The Need and Challenge
A large pulp and paper facility discovered spalling and cracking on its primary structural members due to moisture ingress. Loss of concrete and steel metal loss was causing structural concerns while the spalling concrete was damaging machinery and contaminating product. Safety was a key concern as all work was carried out at heights over equipment sensitive to debris and contamination.

Solution and Outcome
TEAM concrete repair and polymer coating specialists developed a safe and efficient repair that included:

- Removal of loose concrete
- Priming of exposed repair surfaces
- Reinstatement of lost concrete with specialized repair mortar
- Overwrap of carbon fiber
- Epoxy top coat to seal repair and provide professional finish

The completed repair reinforced the structure and prevented future deterioration.

Overview
Specialized repair of concrete primary structural beams and roof panels provides lightweight, lifetime extension to plant structure.
Carbon Fiber Repair of Concrete Beams & Roof Panels

Solution and Outcome
When a large pulp and paper manufacturer discovered damage to primary structural steel-reinforced beams and roof panels they called TEAM’s concrete repair and polymer coating specialist for a safe and successful solution. Over time the contaminated water vapor from the paper production process had penetrated the concrete and corroded the reinforcing bars causing corrosion expansion and subsequent spalling of the concrete.

Not only was the long-term integrity of the structural members in doubt, the spalling concrete was falling into critical process equipment below causing safety concerns, machine damage and product quality issues. The cost of poor quality resulting from the contamination of product was significant.

TEAM’s specialists developed a repair based on the customer’s loading data. This repair was then approved by the end user and their 3rd party structural specialist.

Work location was a key challenge with all work being carried out at heights on mobile working platforms and scaffolding. Additional complexity was introduced by the need to bond materials to the substrate in an overhead orientation. Control of material adhesion would be key as would the management of dropped objects.

The repair involved removal of damaged material, surface preparation and priming of exposed steel/concrete, priming substrate, installation of stainless steel anchors across repair region, re-instatement of concrete using specialist repair mortar, surface preparation/priming of restored concrete and installation of specialist carbon fiber reinforcement. The structure and repair area was coated with an impervious epoxy material to prevent further moisture ingress and to provide a professional finish.

The project was completed safely, on time and on budget with the entire scope extending to 8 beams and 220 roof panels due to the success of the initial repairs.