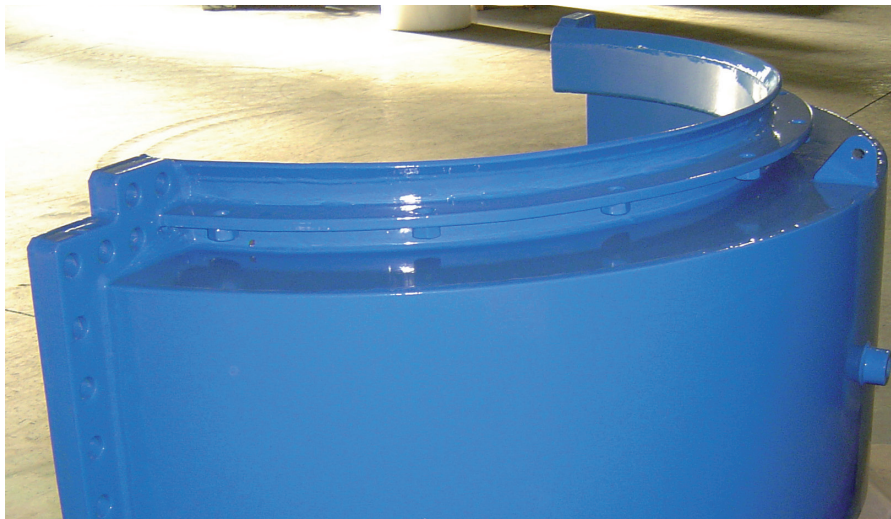




Plascoat PPA 571

Superior Corrosion Protection and Labour Saving Benefits



Pipe fitting coated in Plascoat PPA 571

Challenge

Seattle Public Utilities (SPU) use ductile iron pipe as the primary material for distribution water mains. Like all utility companies, SPU have to take measures to protect the pipe from corrosive soils.

The Port of Seattle was increasing the size of the port facility at one of the terminals, and SPU would need to relocate and redesign the water main system - over 5700 linear metres (19,000 feet) of ductile iron pipe. The enlarged terminal would extend into part of Harbor Island, an area that had previously been home to numerous industrial and manufacturing businesses, including four petroleum tank farms and metal recycling and scrap yards.

Described by the US Environmental Protection Agency as a "superfund site", the soils were contaminated with highly toxic heavy metals and organic compounds, highly corrosive as a result and posing an enormous challenge to anyone wanting to lay metal pipes beneath the ground.

The method previously used to protect pipes was polyethylene tape, of different thicknesses depending on the level of corrosivity of the soil. In many parts of the district the soil is highly corrosive with a high moisture content reducing soil resistivity and increasing the corrosion potential. In these areas multi-layered tape coating had been used, together with bonded joints, insulated couplings or flange kits at connections to dissimilar metal pipe and electrolysis test stations.

Thinner tape was used on areas of lower corrosivity.

Issues with Previous Pipe Protection:

The polyethylene tape used previously had been found less than ideal in a number of key areas.

- It was difficult to bind the tape closely on uneven surfaces such as valve bodies, crosses bends, tees and joints, due to poor adhesion.
- There was evidence that ground and pipe movement disturbed the tape.
- After a short time underground the tape delaminated or wrinkled, allowing water and soil to travel underneath and begin to corrode the ductile iron pipe.



Application:

Pipes and pipe fittings
(water distribution)

Product:

Plascoat PPA 571

Location:

Harbor Island, Seattle,
North America

Client:

Seattle Public Utilities

" Seattle Public Utilities

declared Plascoat

PPA 571 to be its

'coating of choice'.

As well as noting the

exceptional protection

against corrosion

and low maintenance

the company also

appreciated the labour

saving benefits it offered

during installation,

in soils that would be

hazardous to personnel

if subjected to prolonged

exposure."

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- Polyethylene tape is destabilised by exposure to UV light making it difficult to have in-house stock available for repairs or new pipe sections.
- Contractors and SPU personnel considered the tape non user-friendly and very labour intensive. For instance, to insert the plain end of pipe into a bell end requires time consuming removal of tape followed by heat shrinking of the sleeves around the bell end.



The polyethylene tape has wrinkled and split



In other areas the polyethylene tape has flaked and peeled

Solution:

Seattle Public Utilities were aware of bonded thermoplastic coatings manufactured by Plascoat Systems Ltd, and of the potential benefits of this form of protection. The thermoplastic material is an acid modified powder applied by conventional powder spray techniques or fluidised bed. The thermoplastic powder melts and flows to form a fusion bonded coating which hardens to a firm, durable, thick (150-200 microns) surface, highly resistant to cracking, chipping or peeling.

SPU sought documented experience of the use of this coating on ductile iron pipe and travelled as far as Gothenburg, Sweden to view pipe with **Plascoat PPA 571** thermoplastic coating that had been in corrosive soil for over ten years. The pipe coating was intact and showed no evidence of abrasive damage or corrosion.

The protective benefits of Plascoat PPA571 were evident. PPA 571 forms a closely adhered envelope around the pipe and 'wets out' over welds. The coating withstands cold temperatures without cracking or flaking and is resistant to UV light, chemicals and pollutants. Before using thermoplastic on pipe work for the Port of Seattle extension, SPU trialled the coating on four small test projects.

These projects demonstrated the excellent protective qualities of thermoplastic together with the advantages of ease of application and overall cost savings.

- PPA 571 can be applied two hours prior to use.
- The plain end of thermoplastic coated pipe can be directly inserted into the bell end. No need for labour intensive tape removal.
- The coating is resistant to handling damage, reducing the need for expensive field repairs.



Harbour Island, Seattle, pipe coated in PPA 571



Pipe fitting coated in PPA 571

Key Points

- **Excellent adhesion to steel, iron and aluminium**
- **Flexible coating withstand pipe movement**
- **Withstands cold temperatures without cracking or flaking**
- **Labour-saving benefits compared to tape**

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Outcome:

Over 5700 linear metres of redesigned and relocated distribution water mains pipe work for the extended Port of Seattle was coated in **Plascoat PPA 571**. The benefits achieved by Seattle Public Utilities include superior protection against corrosion, ease of handling and long term cost savings through longevity in terms of pipeline life-time and minimal maintenance costs.



Water distribution pipes coated in PPA 571 Aqua

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