

MASONRY Laboratory Website

Lab 6 – Non-Destructive Evaluation

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General information:

A cover meter works on the principle that the steel within the masonry and concrete will be affected by a magnetic field that is applied by the cover meter. In a magnetic material, when a magnetic field is forced through it, it opposes this change with an eddy current, which produces its own magnetic field opposite in direction to the applied field. The strength of an eddy current and its corresponding opposing magnetic field depends on the magnetic properties of the material subject to the impressed magnetic field as well as the distance between the two. By assuming a set magnetic property for all steel reinforcing bars and using a given bar size, the cover meter can predict the depth and location of the reinforcing bar. The cover meter pulses its magnetic field and measures the opposing magnetic field created by the eddy currents in the ferrous material, most likely reinforcing bar. By measuring the strength of the opposing magnetic field, using the given bar size and magnetic

properties, the cover meter can calculate the distance to the reinforcing bars. To locate the bar position, the distance to the bar is minimized, indicating that the cover meter is directly over a piece of the reinforcing steel.