# Tekron Services *Inc.*

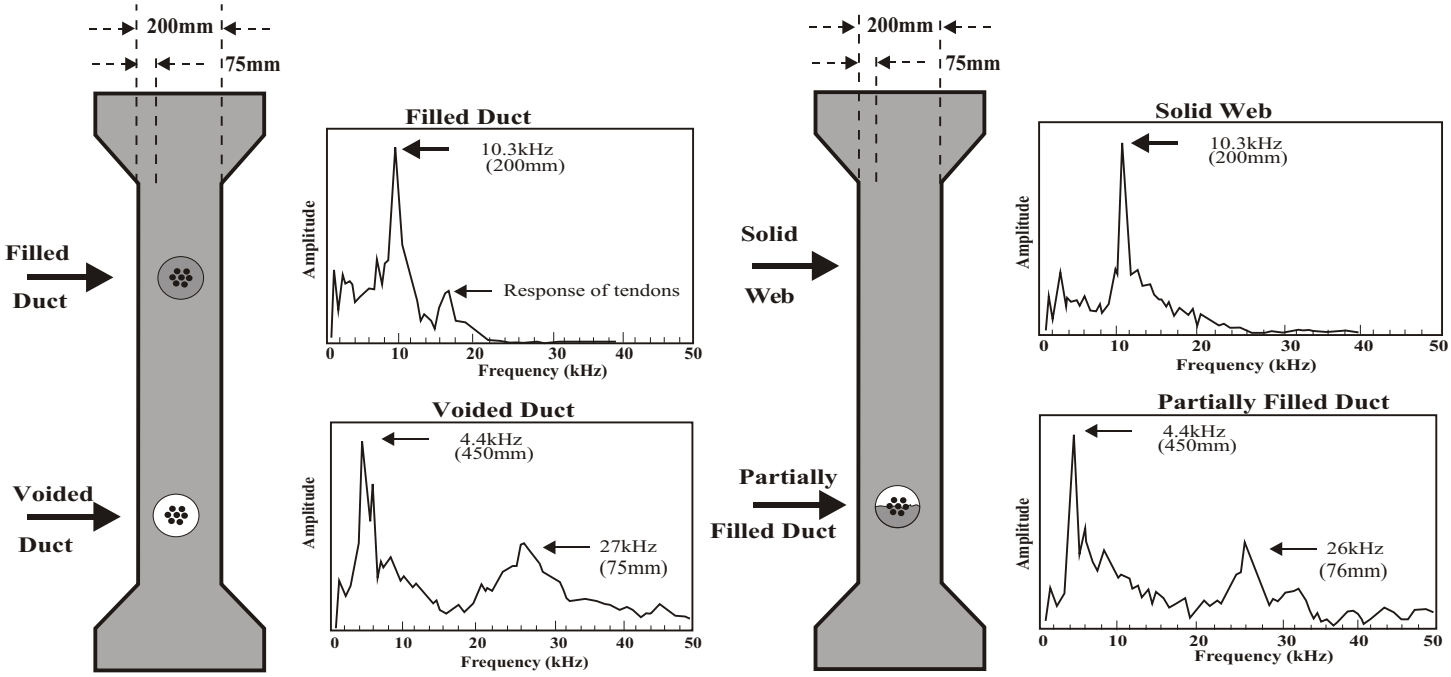
Information Sheet 8

# Detecting Voids In Grouted Ducts

Serious problems can develop in post tensioned structures if voids are present within the grout that is used to fill the ducts. Theoretical, experimental and field studies have demonstrated that impact-echo technology can be reliably used to detect the presence of such voids.

When sound waves are induced into the concrete structure characteristic signal responses are returned which enable an experienced operator to detect the condition of the duct.

**Testing Post-Tensioned Ducts with Impact-Echo Equipment**




- The response through a fully filled duct consists of a dominant peak corresponding to the web thickness and a minor peak corresponding to reflections from the prestressing steel
- The characteristic response of a voided duct includes a dominant peak in excess of the thickness frequency and the presence of peaks corresponding to depth of concrete cover to the void
- A solid response through the web consists of a single dominant peak equal to the thickness frequency
- The characteristic response of a partially filled is similar to a voided duct response.


**Specialists in NDT and Computer Monitoring of Structures**

**For Further Information Contact**

Tel. (905) 279-8072 2543 Palisander Avenue, Mississauga, Ontario, Canada, L5B 2L1 Fax. (905) 566-9891

www.tekron.com e-mail sales@tekron.com

**Extent of honeycombing evaluated around duct of precast bridge beam**

**Testing post-tension ducts for partial filling**

## NDT Techniques

Impact-echo

Ground Penetrating Radar

Schmidt Hammer

- Standard
- Pendulum

Boroscope

Corrosion mapping

- -Half-cell
- -3D half-cell
- -Electrical resistance
- -Rebar detection

Moisture and humidity detection

## Dynamic measurement of physical properties

-Linear displacement transducers
-Telltale
-Demeg gauge
-Vibrating wire strain gauge
-Vibrating wire water pressure transducers
-Vibrating wire tilt meters
-Miniature single and multiple channel data loggers including the following sensors:-

- Temperature
- Humidity
- Light intensity
- Voltage
- Motor on/off vibration sensor
- Motor on/offA/C sensor

## Company Profile

Tekron Services is a Canadian company providing specialized inspection and testing of construction materials. Incorporated in 1987, the company offers a wide range of inspection and non-destructive testing services to evaluate structures and construction materials. Since the formation of the company our goal has been to incorporate emerging technology into tools and techniques for the construction industry.

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Web page: www.tekron.com e-mail: sales@tekron.com
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