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Omaha District

Evaluation of The Use of Lithium Compounds in Controlling ASR in Concrete Pavement

Tri-Service Infrastructure Conference

3 August 2005

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ASR Distress



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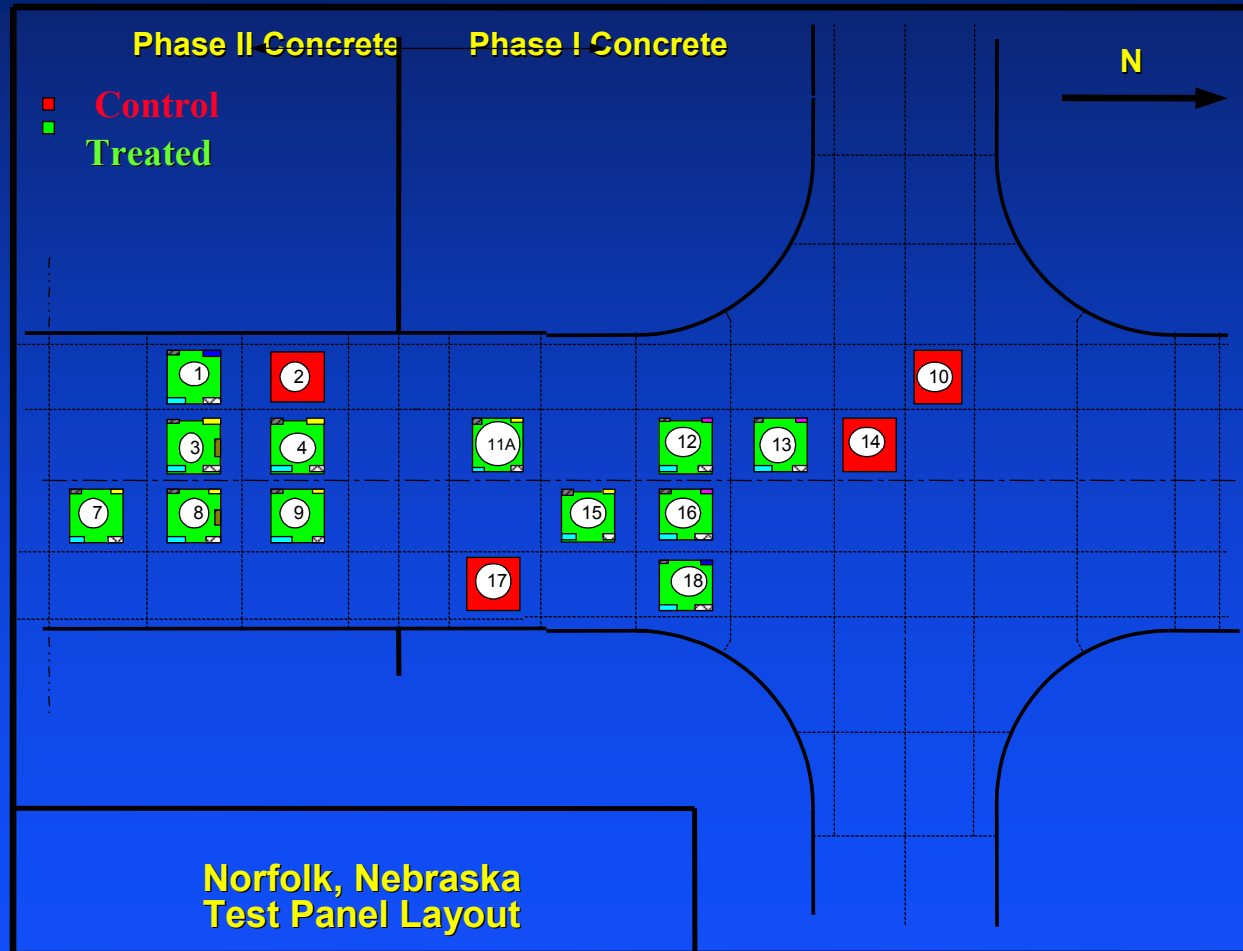
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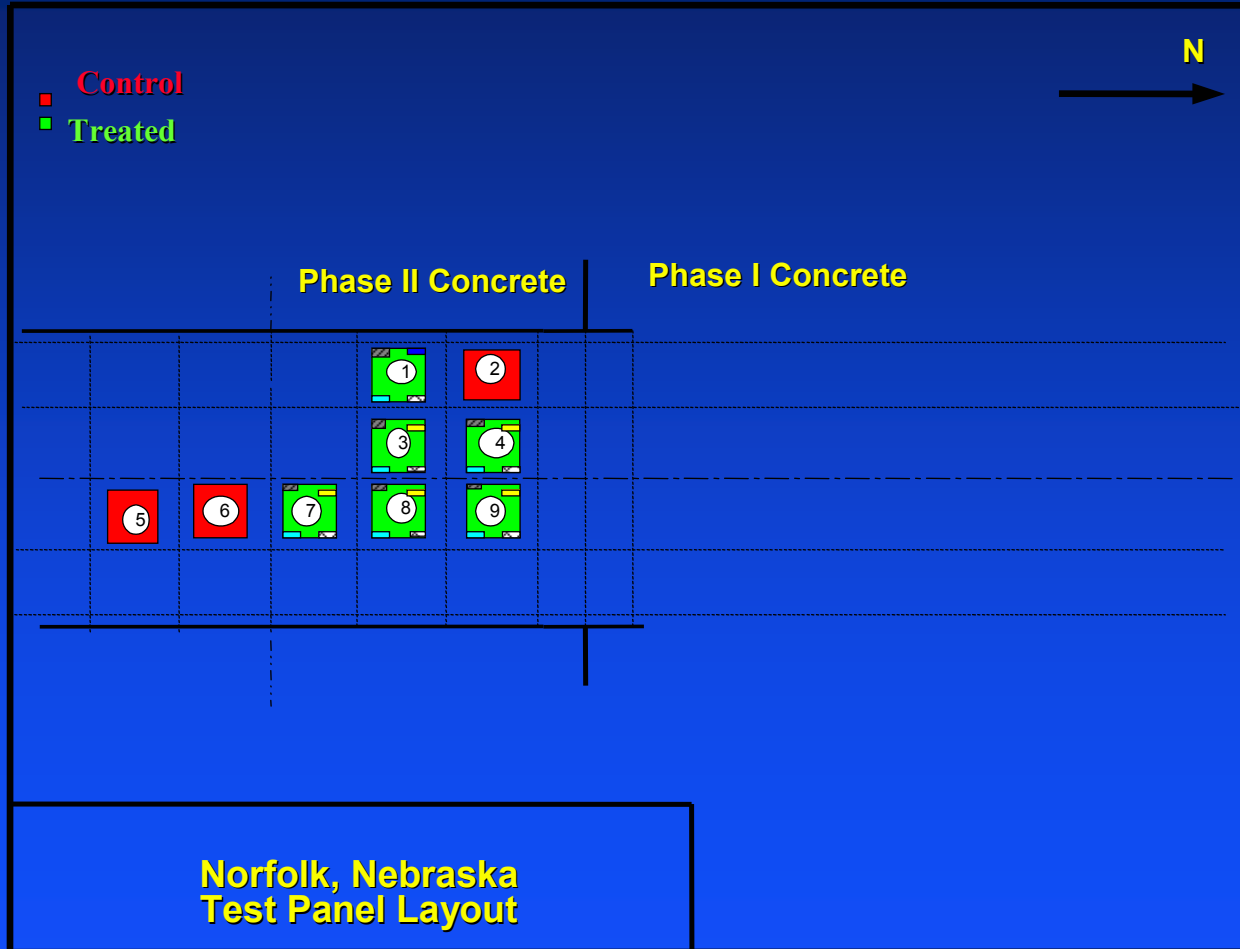
Site Layout





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Site Layout





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Site Characterization

- **Petrographic Examination**
- **Map Cracking**
- **“V” Meter**
- **Schmidt Hammer**
- **Impact Echo**
- **Expansion / Contraction Measurements**

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Core Samples



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Petrographic Examination



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Crack Mapping



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Crack Mapping



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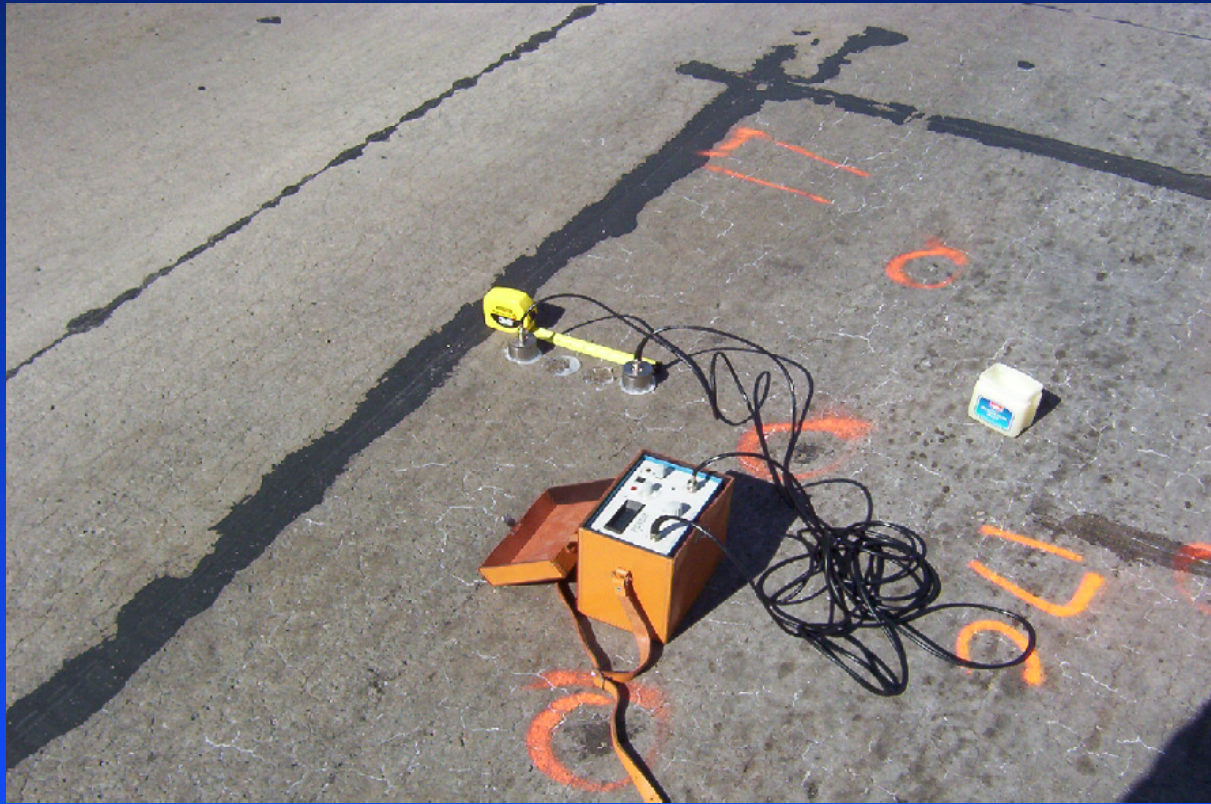
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“V”-Meter



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Schmidt Hammer



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Impact Echo



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Expansion / Contraction Demac Points



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Demac Point



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Demac Points



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Expansion / Contraction Measurements



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Expansion / Contraction Measurements



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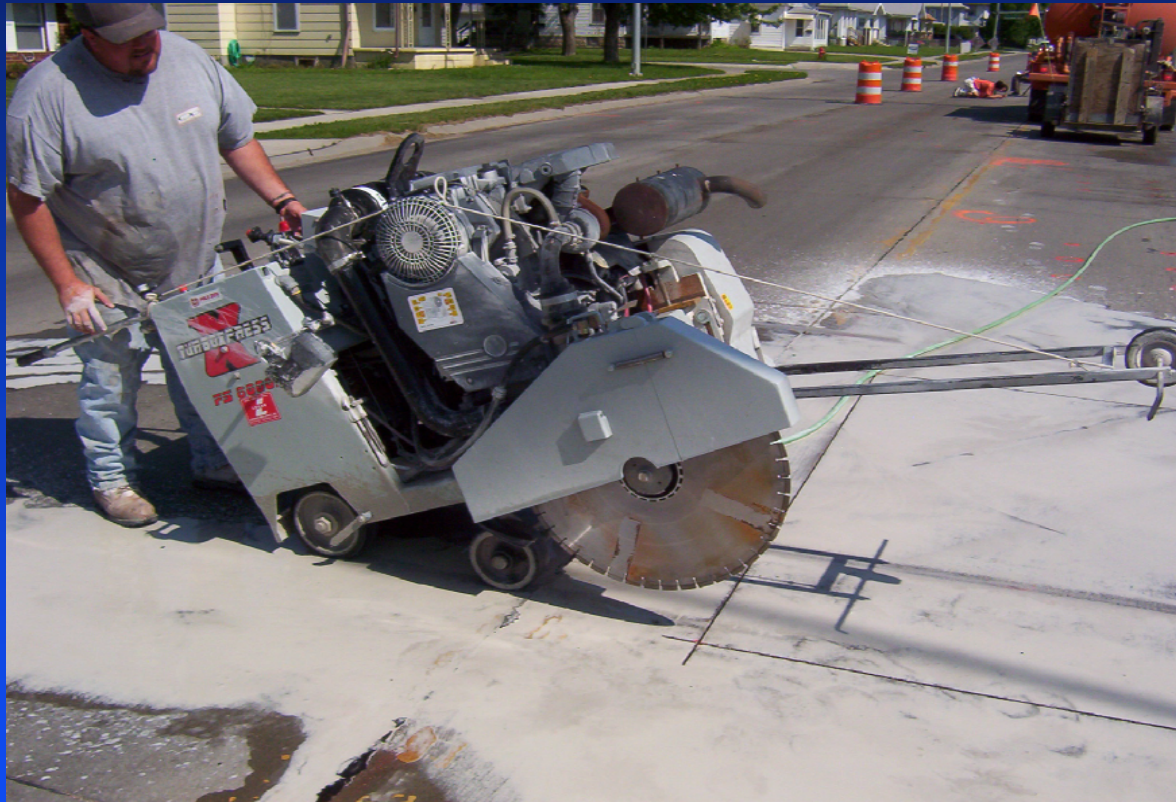
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Saw Cut Operation



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Full Depth Saw Cut



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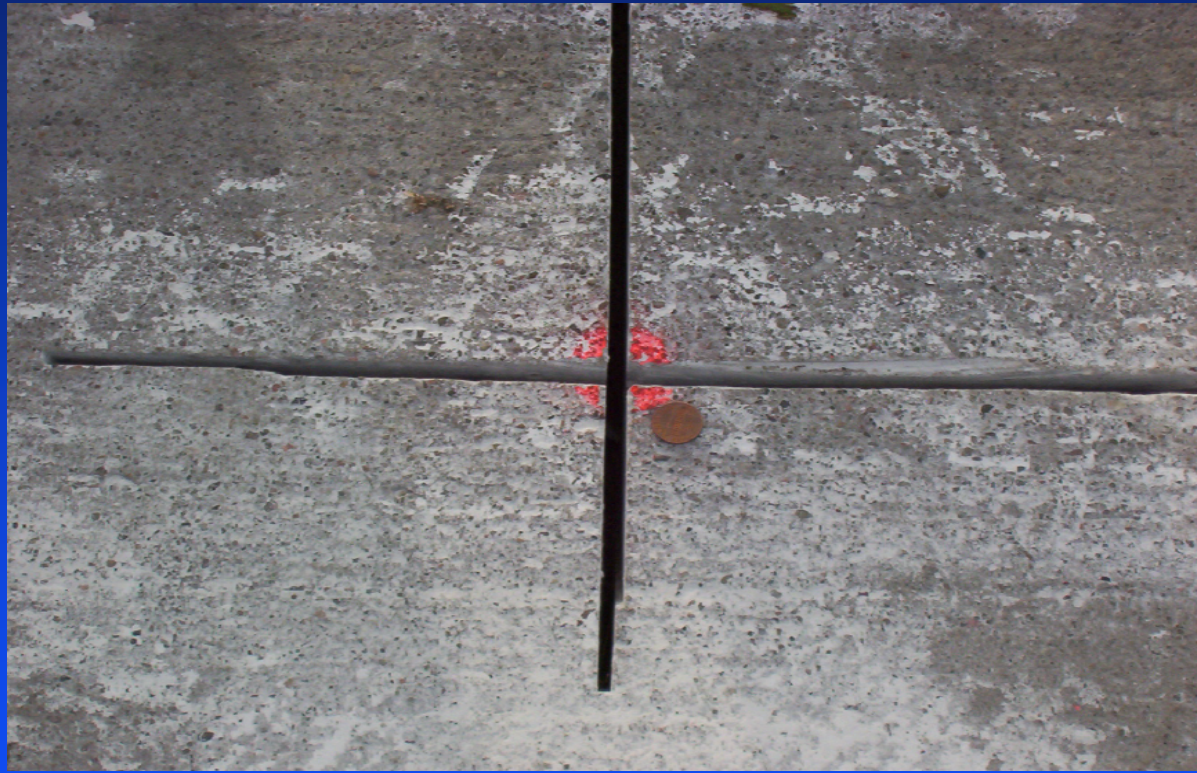
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Saw Cut



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Treated / Control Panels



9' x 9' Panel

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Lithium Application



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Lithium Application

Dates & Application Rates:

- Nov 2002: 0.006 – 0.012 gal/s.f.
- Dec 2002: 0.012 gal/s.f.
- May 2003: 0.006 gal/s.f.
- Oct 2003: 0.006 gal/s.f.
- May 2004: 0.006 gal/s.f.
- Oct 2004: 0.012 gal/s.f.

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Lithium Material



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Salt Residue



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Addition of Water



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Powder Samples



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Powder Samples



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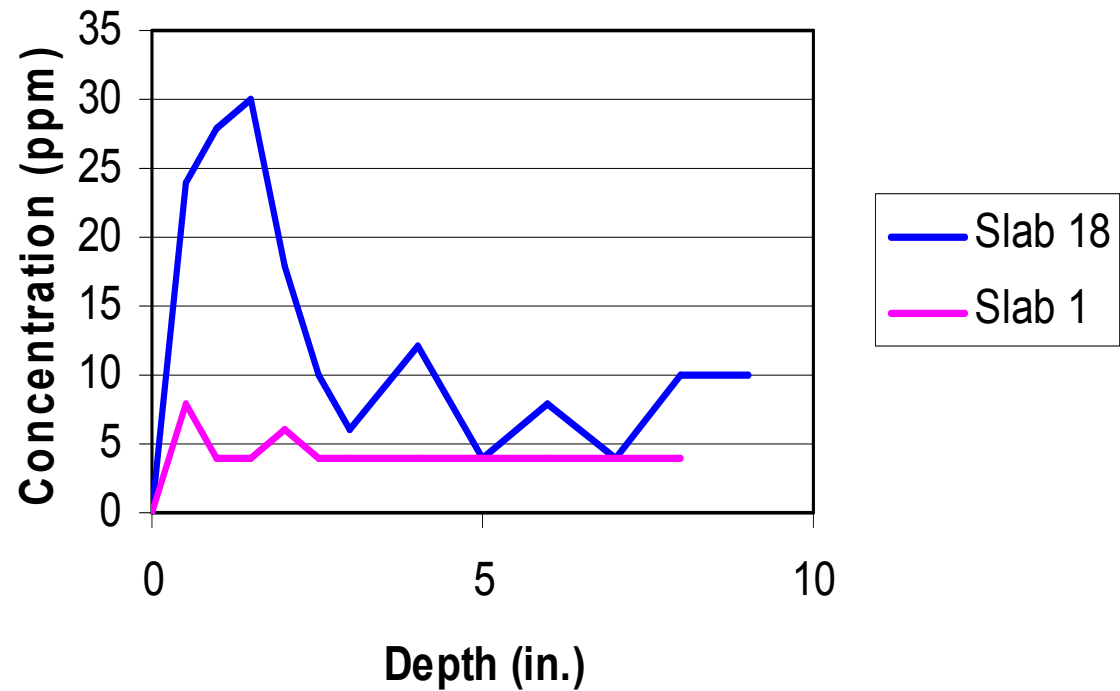
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Lithium Contents



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Pressure Injection



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Pressure Cell



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Pressure Cell



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Pressure Cell



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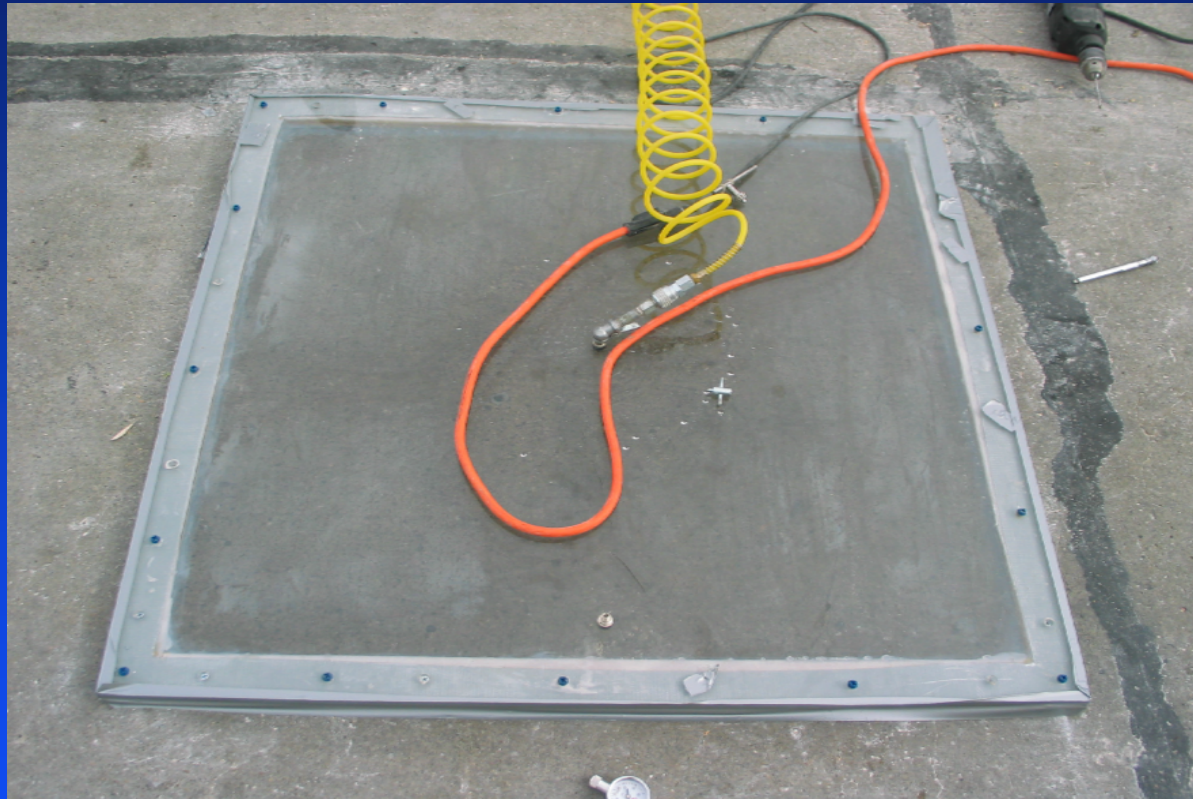
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Pressure Injection



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Pressure Cell



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Pressure Application



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Vacuum Impregnation



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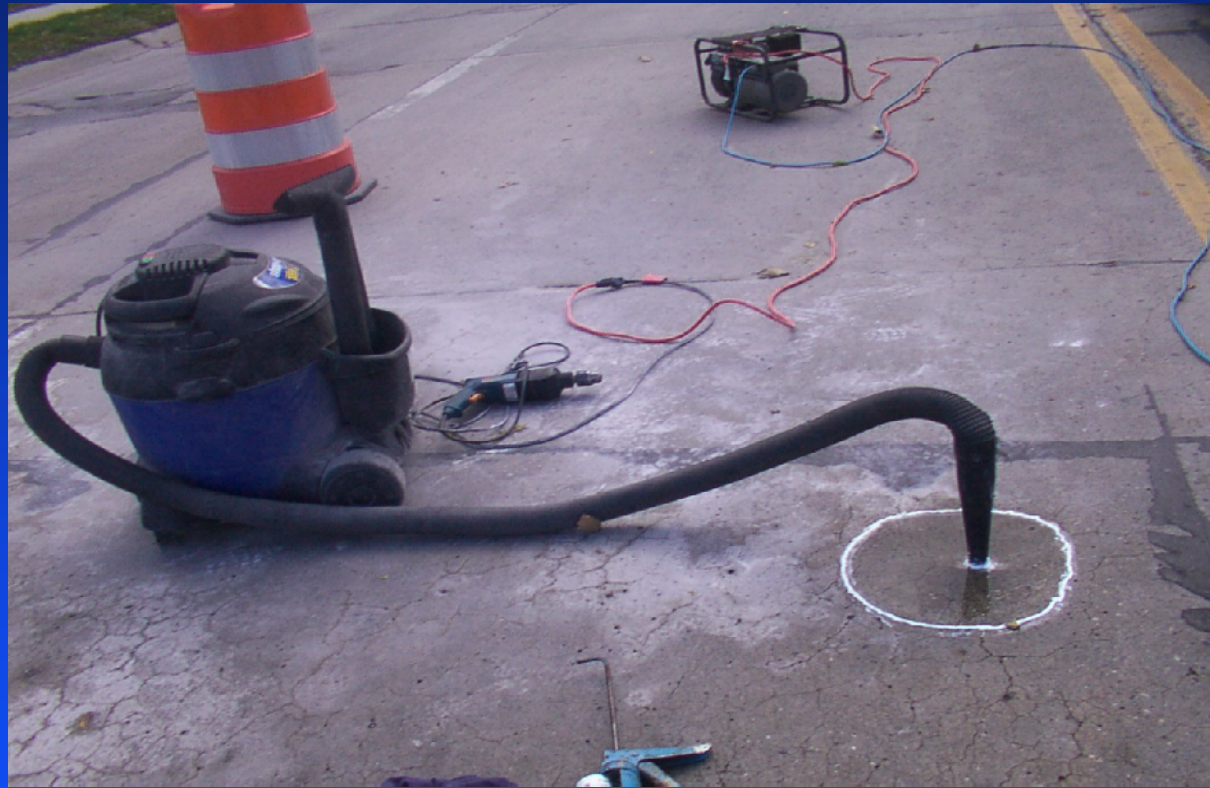
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Vacuum Impregnation



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Powder Samples



Lithium Content ????

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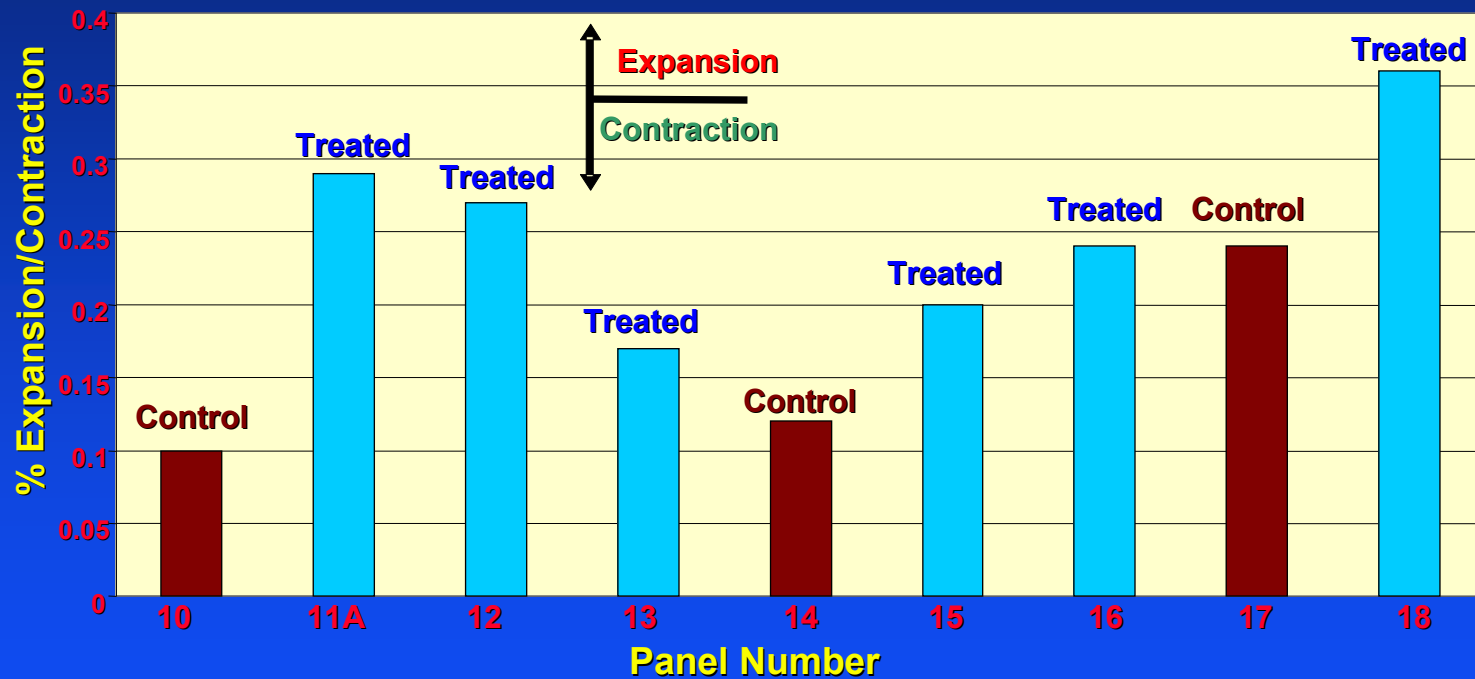
Data Analysis





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N-S Phase I Concrete



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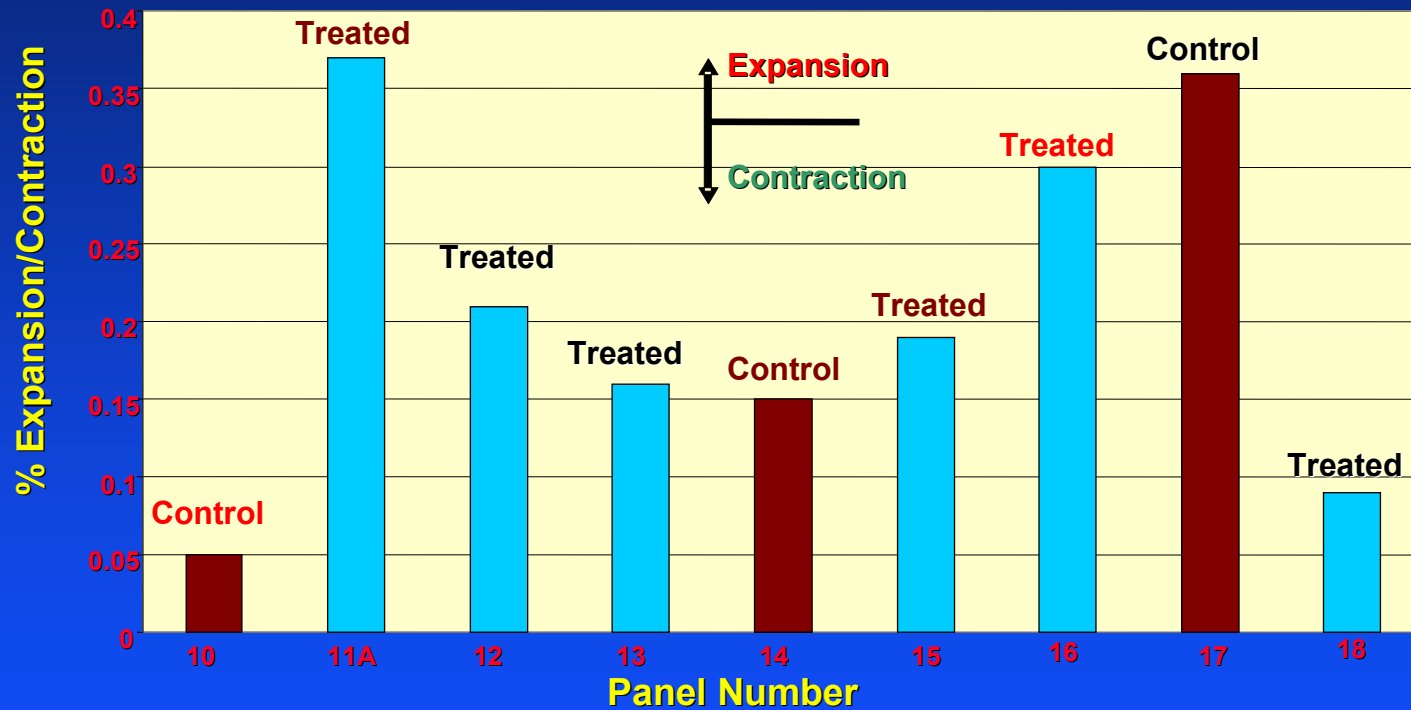
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E-W Phase I Concrete



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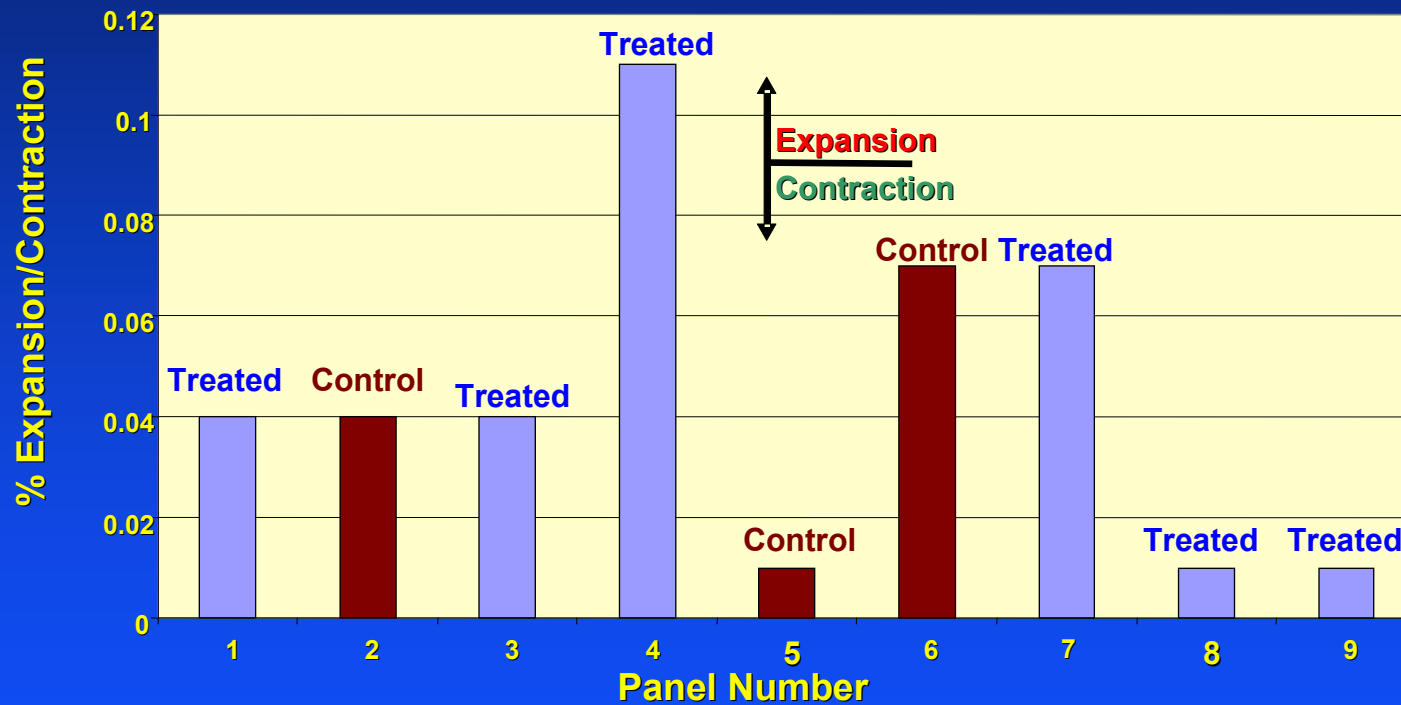
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N-S Phase II Concrete



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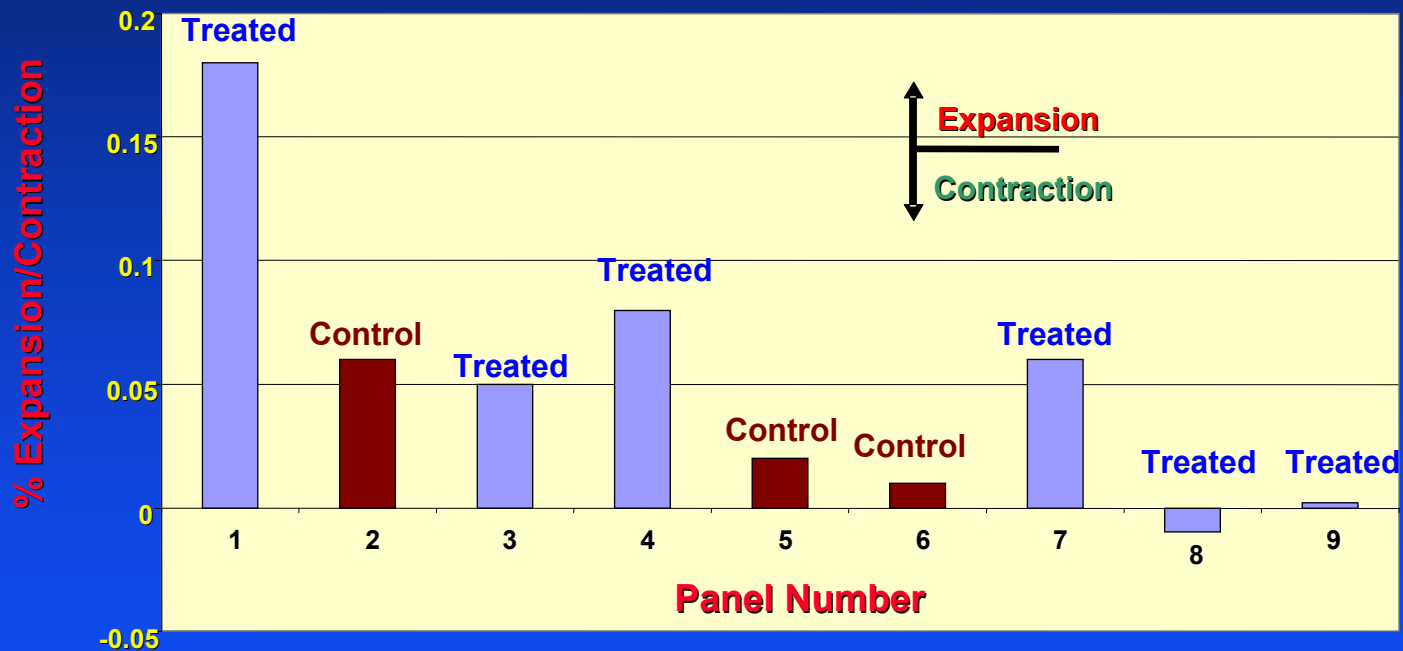
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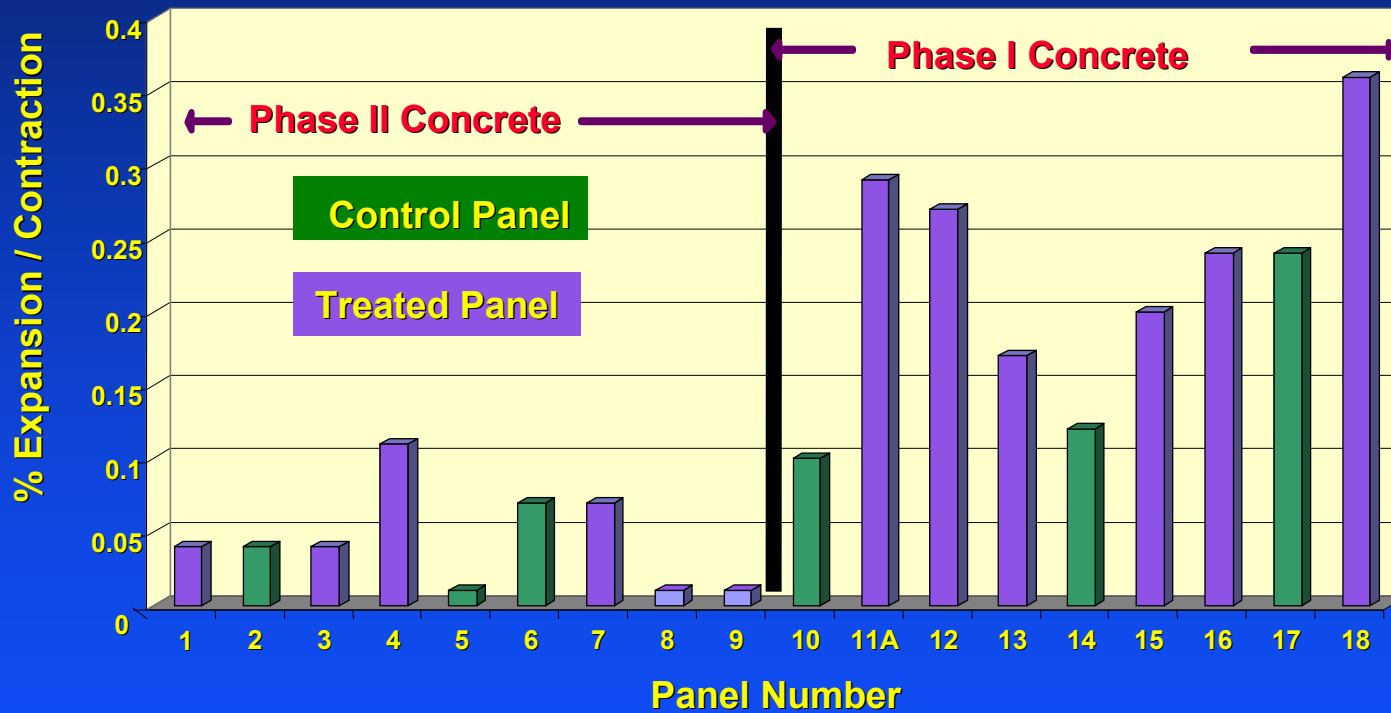
E-W Phase II Concrete





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N-S Expansion / Contraction



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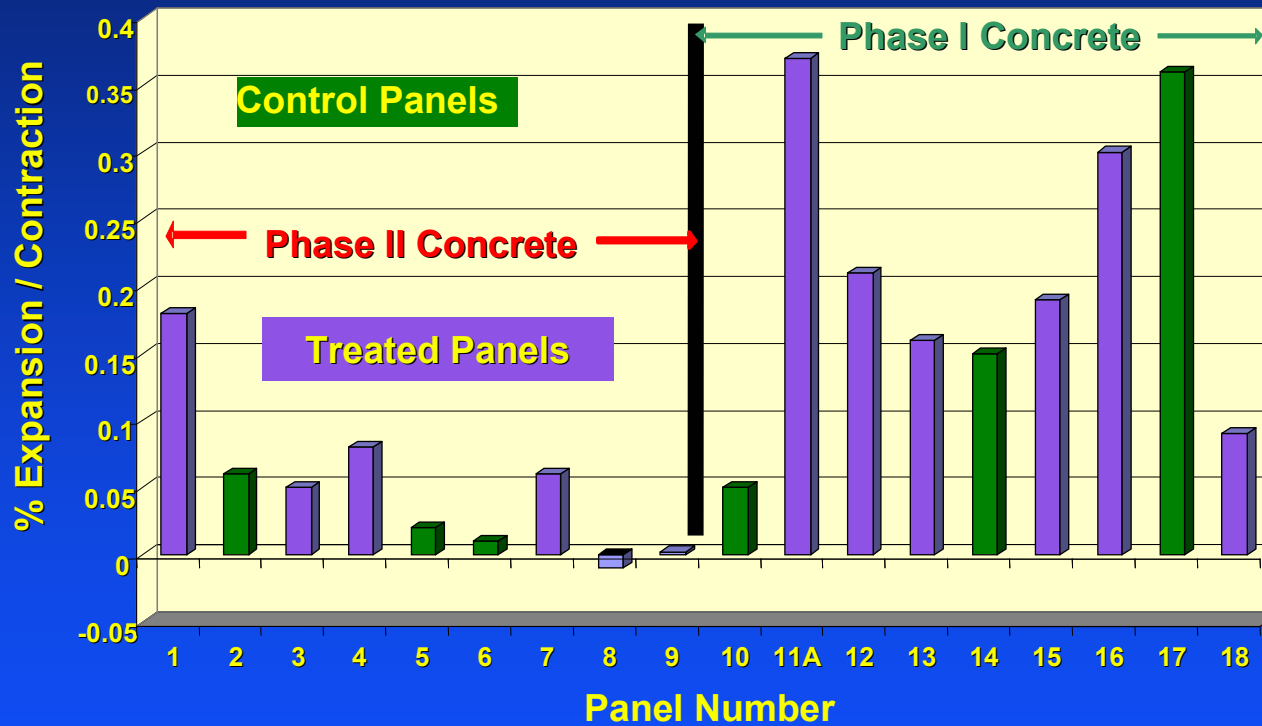
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E-W Expansion / Contraction



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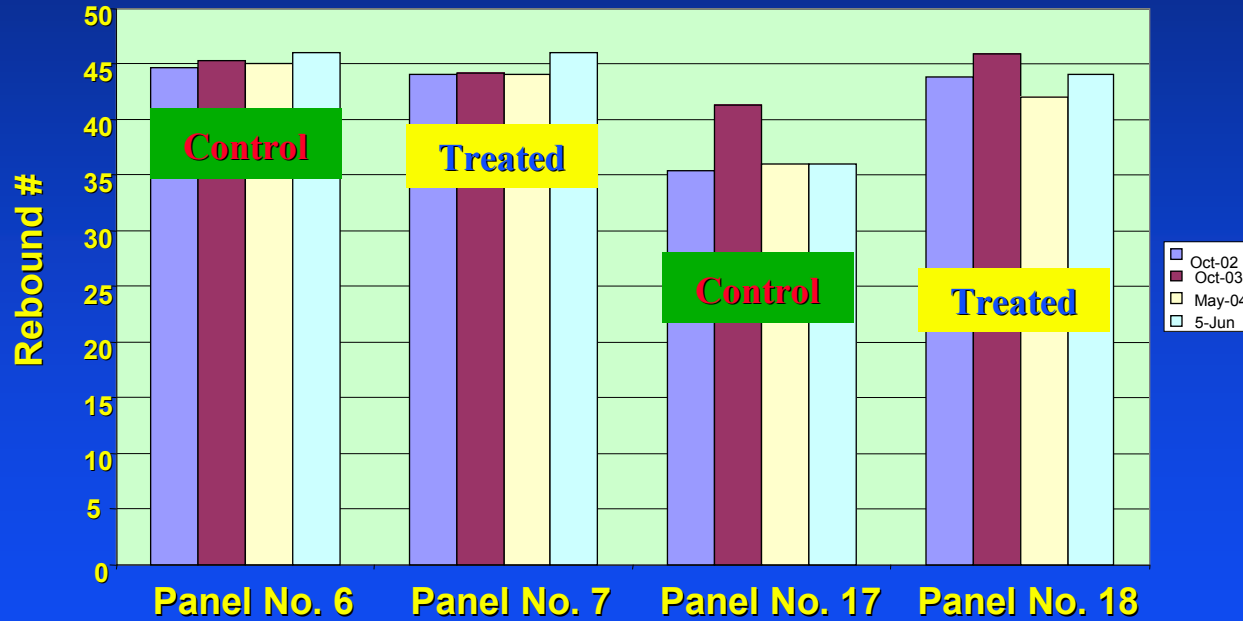
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Schmidt Hammer Evaluation



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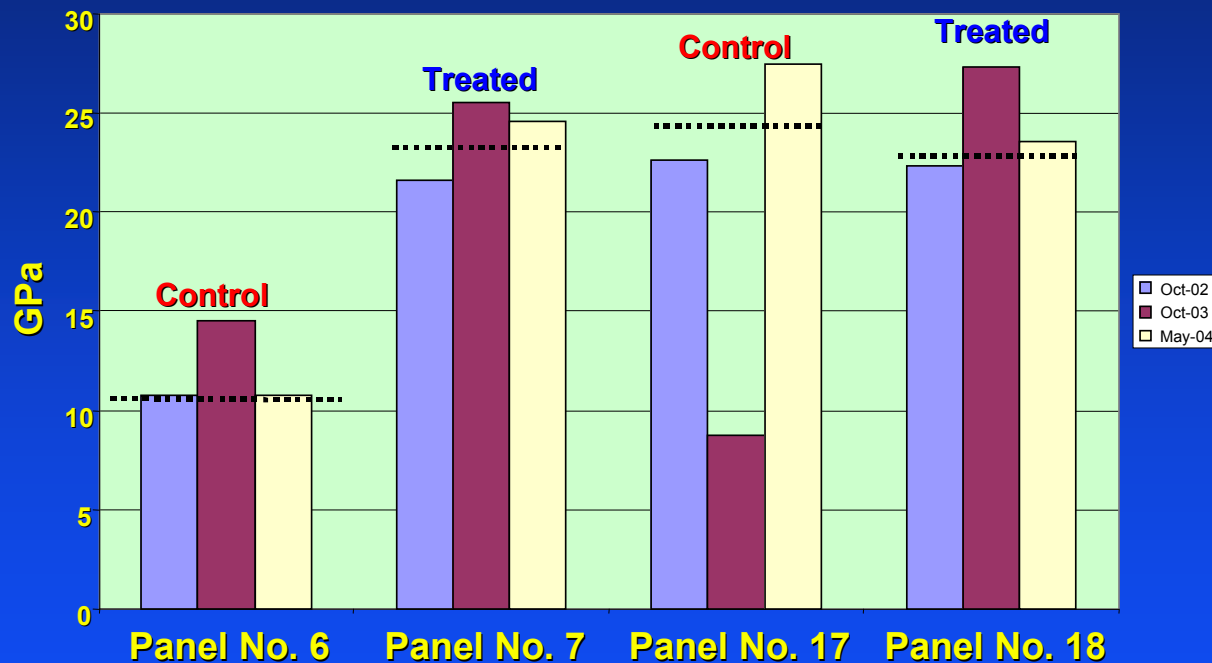
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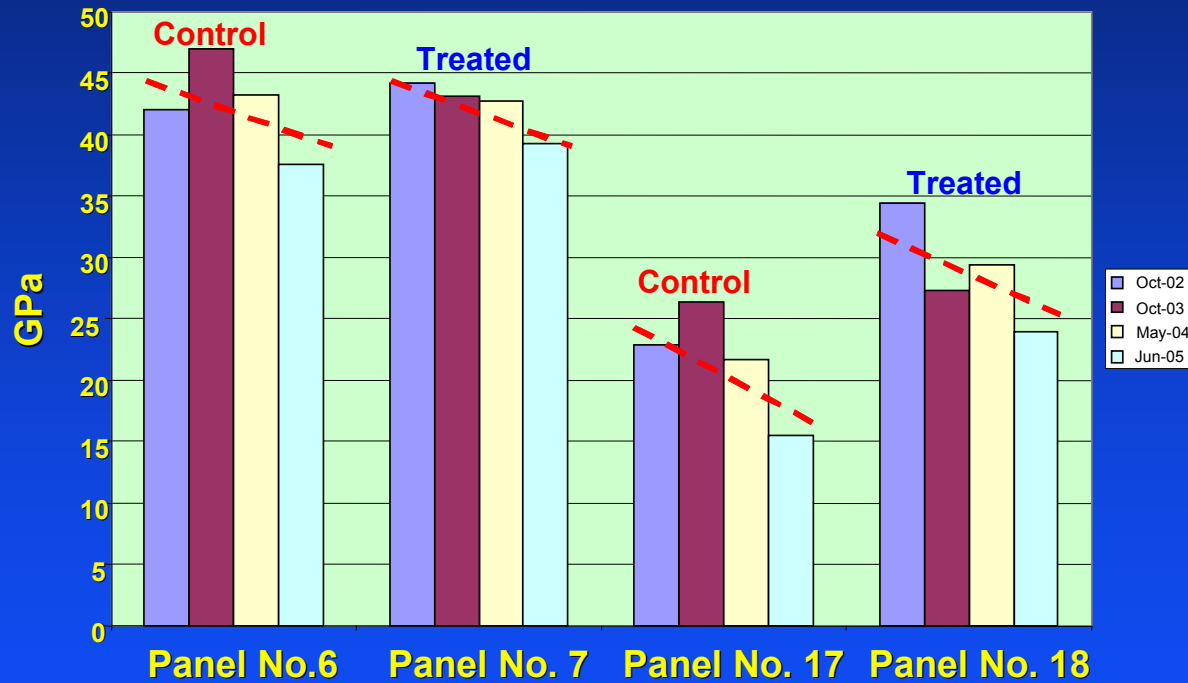
Impact Echo Evaluation





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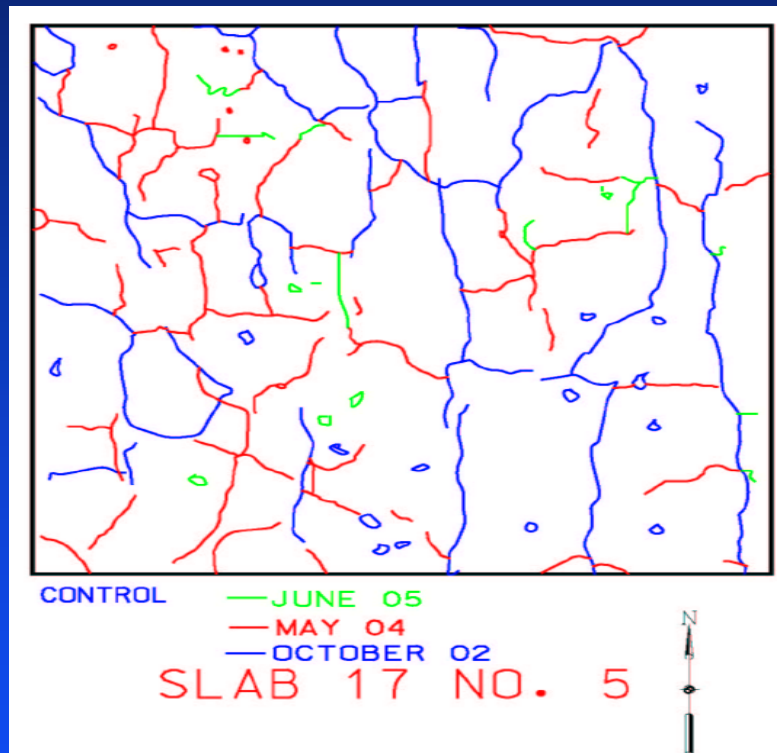
“V”- Meter Evaluation





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Map Cracking



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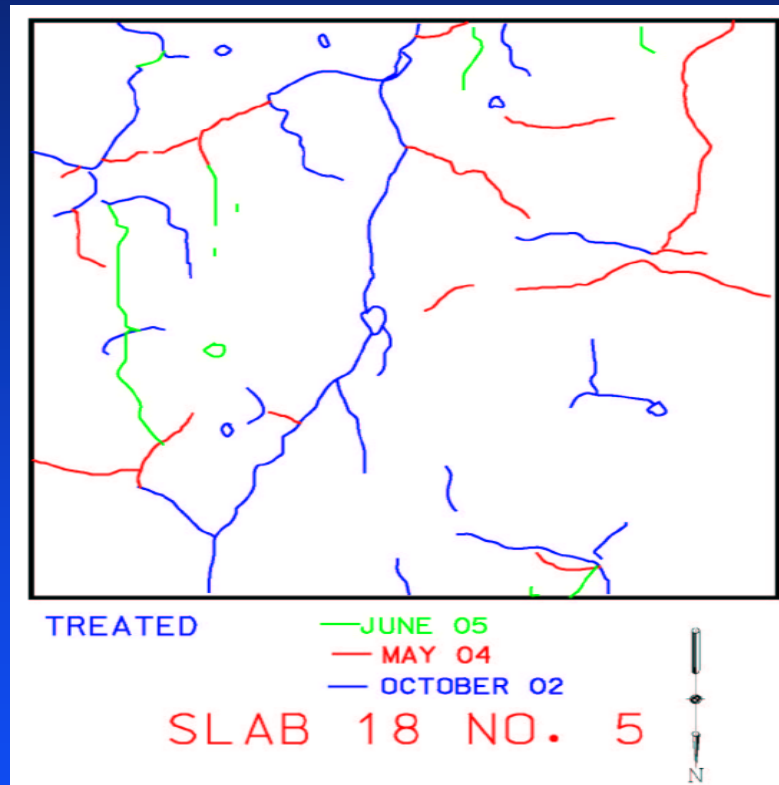
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Map Cracking



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QUESTIONS PP

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