

Protective Coatings – a Guide to Project Delivery

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This article aims to present a description of the asset maintenance industry and how the various intermediaries fit into the larger picture. Many of you are experienced in designing, engineering, protective coatings or project delivery, however many professionals and contractors tend to operate in their own silos. I aim to discuss a description of the industry and how the various intermediaries fit into the larger picture.

By formalising the industry structure to describe how projects get delivered we can understand where an asset owner's project can fit into this industry structure.

The 'Guide for Project Delivery' will be discussed by working through the following topics:

- Assessing your project
- How we all fit in the bigger picture
- Provide real life examples of how differing projects fit into the existing industry structure

Assessing Your Project

So when focusing on 'Protective Coatings Projects' we most likely include the following parties:

- Asset Owner
- Engineering (Designer – Mechanical, Structural, etc.)
- Engineering (Corrosionists)
- Engineering (Materials Science)
- Consultant (Protective Coatings)
- Consultant (Project Management)
- Contractor
- Coatings Manufacturer
- Coatings Inspector

Where We Fit In

Lets discuss how we all fit within a project delivery model.

When an asset owner is appraising a project, they need to consider;

- capacity or function
- financial budgets
- asset life cycle
- time to first maintenance
- risk management

This sounds basic, but how many times have we been invited during the latter stages of a project where some of these items haven't been considered?

When presented with a coatings project – the asset owners need to properly evaluate how many elements are required to effectively manage their expected outcome.

Typical roles in a coatings project can include:

- Asset Owner
- Engineering (designer, mechanical, structural etc.)
- Engineering (Corrosionists)
- Engineering (Material science)

- Consultant (Protective Coatings)
- Consultant (Project Management)
- Contractor
- Coatings manufacturer
- Coatings Inspector

Notice there are 3 engineers, 2 consultants, 1 contractor doing the work, 1 manufacturer supplying the paint and 1 inspector. The greater proportion is weighted at the pre start stages of the project being - **Project Appraisal**.

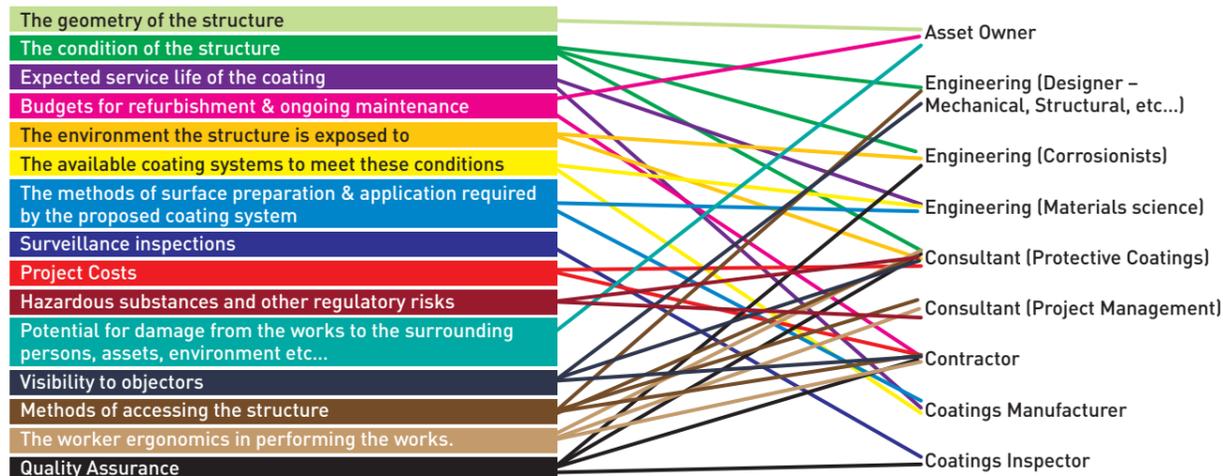
That's because expending the effort at the front end of the project saves time & money in the back end of the project.

A simple rule of thumb is, 'if you can't conceptualise the project, you need to surround yourself with people that can'.

It doesn't mean you need to stack the project with multiple layers of management. You just need to assess where your organisation's skills are lacking and get a professional third party provider to assist with that portion.

Let's now look at the major elements in a protective coating project.

Protective coatings, project considerations.



Organisations Capabilities.

Upper Levels of:

- Engineering Design
- Materials Science

Functional / Site Based Level:

- Consultants
- Contractors
- Coating Inspectors



Project Case Studies

Case Study 1 Molasses Tanks:

A set of large silos on site that is overdue for a repaint.

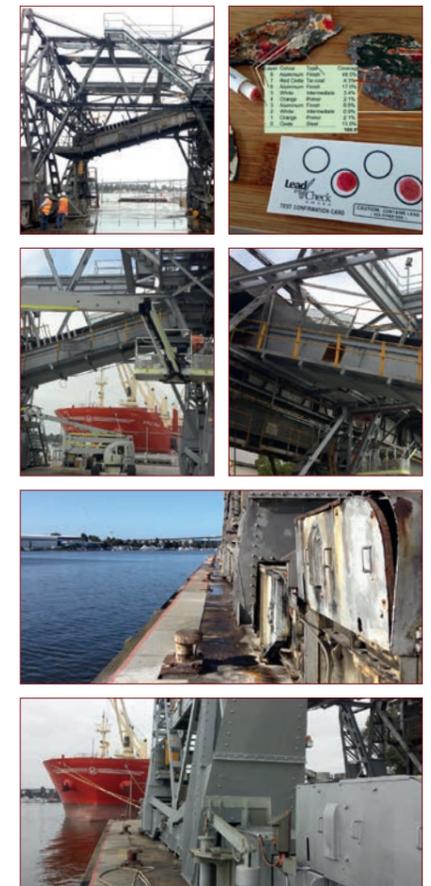
Clients Request:	Need to repaint the silos.
Reasoning:	Because they look bad.
Risks:	<ul style="list-style-type: none"> ■ Working at heights ■ Interruption to delivery flow.
Requests:	Low budget – long warranty
Solution:	<ul style="list-style-type: none"> ■ Asset owners understanding of PC is limited. ■ They wanted the contractor to "Make it look good" ■ They recognised their lack of understanding and sought help. ■ They did not need designs or engineers as there was no alterations. ■ They needed a coating specification. ■ They needed a specialised approach to minimise the cost.
Outcomes:	These works were completed with a 6 year guarantee. A unique solution was developed in order to turn the project proposal into a job.



Case Study 2 Ship Loader:

This project involved refurbishment of a 1920's steel structure that had corrosion, lead based paints trapped under 7 defective coating layers.

Clients Request:	To remove lead based paint, treat corrosion & apply a new protective coatings system.
Reasoning:	To protect the structure from corrosion
Risks:	<ul style="list-style-type: none"> ■ Lead containing paint. ■ Damage to the Environment (Port of Melbourne waterway). ■ Working at heights (difficult geometry) ■ Interruption to shipping schedules.
Requests:	Upon going through the Project Appraisal Stage the client determined the required budget (\$450k) was not suitable.
Solution:	<p>A detailed coating survey was performed to determine the extent of the lead containing paint and also the extent of the defective coatings to help us tailor a solution.</p> <p>This involved:</p> <ul style="list-style-type: none"> Low pressure water cleaning. Basic surface preparation performed to 90% of the surface area. This coupled with an aluminium pigmented epoxy mastic provided suitable protection for the next 5+ years before further evaluation. 10% of the remaining area had potential to disturb lead containing paint. For the short term these areas were coated to encapsulate lead and corrosion.
Outcomes:	In making their investment decision the owner was able to: <ol style="list-style-type: none"> 1. Contain corrosion to 10% of the structure 2. Effectively manage the lead containing paint. 3. Input a maintenance plan moving forward that will allow them to slowly treat the corrosion.



Project Case Studies

Case Study 3 Sewage Treatment Plant (STP) – Filter Cell:

This project was to strip defective coatings from a concrete tank and apply a new protective lining system.

Client's Request:	Detailed appraisal & specification to be developed by external Engineering & Consultancy CH2M Hill.
Reasoning:	Another coating failure would be unacceptable as it reduces the design capacity of the STP.
Risks:	<ul style="list-style-type: none"> ■ Poor workmanship or materials. ■ Confined space entry & rescue. ■ Damage to downstream elements of the STP.
Intermediaries:	<p>The Asset Owner engaged an external Engineering & consultancy firm to;</p> <ul style="list-style-type: none"> ■ Provide mechanical engineering in appraising the environment for a new lining system. ■ Provide materials science principles in evaluating the range of coatings available. ■ Provide a detailed project specification. ■ Provide project management in selecting contractors and overseeing the works. ■ Engaged Remedy Asset Protection to provide site based consultancy & coating inspection duties.
Outcomes:	<p>Successful removal of the old coatings & application of a new 4 layer resin based laminate coating.</p> <ol style="list-style-type: none"> 1. Detailed work procedures were developed to deal with site specific issues. 2. Well documented site diary & inspection reports were completed to enforce contractor & manufacturer warranties. 3. Have been able to capture the learnings from this project to apply onto the other 11 cells.



Conclusion

Some suggestions to leave you with are;

Recommendations	Steps for failure	<ul style="list-style-type: none"> ■ Not listening to recommendations from industry ■ Sacrificing quality for money (results in less longevity) ■ Accepting a lowest price bidder without properly checking their methodology. ■ Having a combative attitude to project delivery rather than a collaborative attitude.
	Steps for success	<ul style="list-style-type: none"> ■ What is the project? ■ What is the outcome (includes standards)? ■ What is the risk? ■ What is the budget? ■ Use documentation.

Refurbishment of protective coatings involves many factors outside of simply applying coatings. These are projects that if managed well – work well and provide the desired outcomes. However when managed poorly they really expose the Owner to cost over runs and many risks that can make your head spin.

It is recommended spending some time with a professional at the evaluation stages to identify;

- Required outcomes
- Available budgets
- Key risks
- And skills that are not available in-house.

Then convince your boss (or client) to allocate some of the budget towards consultancy or inspection services where you have a skill deficiency.

Whether that is at the upper levels of;

- Engineering design & materials science

Or, at the functional site based levels of;

- Coatings consultant or coating inspector.

This additional expense at the front end of the project will;

- Save you grievances from your boss & your client.

- Make sure the job is done right.
- It will make you look good by having foreseen the likely risks and effectively managed them
- And you will protect & enhance your reputation for project delivery.

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