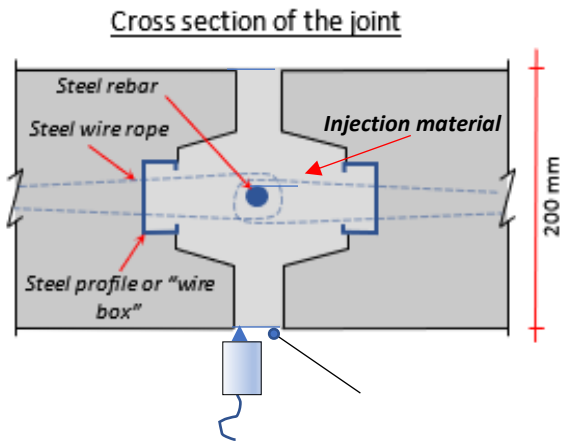


## Case 8.4 Joints testing for injection quality with DOCTer impact-echo

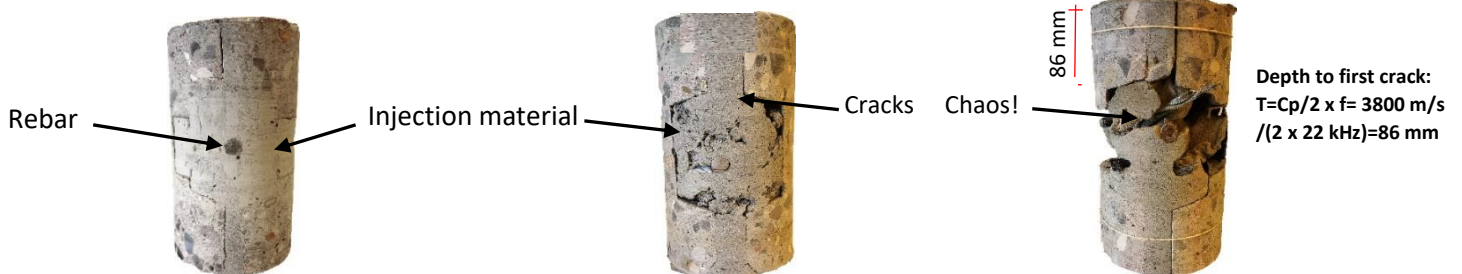
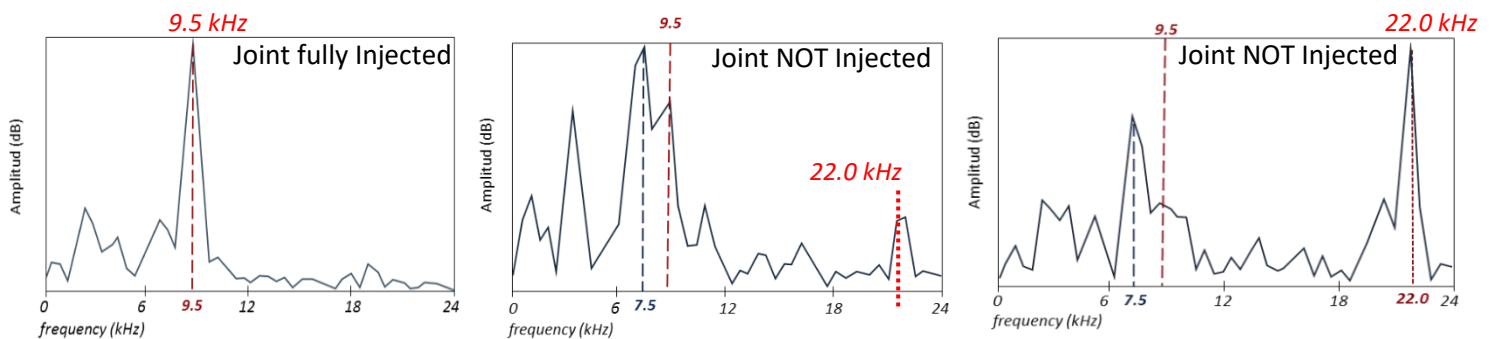


Elements used in construction has joints in between, where it is important to fill out the joint with injection material to achieve a monolithic structure with the needed structural performance and durability.

Testing with DOCTer impact-echo allows voids and cavities in the injection material to be detected, quickly and efficiently, for re-injection to be performed should such voids / cavities be present.



In the examples shown the wall thickness is 200 mm. For the solid signal, left, the measured frequency is 9.5 kHz, equivalent to a P-wave speed of the injection material of  $C_p = f \times 2 \times T = 9.5 \text{ kHz} \times 2 \times 200 \text{ mm} = 3800 \text{ m/s}$  using the impact-echo equation  $f = C_p / 2 \times T$



DOCTer test signals from joint testing in a 5-story building where full injection of all the joints was specified. Many joints had very bad injection. Cores, as shown, were extracted for documentation.