

Repairing Corroded Injection Water Pipes in the Cooling Tower of CSR Macknade Sugar Mill

Project 868

Overview:

- CSR Sugar Mill, Macknade
- Single "train" mill capable of crushing over 1.5 million tons of sugar cane
- Routine engineering inspection of the cooling tower revealed injection water pipes had been eaten away in places by corrosion

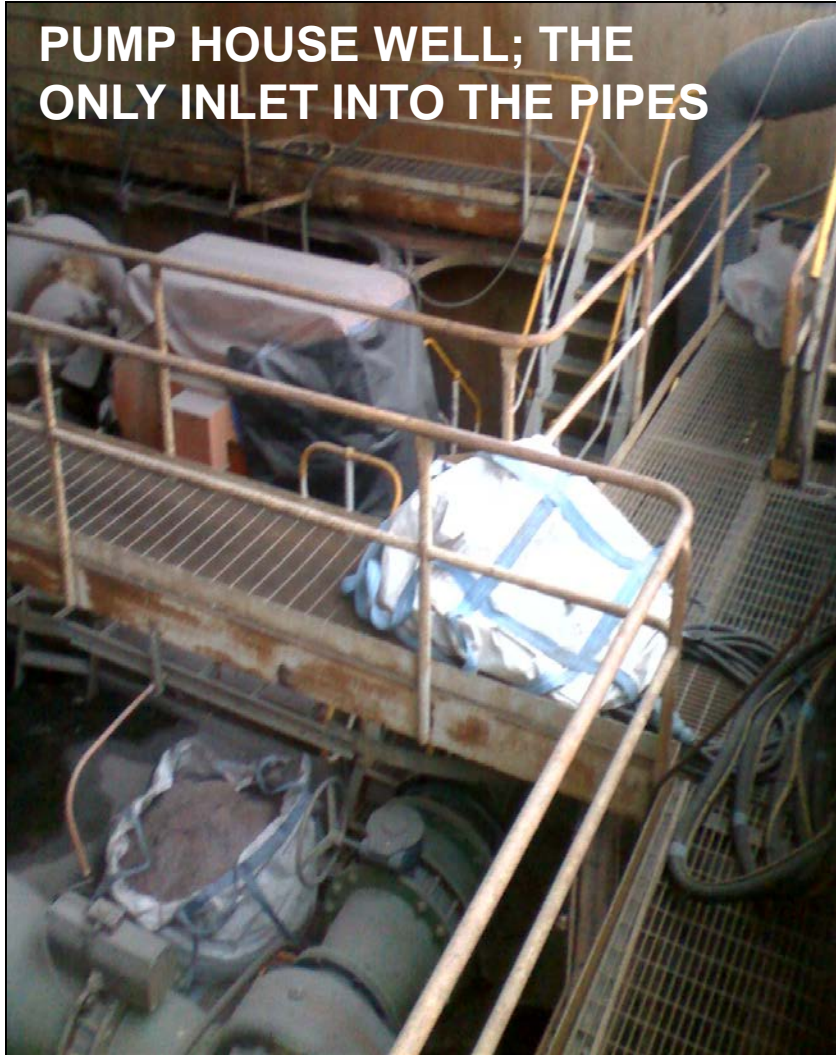
Objective:

Repair corroded/leaking pipe sections by abrasive blasting and applying high-build composite coating



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PUMP HOUSE WELL; THE ONLY INLET INTO THE PIPES



- Injection water pipes are 5m(16.5ft) underground
- Concrete sections run nearly 100m (328ft) where they join steel sections and a splitter intersection
- Sponge-Jet was selected as the abrasive solution due to: (1) its low dust attribute in confined spaces and (2) it can achieve a more consistent surface profile for the application of high-build molecular composites

Sponge-Jet setup out side on ground level



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Substrate: Steel and concrete

Specified Cleanliness Level:

Near White Metal Blast Cleaning
NACE 2 / SSPC SP-10 / Sa2.5

Profile: 75-100microns (3-4mils);
including exposed concrete

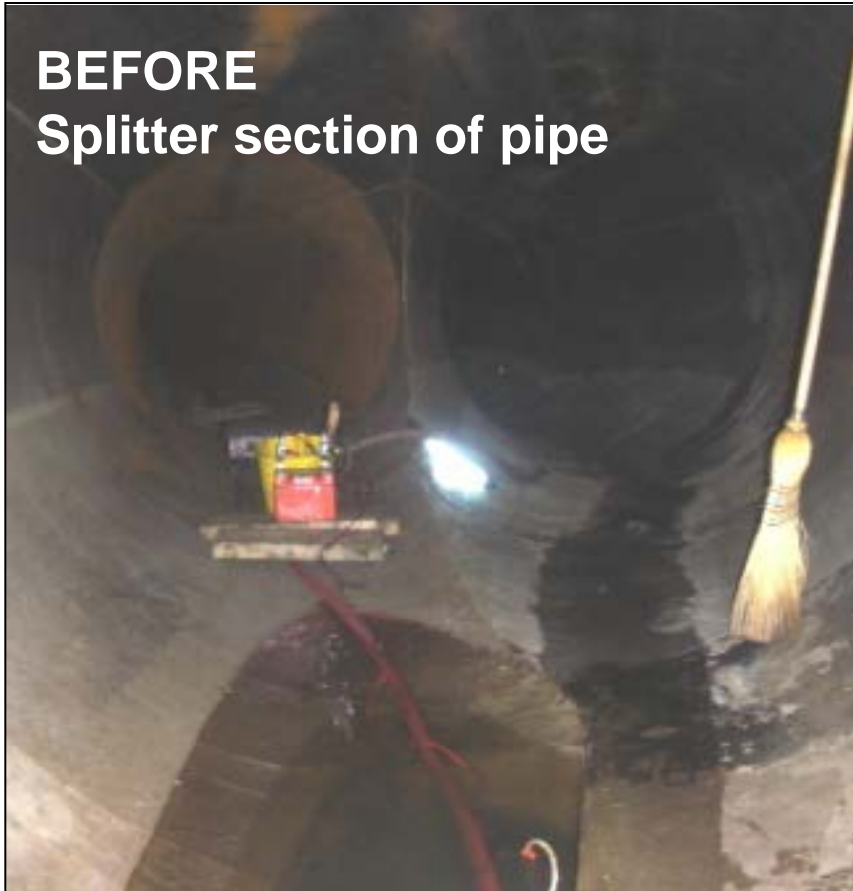
Used: Silver 30 Sponge Media™
abrasive, (1) 100-HP Feed Unit™
and (1) Sponge-Jet Recycler™

- During preliminary blasting, prior repairs that were found used mixed products (30mm thick)
- Water was seeping in during blasting, where large sections of steel were missing
- All leaks and pin holes had to be repaired/plugged



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BEFORE
Splitter section of pipe



AFTER
Rebuilding and coating



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REPAIRED WALL



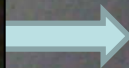
STEEL BONDED PLATES



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**EXPOSED REINFORCED STEEL
SPONGE BLASTED FOR RECOATING**

**SPONGE BALASTED
JOINER FOR REBUILDING
BETWEEN CONCRETE
AND STEEL**



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Outcome:

- The client was exceptionally happy with the project result
- Repaired pipes were scheduled for inspection in March 2010; with new confidence of repairs CSR Macknade Sugar Mill rescheduled inspection to 2011 or beyond
- There are 13 Sugar Mills in the CSR stable; all have similar problems with the water return and injection pipes
- There will be future work in other mills based on the application at the Macknade Sugar Mill