Case Study

A Hydro Demolition Case Study

By Hi Tech Industrial Services, May 2015

Scope of works

Hi Tech Industrial Services used Hydro demolition as the preferred technique, to remove concrete from around the reinforcement within an existing slab. This method of demolition allowed the concrete to be removed without any damage to the reinforcement, allowing for lapping of reinforcement to tie in a new stair well to the slab.

The lap length required was 1000mm. A high pressure unit with two operative were allocated to the contract to complete the works. Extreme care had to be taken with regards to screening of the works in order to contain the debris generated by the cutting process as the works were in close proximity to glass panels. Hi Tech successfully removed the concrete using a hand held cutting lance.

For larger areas, Hi Tech utilise there in house robotic equipment, however a hand held lance was selected for this job as multiple small locations required cutting with a combined area of 4 – 5m³.

Typical hand lance outputs are between 0.6 and 1.2m³ per 10 hour shift as opposed to 4 – 5m³ in the same time using robotic equipment.

Benefits to Hydro Demolition

Hydro Demolition is a technique used for the controlled removal of concrete from any physical structure using either High Pressure (HP) or Ultra High Pressure (UHP) water jets. There are many benefits to hydro demolition when compared to conventional methods of concrete removal. This includes, but is not limited to.

Environmental

- No dust pollution
- Reduced noise pollution caused by setting up of resonance within the structure generated by percussive methodology

Safety

- Vibration free which means there is no risk associated with hand-arm vibration syndrome
- Dust free environment so no inhalation for operatives

Technical

- Maintains the structural integrity of reinforced steel
- Eliminates all micro cracking left behind when using percussive tools
- The water used for the operation flushes all contaminants out of the concrete and surface of reinforcement, particularly advantageous when carrying out remedial works on defective structures
- Reinforcement steel is prepped ready for reinstatement by the hydro demolition operation
- No additional grit blasting is required
- Ability to provide precision cutting with no over brake or soffit spalling due to vibration

Challenges and Hi Tech's Solutions

Hi Tech was faced with some challenges during the project. Hydro Demolition proved to be beneficial as it was the safest and most cost effective method of removal. On site challenges included;

Challenges	Hi Tech's Solutions
Potential flying debris in surrounding environment	After a site analysis in conjunction with our SWMS, Hi Tech supplied and fitted a surrounding encapsulation to the workable site. This eliminated the chance of debris leaving the workable area.
Water control of 5,000L per/hour	Hi Tech ensured that a bunding and filtration system was in place to enable water to be released at a safe speed and pressure, which had no contaminants and was directed down the sewer drain.