

Webb Dock Redevelopment, Port of Melbourne Corporation

Achieve greater abrasion
resistance and protection, and
reduce project time

Case study



Owner

Port of Melbourne Corporation (PoMC)

Contractor

McConnell Dowell

Sub-Contractor

UCC

Applicator

Geelong Abrasive Blasting

Location

Webb Dock Drive, Port Melbourne 3207, Victoria,
Australia

Coating System

PPG SIGMASHIELD 880XS (110,000 Liters)

Substrate

Mild Steel (Steel Sheet Piles)

Surface Preparation

Abrasive Blast

Date of Application

Jan 2014 – Oct 2015

Date of this Report

June 2016

The Customer

The Port of Melbourne (PoMC) handles almost 2.6 million containers annually with around 3,000 ship visits each year. The port is Australia's largest container and general cargo port, with great importance to the Victorian and national economy. To meet future container and cargo throughput demand, PoMC decided to add additional capacity through the redevelopment of Webb Dock.

The Challenge

The project required a coating to meet the AS/NZS 3750 ultra-high-build epoxy standard, which required a minimum of 1,500 μm dry-film thickness (DFT) in a single application. Due to the project's very strict delivery schedule, along with Melbourne's prevailing cold winter temperature (5 to 12°C), the coating system needed to be "fast cure" so it could be handled 18 hours after application. As the seabed is very abrasive and hard, the installation required the sheet piles to have superior abrasion-resistant coating protection to ensure the coating's long-term protection.

Our priority was to offer a reliable coating system, with ultra-high-build film thickness and excellent abrasion resistance, which would fulfill the customer's immediate and long-term objectives for the project.



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The Solution

In order to provide the customer with the most effective protection, along with meeting the stringent delivery schedule, we proposed the PPG SIGMASHIELD 880XS ultra-high solids, pure epoxy coating.

The system meets the AS/NZS 3750 standard and also passed and exceeded customer's expectations for abrasive resistance, adhesion, curing assessment, hardness, and holiday tests. GAB, the applicator, was invited to China to witness the system trial; the sheet piles were automatically blasted by a wheel abraded, then loaded into a custom jig where the piles were cleaned and finally sprayed with the coating.

The PPG SIGMASHIELD 880XS coating is capable to be "Hot-Applied, Cold Cured" (HACC), where the coating is heated and sprayed onto cold steel. The process significantly reduces project throughput time, even during the harsh winter season.

The Benefits

Just a single application of PPG SIGMASHIELD 880XS coating can achieve 800 to 2,500 μm DFT. This meant there was no need for multiple coats thereby saving a substantial amount of application time and increasing efficiency.

The HACC application also significantly reduced the curing time and allowed the holiday tests to be carried out the following day as opposed to waiting between 5 to 10 days if traditional, ultra-high-build epoxy coats were applied. As a result, the sheet piles were completed and transported to site much quicker for installation.

Key Benefits of PPG SIGMASHIELD 880XS:

- Ultra-high-build: 2,500 microns DFT in one application
- Fast curing – even at lower temperatures
- Excellent abrasion resistance

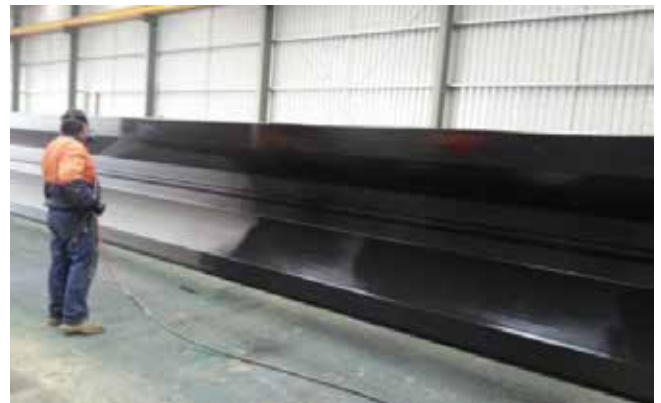
The Result

PoMC, was extremely happy with the application, which comprised 110,000 liters of PPG SIGMASHIELD 880XS product for 35,000 m^2 of steel.

Owner achieved their objectives through our expertise in this industry. GAB was satisfied with the innovative application and handling of sheet piles. In fact, over 900 sheet piles were coated with no product issues. The PPG SIGMASHIELD 880XS system will provide the piles with outstanding abrasion resistance and corrosion control.



Handling of painted PPG SIGMASHIELD 880XS after 18 hours overnight curing between 12 and 5°C. The coatings were already hard dry enough and there was no marks



- Spray application PPG SIGMASHIELD 880XS
- Good atomization
- No blockages experienced throughout
- No dry spray
- No smell of solvent

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