COATING SPECIFICATION

ELASTOMERIC POLYURETHANE PROTECTIVE COATING ON CONCRETE

COATING SPECIFICATION: I1  ISSUE: 1  DATE: 12 DECEMBER 2012

1.0 SCOPE

This document summarises the procedure for spray applying Elastomeric Polyurethane protective coatings (e.g. Polybrid®, Polyurea®) onto concrete structures.

Refer Design Standard, DS 95 (Standard for the Selection, Preparation, Application, Inspection and Testing of Protective Coatings on Water Corporation Assets) for additional information or clarification.

It shall be read in conjunction with Water Corporation surface preparation specification A5 - Surface Preparation for the application of Protective Coatings on Concrete.

2.0 PURPOSE

The purpose of this coating specification is to describe the process for coating new and existing potable and wastewater concrete structures. Typical applications include Sludge Digesters, potable water concrete tanks etc. For potable water applications the coating shall have AS/NZS 4020 (Testing of products for use in contact with drinking water) approval.

3.0 DEFINITIONS

ACA means Australasian Corrosion Association.

Adhesion Testing means testing to determine the bonding strength of the coating to the substrates to which they are applied.

APAS means Australian Paint Approval Scheme.

Contractor means the service provider or its sub-contractor who will undertake the works.

Corporation means the Water Corporation and the Principal for the purposes of externally contracted asset delivery.

DFT means Dry Film Thickness.

ITP means the detailed Inspection and Test Plan(s) for the Works.

NACE means National Association of Corrosion Engineers.

PCCP means Painting Contractors Certification Program.

Spark Testing means testing of the continuity of a fully-cured coating film for evidence of defects, pin holes, holidays (misses) or damage.
Superintendent means the Superintendent for the contract, as defined in the conditions of contract, who is appointed by the Water Corporation to manage/oversee the work under the contract on behalf of the Water Corporation.

TDFT means Total Dry Film Thickness.

Works means the surface preparation, coating application and inspection to be undertaken by the contractor to which this coating specification applies.

**4.0 SURFACE PREPARATION**

4.1 The concrete structure surface to be coated is to be prepared in accordance with Water Corporation specification A5.

4.2 All visible contaminations dirt, laitance, sludge and other foreign matter shall be removed from the surfaces to be coated by “appropriately rated pressure” water blasting of the structure. Follow the paint manufacturer recommendation for water blasting pressure.

4.3 Prior to coating of new and old concrete structures, moisture content of the concrete shall be measured and shall be less than 5%.

4.4 Repair aggregate exposure and imperfections (bug holes, cold joints etc.) in the wall and floor concrete surface using a 100% solids epoxy paste mortar screed. The hardening time shall be in accordance with manufacturer’s recommended practice.

4.5 Floor to wall joints, sharp corners etc. shall be formed “coved” prior to embedding with Geotextile fabric [Refer: Figures 1 and 2].

![Coving on the floor to wall joint.](image)

Figure 1 – Coving on the floor to wall joint.
COATING SPECIFICATION

ELASTOMERIC POLYURETHANE PROTECTIVE COATING ON CONCRETE

COATING SPECIFICATION: 11  ISSUE: 1  DATE: 12 DECEMBER 2012

Figure 2 – Geotextile fabric installed on the floor to wall joints

4.6 If needed, spray apply moisture tolerant penetrating surface binding epoxy coat to strengthen and seal concrete surfaces and allow to harden.

4.7 Spray apply a second epoxy primer coat to the required thickness and allow to become tacky before applying elastomeric final coat system.

5.0 COATING MATERIALS

5.1 Where a suitable Australian Paint Approval Scheme (APAS) approved product is available it shall be used. If a suitable APAS approved product is not available, then an equivalent non-APAS approved product may be used subject to approval by the Corporation.

5.2 The coating components shall be thoroughly mixed in the specified proportions. Material so prepared shall be used within the “pot-life” period claimed by the manufacturer for the relevant site conditions.

5.3 Coating specifications inclusive of datasheets, coating application, method statements and ITP’s shall be submitted to the Principal for approval at least 10 working days prior to commencement of the work.

5.4 Recommended drying times between coats for on site conditions shall not be exceeded.

5.5 Applied coatings shall be protected from rain or moisture until cured.
6.0 ATMOSPHERIC CONDITIONS

6.1 Prior to and during coating application, the contractor shall record details pertaining to environmental conditions including ambient and surface temperature, relative humidity and dew point.

7.0 COATING THICKNESS

7.1 Apply Elastomeric coating using heated plural component spray equipment to produce 2000 microns minimum dry film thickness.

8.0 COATING FINISH

8.1 The finished coating shall be of uniform thickness, colour, appearance and gloss. It shall be fully cured, adherent, coherent and free from holidays, laps, sags, blistering, checking, wrinkling, overspray, patchiness and any other defects that may impair the performance and/or appearance of the coating.

9.0 COATING APPLICATOR/PERSONNEL QUALIFICATION

9.1 Work shall only be carried out by competent personnel.

9.2 The work shall be undertaken by a coating contractor accredited by the PCCP to a class appropriate for the work to be undertaken.

9.3 The Applicator’s Coating Supervisor shall possess as a minimum one of the following certifications:

- ACA - Coating Inspector; or
- NACE - CIP Level I Coating Inspector.

9.4 The coating contractor shall nominate a Coating Inspector as their Quality Control Officer to carry out inspections, submit the ITP, undertake the required testing and maintain appropriate records for all work performed.

The Applicator’s Coating Inspector shall possess as a minimum one of the following certifications:

- ACA - Coating Inspector; or
- NACE - CIP Level I Coating Inspector.
10.0 INSPECTION AND TESTING OF COATING

10.1 Visual Testing - Coatings shall be visually examined for surface defects and any discontinuity arising after curing shall be recorded.

10.2 Spark Testing - The finished coating shall be holiday tested in accordance with NACE Standard SP0188 – Discontinuity (Holiday) Testing of New Protective Coatings on Conductive Substrates.

10.3 Adhesion Testing - This test shall be conducted in accordance with AS/NZS 1580 Method 408.5 to determine the adhesion strength of the coating to the substrate. Reference shall also be made to ASTM Standard D4541-09, ASTM D7234-05 and ASTM C1583/C1583M-04.

10.3.1 The minimum acceptable adhesion value for elastomeric coatings on concrete shall be in accordance with the coating manufacturer’s recommendation.

10.3.2 The location of test sites shall be identified and agreed upon by both the Contractor and the Principal prior to the start of attaching the dollies to the substrate.

10.4 The results of all testing shall be submitted to the Superintendent at the completion of work.

11.0 REPAIR OF A DEFECTIVE COATING AND RETESTING

11.1 Coatings with defective areas equal to 20% or more of the total coated surface will be rejected outright.

11.2 Defects such as pinholes, cracks, blisters, voids, foreign inclusions and irregular profile peaks shall be marked for repair and retested upon full cure of the repaired coating.

12.0 RECORDING AND REPORTING

12.1 Following testing a report shall be submitted by the Contractor. The Contractor shall keep detailed records and reports including the following:

- Environmental conditions (relative humidity, dew point etc.);
- Surface preparation;
- Surface profile;
- Coating application;
- Coating testing; and
- General failure.
12.2 To supplement these records, prior to any works commencing, an Inspection Test Plans (ITP) shall be forwarded to the Water Corporation for review a minimum of ten working days prior to the commencement of work.

13.0 CONTRACTOR'S RESPONSIBILITY

13.1 The Contractor shall supply all necessary plant, equipment, materials and labour, prepare the surface and apply and maintain the protective coating in accordance with this specification.

13.2 The preceding inspection clauses shall not relieve the Contractor of their responsibility to supply materials and perform work in accordance with the requirements of any overriding contract documentation.

--- End of Document ---