



Barrett
Foundation



The
UNIVERSITY
of **VERMONT**

Analyzing the Effect of Ground Glass Pozzolan as a Supplementary Low-Carbon Cementitious Material

ANNA CASAVANT², ROBERT WORLEY II¹, DRYVER HUSTON²

¹CIVIL AND ENVIRONMENTAL ENGINEERING, UNIVERSITY OF VERMONT

²MECHANICAL ENGINEERING, UNIVERSITY OF VERMONT



CONCRETE MIX DESIGN



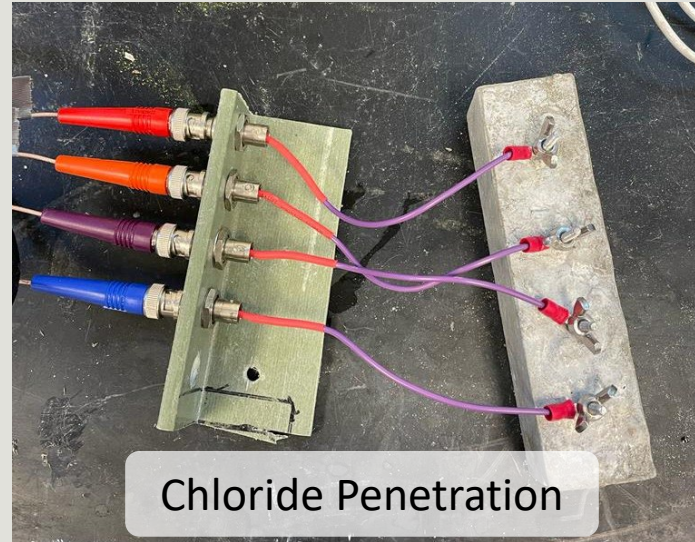
Motivation

Concrete is a widely used building material

Produces roughly 5%-7% of the world's CO₂ emissions because of cement used

Replacing even a small portion of cement with ground glass can be helpful

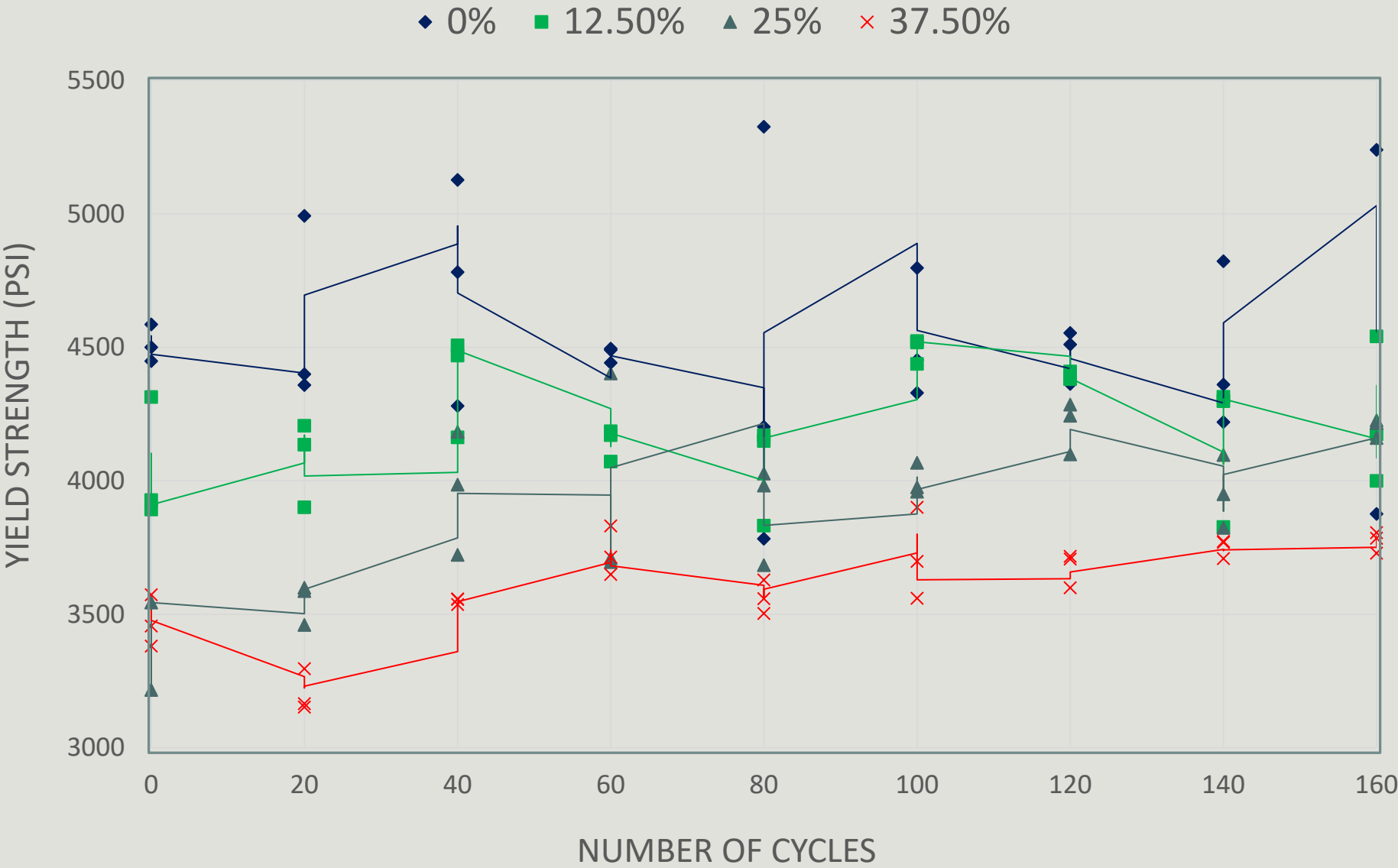
Methods



0, 12.5, 25 and 37.5% cement replacement with ground glass

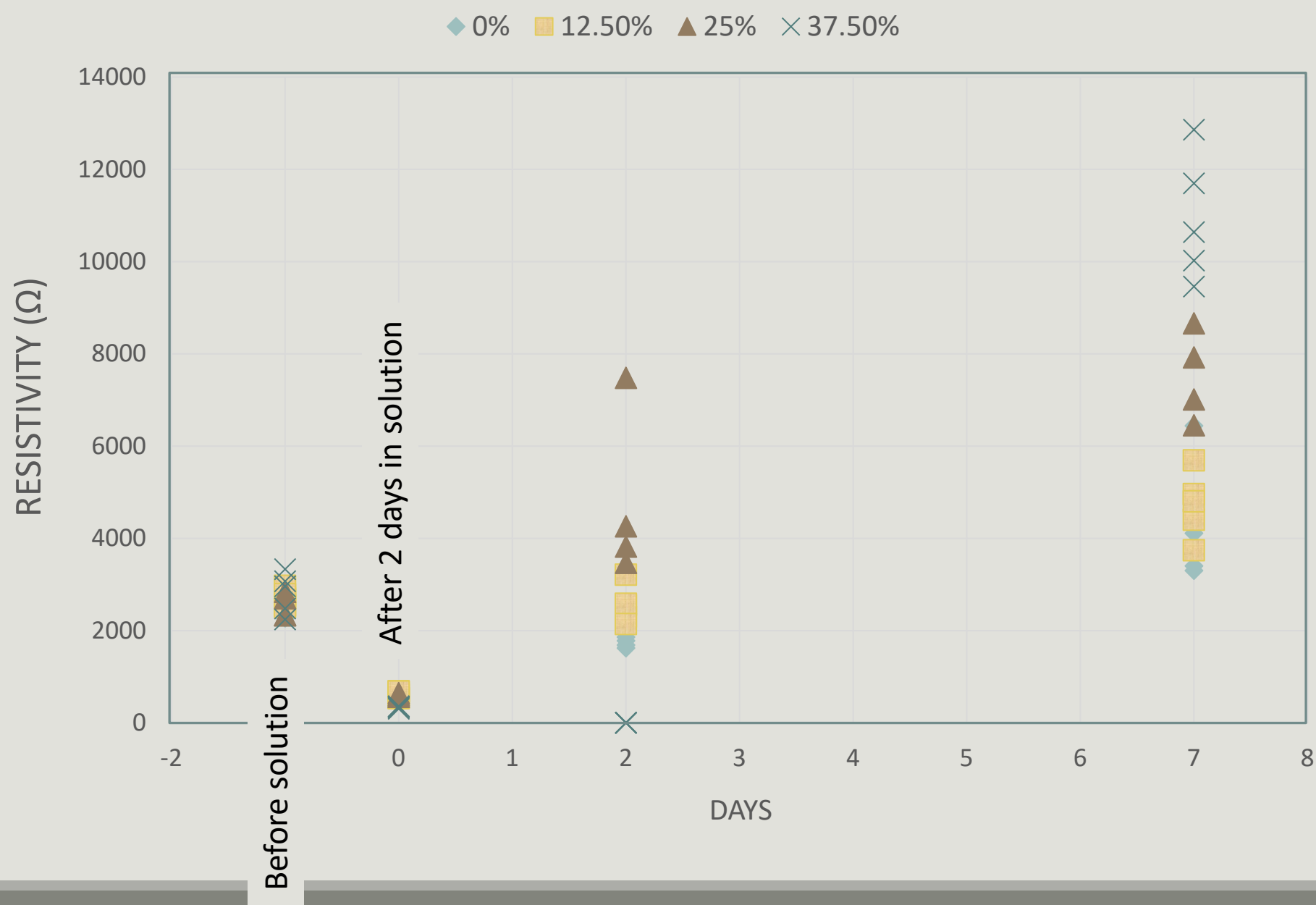
Results

Compressive Strength During Freeze-Thaw Cycling



Results

Chloride Penetration & Resistivity Testing





Conclusions

Compressive strength decreased with increased ground glass, but all above 3,000 psi

Chloride penetrability decreased with increased ground glass

The exploratory data show that there is potential merit in using ground glass