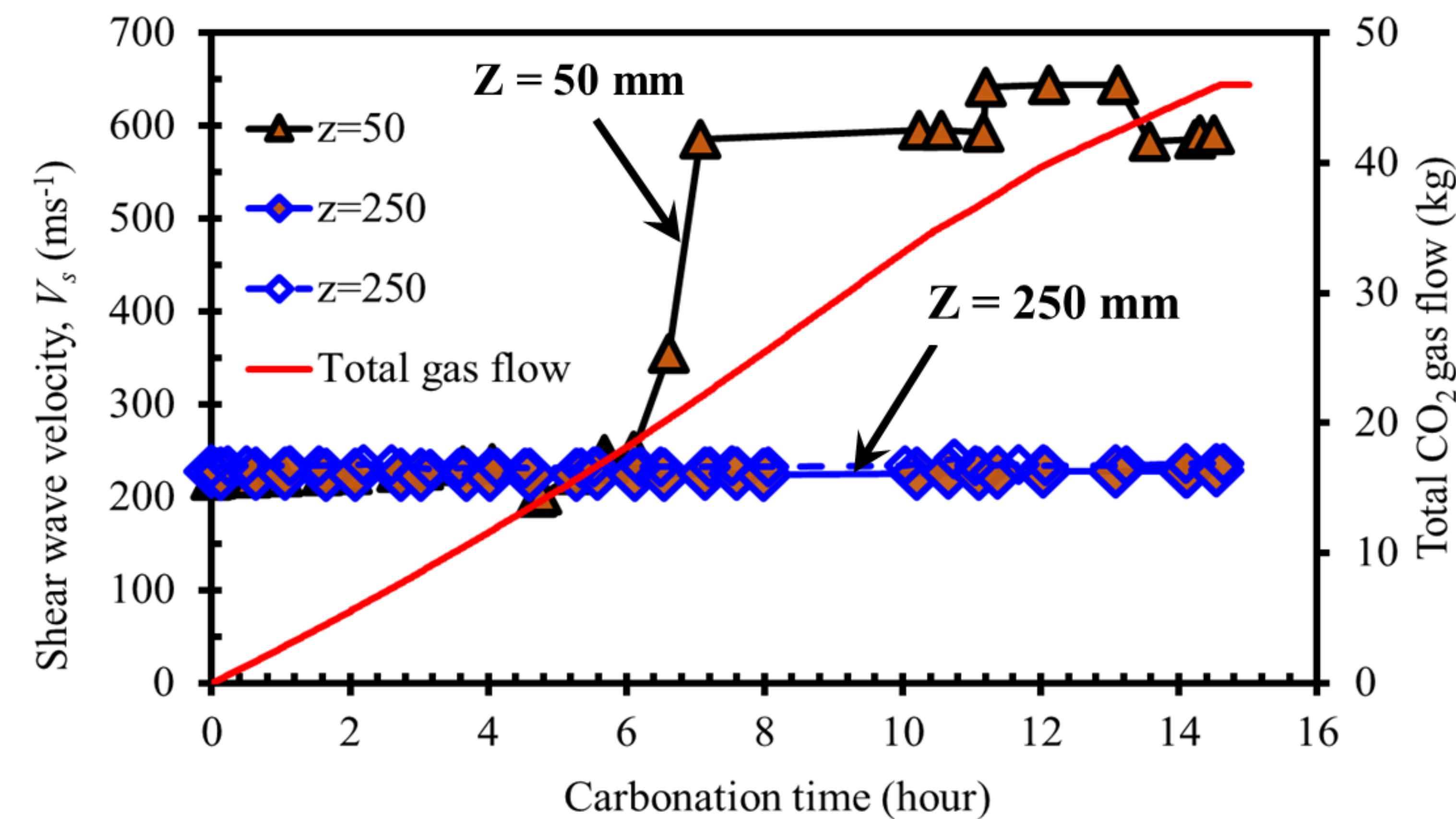


TABLE 2—NEHRP site classification (NEHRP, 2003)

Site Class	Soil Profile Name	Soil Shear Wave Velocity, V_s (m/s), of Upper 30 m (IBC 2000)
A	Hard rock	$V_s > 1524$
B	Rock	$762 < V_s \leq 1524$
C	Very dense soil and soil rock	$366 < V_s \leq 762$
D	Stiff soil profile	$183 < V_s \leq 366$
E	Soft soil profile	$V_s < 183$
F	"Problematic soils"	Site spec. eval.

Fig 3.) Changes in soil stiffness

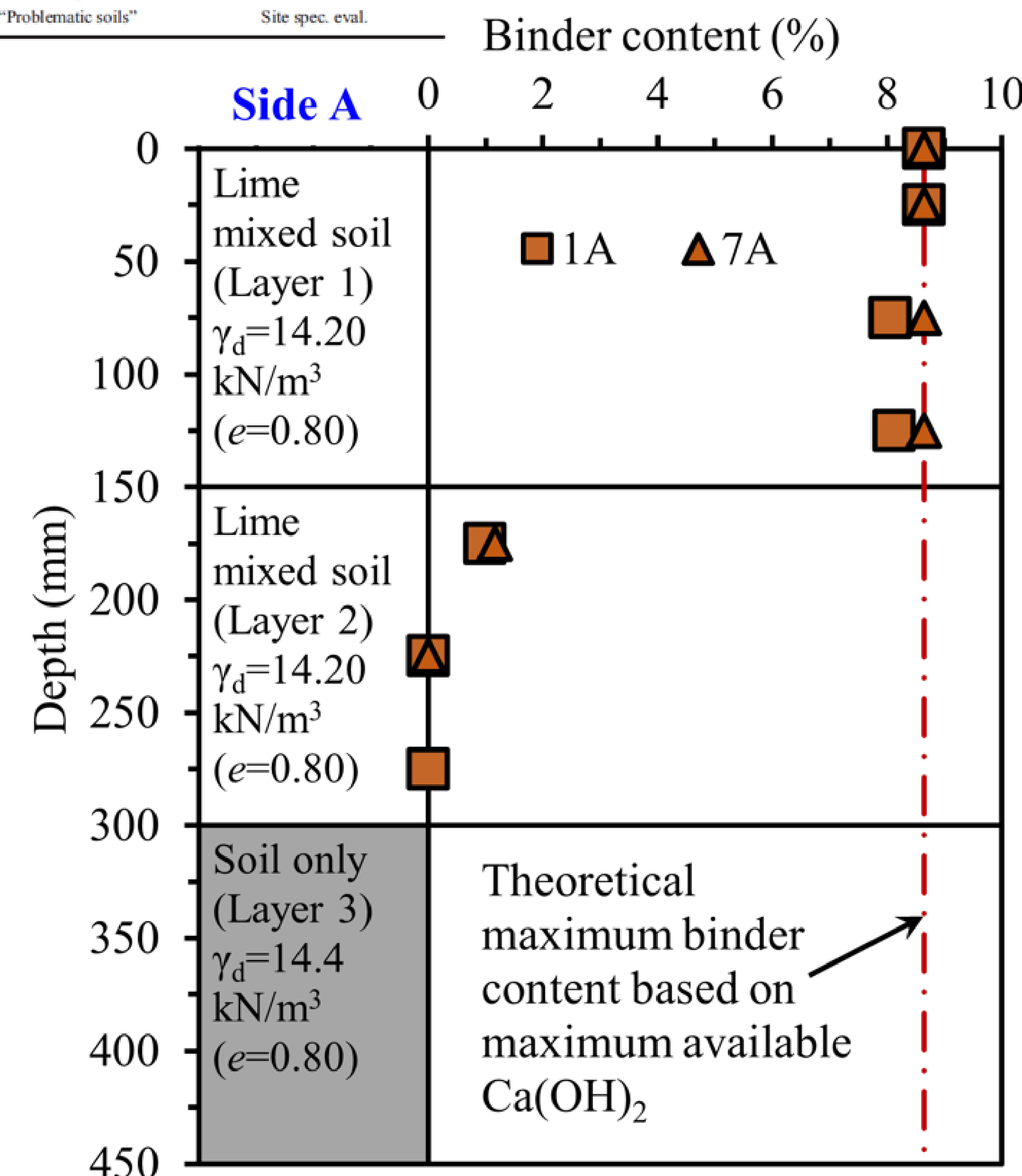


Fig 4.) Carbonation profile

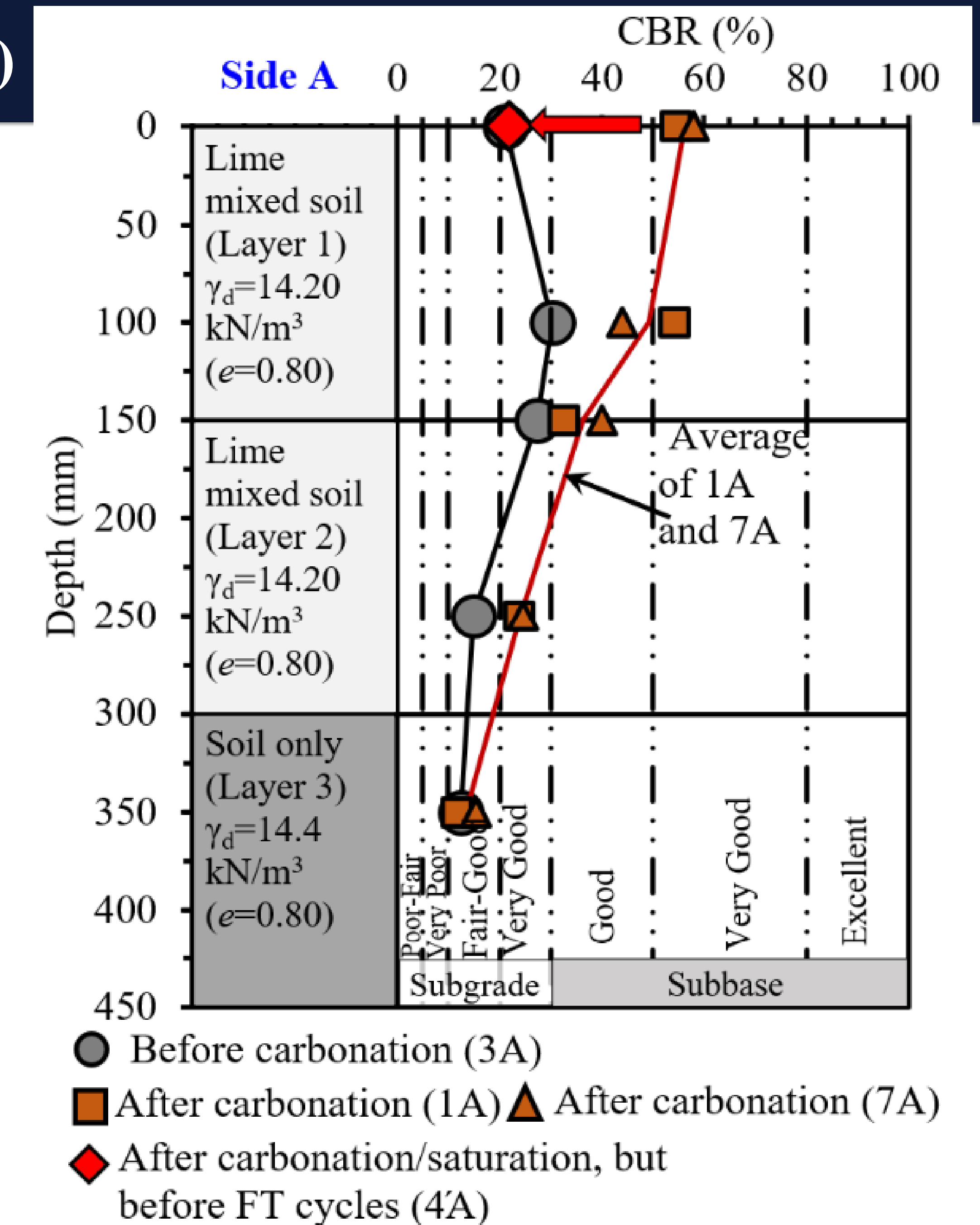


Fig 5.) Strength profile after carbonation and soaking

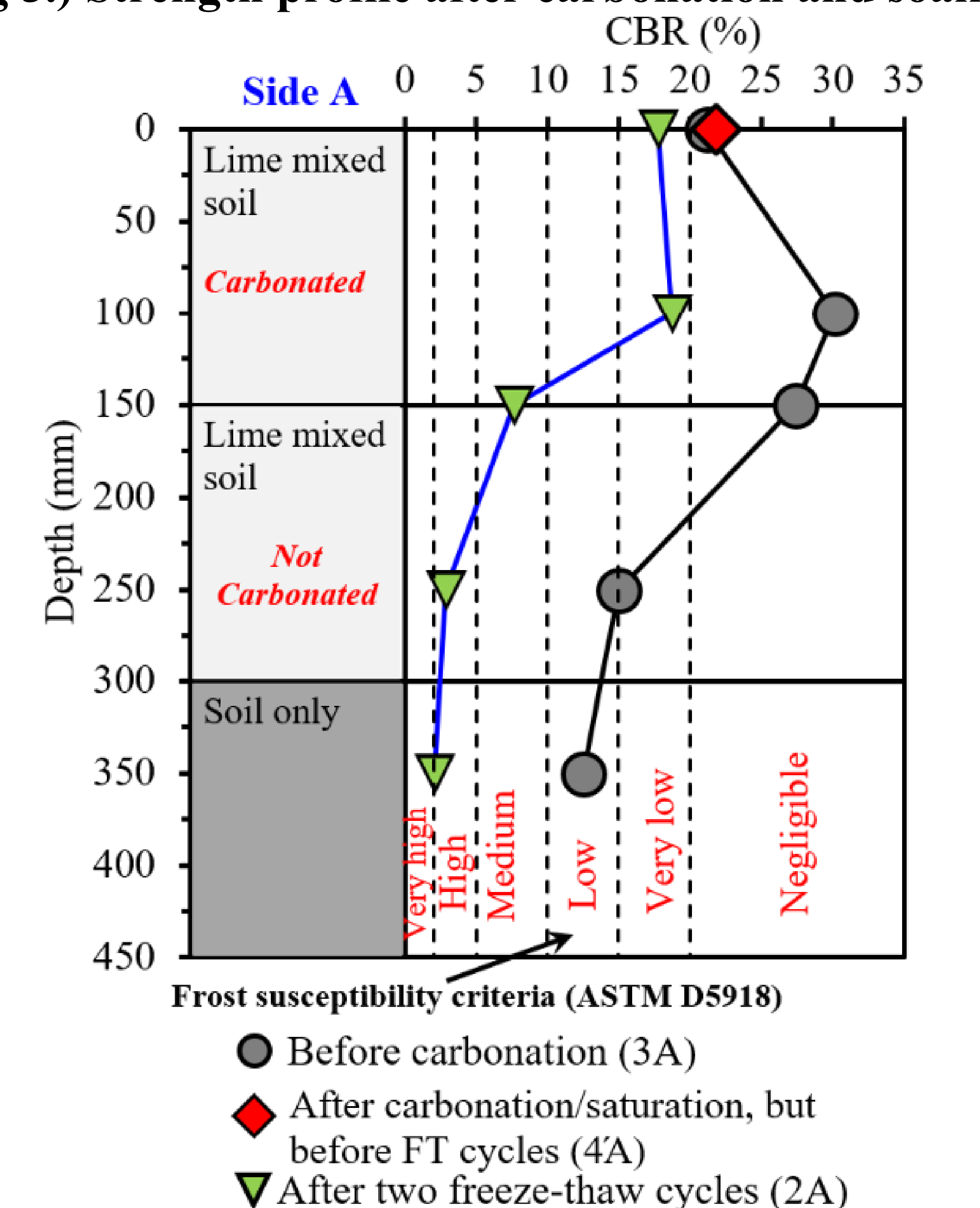


Fig 6.) Strength profile after FT cycles