

PROBLEM SOLVING APPLICATIONS

Continuous Casting Foundation Instability

PRES, Inc. was asked to investigate the cause of the deterioration on a continuous casting foundation at a steel mill in May of 2001. Vibration data was collected via a Sentry ICMS.

Figure 1: Accelerometers were strategically placed on the bending unit frame and steel shoe plate that were fastened to the concrete foundations. Observations, data collection, and analysis were then made to determine the root cause of the concrete foundation deterioration under each shoe plate.

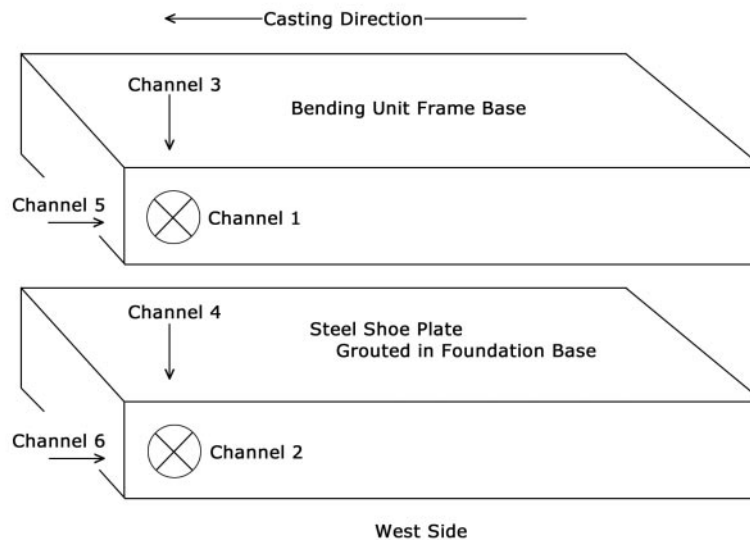
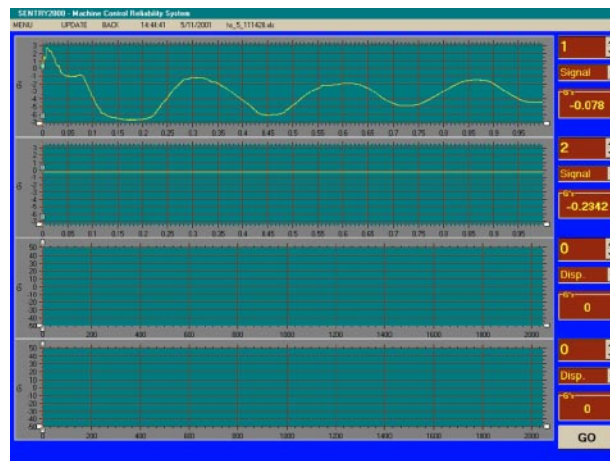


Figure 2: Time waveform Channels 1 & 2 during shear impacting. This graph illustrates that vibration resulting from the shears are much greater than steady-state vibrations. It illustrates how channel 1 "ring" for several seconds transmitting large amounts of vibration energy to the structure shoe plate and subsequently the foundation (see Channel #2). Although channel #2 does not "ring" like channel #1, the vibration energy is transmitted to the foundation.

Figure 3: Time waveform depicting channel #1 "ringing" note: This waveform was obtained 4 seconds after Figure #3. PRES Inc. suggested that damping the vibration transmitted to the shoe plate would prevent the structural deterioration currently effecting the concrete structure. One damping possibility could be the insulation of the bending unit main frame from the shoe plate.



for more information about The Sentry System or other case studies visit us at: www.pres-inc.com

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