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Patent No. 6,581,466

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Acoustic Inspection of Structures

Mississippi State University currently seeks companies interested in providing a simple and inexpensive method for inspecting concrete structures that does not rely on the subjective interpretation of a human inspector. As our nation's bridges and similar structures rapidly age, it has become increasingly important to determine the structural integrity of concrete structures. Current methods and systems for testing concrete structures are expensive, slow or tedious. Researchers have developed and patented (US Patent 6,581,466) a technology that provides a more complete and practical inspection through the use of an acoustical sensor.

Uses/Applications

Acoustic inspection of structures can be done by moving an object across it and marking the structure in real-time. The concrete integrity is determined through the analysis of sound waves emitted from the structure. Areas for which the total energy across the frequency bands exceeds the threshold corresponds to defects such as delamination. A map of delaminated areas can be created to track changes to a bridge over time.

Advantages

- Nondestructive and easy
- Prevention of unnecessary repairs
- Reduction of costly maintenance schedules

Technology

The technology receives acoustical energy generated by the structure while the structure is excited over a period of time by a sensor not physically coupled to it. The detection system is comprised of a mobile platform, to which an excitation device, a microphone, and computer are attached.

Inventors

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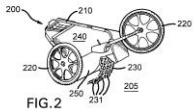


FIG. 2

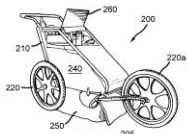


FIG. 3

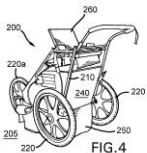


FIG. 4