

**PART S36****PROTECTIVE TREATMENT OF STRUCTURAL STEELWORK (PREVIOUSLY COATED)****CONTENTS**

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**1. GENERAL**

1. This Part specifies the requirements for the supply and application of protective treatment to steelwork which has been previously painted. The Principal will provide details of:
  - (a) the existing protective treatment (including whether lead or other hazardous materials are present);
  - (b) the service environment;
  - (c) the protective treatment to be applied (including paint type, dry film thickness, finish coat colour, extent of treatment);
  - (d) the Class of PCCP accreditation required for this contract; and
  - (e) any special requirements.

2. The following documents are referenced in this Part:

## Australian Standards

- |     |             |   |
|-----|-------------|---|
| (a) | AS 1576.1   | Scaffolding general requirements.   |
| (b) | AS 1580     | Paints and related materials – Methods of test  |
| (c) | AS 1627     | Metal finishing – Preparation and pre-treatment of surfaces   |
| (d) | AS 1680.2.4 | Interior lighting – industrial tasks and processes  |
| (e) | AS 2312.1   | Guide to the protection of structural steel against atmospheric corrosion by the use of protective coatings. Paint Coatings |
| (f) | AS 2700     | Colour standards for general purposes   |
| (g) | AS 3894.1   | Site testing of protective coatings. – Non-conductive coatings-Continuity testing-High voltage (brush) method               |
| (h) | AS 3894.4   | Site testing of protective coatings. – Assessment of Degree of Cure   |
| (i) | AS 3894.6   | Site testing of protective coatings. – Determination of residual contaminants   |
| (j) | AS 3894.10  | Site testing of protective coatings. - Inspection report – Daily surface and ambient conditions                             |
| (k) | AS 3894.11  | Site testing of protective coatings. - Equipment report.  |
| (l) | AS 3894.12  | Site testing of protective coatings. - Inspection report – Coating.   |
| (m) | AS 3894.13  | Site testing of protective coatings. - Inspection report – Daily  |
| (n) | AS 3894.14  | Site testing of protective coatings. - Inspection report – Daily painting   |
| (o) | AS 4361.1   | Lead paint removal – Industrial applications.   |

## DPTI

- (a) TP 765 Determination of Total Dissolved Salts of Abrasive Blast Medium
- (b) TP 800 The Determination of Surface Profile, Abrasive Blast Cleaned Steel Substrates
- (c) TP 801 The Development of Dry Film Thickness Requirements for Coatings on Structural Steelwork (Abrasive Blast Cleaned)
- (d) TP 910 Paint Sampling and Testing
- (e) TP 911 Water Sediment Testing – Lead Abatement Projects
- (f) TP 912 Air Monitoring – Lead Abatement Projects
- (g) TP 913 The Measurement of Dry Film Thickness of Coatings on Structural Steelwork (Abrasive Blast Cleaned).
- (h) TP 914 Soil Testing – Lead Abatement Projects

## SafeWork Australia

- (a) NOHSC: 1012 National Standard for the Control of Inorganic Lead at Work
- (b) NOHSC: 2015 National Code of Practice for the Control and Safe Use of Inorganic Lead at Work
- (c) Code of Practice Abrasive Blasting
- (d) HCIS Hazardous Chemicals Information System ([hcis.safeworkaustralia.gov.au](http://hcis.safeworkaustralia.gov.au))

## The Society for Protective Coatings

- (a) SSPC-PA 2 Measurement of Dry Coating Thickness With Magnetic Gages

The following abbreviations may be used in this Contract:

- (a) ACA Australasian Corrosion Association
- (b) APAS Australian Paint Approval Scheme (refer [www.apas.gov.au](http://www.apas.gov.au))
- (c) EPA Environmental Protection Authority
- (d) NACE National Association of Corrosion Engineers
- (e) PCCP Painting Contractors Certification Program (refer [www.apas.gov.au/pccp](http://www.apas.gov.au/pccp))
- (f) SSPC The Society For Protective Coatings

## 2. QUALITY REQUIREMENTS

1. The Contractor shall be prequalified to PCCP to the Class specified by the Principal.
2. At a minimum, the Contractor's Quality Plan shall include the following documents, procedures and/or instructions:
  - (a) Inspection and Test Plan, in accordance with Part G20 Quality Management Requirements;
  - (b) A list of personnel and their roles on site, which includes training and competencies relevant to this project;
  - (c) A containment concept design;
  - (d) Details of mechanical dust extraction and filtering plant;
  - (e) Details of the bunding and volumes of materials to be stored;
  - (f) Access and scaffolding plan;
  - (g) Current calibration records of test equipment according to AS 3894.11;
  - (h) Surface preparation and paint application plan; and
  - (i) Proposed methods for the repair of damaged areas.
3. If not provided beforehand, this documentation shall be submitted at the Pre-Commencement Meeting.
4. Provision of the documentation listed in this Clause shall constitute a **HOLD POINT**.

### 3. **MATERIALS**

#### **Sampling and Testing**

1. At least 7 days prior to the commencement of work, the Contractor shall submit:
  - (a) an APAS record of supply for each batch of APAS approved material to be used for protective treatment; and
  - (b) where non-APAS approved products are used, evidence that each batch of paint supplied has been manufactured to the same formula as the approved sample.
2. The contractor shall supply a test certificate from a 2 kg representative sample of abrasive, which is to be used for initial blast cleaning, prior to commencing blasting, showing the salt content.
3. In addition, test certificates from representative samples of abrasive taken from bulk containers of abrasive to be used on the project showing the salt content shall be submitted. The initial sampling rate shall be the cube root of the number of bulk bags, and all samples taken shall be tested.
4. Should any batch tested fail to comply with the specified requirements, all remaining bulk bags shall be tested. Any abrasive which fails to comply with specification requirements shall not be used on this project.
5. Provision of the certificates required by this Clause shall constitute a **HOLD POINT**.

#### **Abrasive**

6. Unless approved otherwise, the abrasive shall be garnet and shall not be recycled. Abrasive shall be clean, dry and free from extraneous material such as dirt, gravel and organic matter and shall be silica free. If approval to recycle abrasive has been obtained, it may only be used once.
7. The maximum permissible level of total soluble salt content in abrasive blast medium (including recycled media) shall be 0.01% when determined in accordance with TP 765.
8. The grade of abrasive used shall be such that the surface profile produced complies with the requirements of Clause 9.7 "Surface Profile Height".

#### **Packaging, and Transportation of Abrasive**

9. Blast media shall be delivered to the applicator's premises in the manufacturer's containers, unopened and with the label intact. The following information shall be legibly and durably marked on each container:
  - (a) Abrasive type, e.g. steel grit;
  - (b) Batch Number;
  - (c) Date of Manufacture;
  - (d) Grading of Material; and
  - (e) Manufacturer's name.

#### **Paint**

10. Subject to Clause 3.1 (b) "Sampling and Testing", paint products shall be APAS approved.
11. The colour of the external finish coat shall be specified in accordance with AS 2700. The decorative final coat shall provide complete coverage to a hiding power chart as described in AS 1580.213.1.
12. Paints shall be delivered to the applicator's premises in the manufacturer's containers, unopened and with the label intact. The following information shall be legibly and durably marked on each container:
  - (a) The name or registered mark of the manufacturer;
  - (b) The paint type;
  - (c) Colour to AS 2700 (if applicable);
  - (d) The contents by volume, in litres;
  - (e) Product identification together with appropriate description of each component, e.g. base, hardener, etc.;
  - (f) Production or batch numbers on packs of 4 Litre capacity and above;

- (g) Date of manufacture;
  - (h) Information required by statutory regulations;
  - (i) Instructions for use, including the mixing ratio of the component parts, the pot life, and an instruction that the manufacturer's technical data sheet shall be studied; and
  - (j) The Manufacturer's Safety Data Sheets.
13. All the above information shall be kept on the Site at all times and available for inspection.
14. If the Contractor proposes to use a non-APAS approved product, it shall provide evidence of satisfactory previous known performance and obtain prior approval before using the product.

#### **4. CONTRACTOR'S PERSONNEL**

##### **General**

1. The Contractor's personnel shall include:
- (a) A suitably qualified and experienced Painting Quality Management Representative (PQMR) who shall personally carry out all testing as described in the Contractor's approved Inspection and Test Plan and maintain associated diary records. The PQMR shall be qualified to NACE CIP 1 or ACA Coating Inspector at a minimum.
  - (b) A supervisor with at least three (3) years' experience on projects of a similar size and scope to this work, who shall be on site at all times whilst work is in progress. The supervisor shall not be the PQMR or EMR.
  - (c) An Environmental Management Representative (EMR) who is directly responsible for ensuring that the requirements of the Environmental Management System are complied with.
  - (d) Abrasive blast cleaning operators who are competent in the consistent delivery of the blast cleaning class as specified.
  - (e) Paint applicators that can demonstrate control of dry film thickness at all times. Consistency shall be assessed against the requirements of Clause 11 "Film Thickness".
2. Except where stated otherwise, suitably qualified personnel may undertake more than one of the above roles.

##### **Painting Quality Management Representative**

3. At a minimum, the PQMR's responsibilities shall include the following:
- (a) To observe and record relevant day to day information including.
    - i. Abrasive blast quality.
    - ii. Information on an ongoing basis through the day concerning the operational needs of the works to appropriate Australian Standards. This includes atmospheric conditions, paint details, equipment function and suitability etc.
    - iii. Individual dry film thickness readings for each coat.
    - iv. Co-ordinate all rework for the above as required.
    - v. Address all hold points relevant to these operations.
    - vi. Audit, calibrate and check all measuring equipment where required.
  - (b) To report any Non-conformance with the Specification or Australian and Industry Standards.
  - (c) To provide advice and notification of any problems experienced with the coating system.
  - (d) Be present at all site meetings.

#### **5. PROGRAM AND COMMENCEMENT OF WORK**

1. At least one week prior to the commencement of any work associated with protective treatment, the Contractor shall submit a complete detailed program of work showing all activities required for cleaning and application of protective treatment.
2. The program shall show the paint manufacturer's estimated time to full cure.
3. Where the program no longer reflects the Contractor's actual or planned progress, the Contractor shall provide the Principal with an amended program as soon as practicable.

4. Provision of the program and any amended program shall constitute a **HOLD POINT**.

#### **Notification**

5. The Contractor shall provide at least 48 hours notice prior to the commencement of any cleaning process.
6. Provision of the notice shall constitute a **HOLD POINT**.

#### **Inspection and Lighting**

7. Where inspection and/or surveillance require the use of scaffolding, the Contractor shall provide the scaffolding in accordance with AS 1576.1. Sufficient artificial lighting shall be provided within the contained area, as a supplement to any natural lighting present. The minimum average illuminance over the area of inspection shall be 300 lux and shall comply with requirements of AS 1680.2.0 Table 2 "For the Purpose of Inspection".
8. Provision of the minimum average illuminance results shall constitute a **HOLD POINT**.

### **6. CONTAINMENT REQUIREMENTS**

#### **General**

1. The Contractor shall implement Emission Control to the standard specified by the Principal, or if nothing is specified, in accordance with AS 4361.1 Level A. The design of scaffolding and work platforms shall be such that the work area is sealed to prevent uncontrolled leakage of dust, waste and debris.

#### **Structural Integrity**

2. The containment shall be designed to take into consideration factors such as wind loading and structural loads on the structure. The Contractor will be provided with any design limitations if requested.

#### **Containment Material**

3. The containment material used shall be structurally sound. Sheet steel, plywood or reinforced clear plastic such as Monarflex may be used to form the walls of containment structures. All floor areas shall be effectively banded to contain all waste.
4. Where non-transparent containment materials are used, sufficient lighting shall be provided to satisfy the work, access and inspection requirements as specified elsewhere in this Specification.

#### **Drainage**

5. Where drains are located within the containment, temporary drainage pipes or hoses shall be used to direct water away from the work area.

#### **Dust Collection**

6. Where a mechanical dust collection system shall be used to collect and remove airborne dust and debris generated during the paint removal process, the contained area shall be subject to negative air pressure at all times during the blast cleaning operation. For hazardous coatings jobs sock type collectors shall not be used.

### **7. ENVIRONMENTAL MANAGEMENT**

1. For general environmental requirements, refer to Part G50 Environmental Management Requirements.
2. Hazardous paint management shall be in accordance with the requirements of AS 4361.1. All dust produced by the abrasive blast cleaning process shall be effectively contained, filtered, stored and disposed of in such a way as to prevent any impact on the environment. An approved hazardous coatings management procedure shall be in place prior to commencement of contract works on site.
3. Full time air monitoring shall take place during all hazardous coatings operations, in accordance with TP912. Visual monitoring shall be continuous, with visible emissions resulting in immediate shutdown of operations such that the cause of the leak can be identified and corrective action taken. Filters shall be forwarded to the test authority no later than 5 working days after sampling has taken place. Background filters may be forwarded with the first batch of work filters.

4. Samples of soil, water/ sediment shall be taken before work commences on site, and at the conclusion of work at each site, in accordance with TP914 and TP911 respectively. All samples taken shall be tested.

## 8. EXISTING PAINT

1. If lead in existing paint is present at levels exceeding 1% by mass or chromium exceeding 0.1% by mass, or other coatings identified by the Principal as hazardous, all work on site shall be treated as lead risk, as defined in Safe Work Australia National Standard for the Control of Inorganic Lead at Work, NOHSC: 1012 and the National Code of Practice for the Control and Safe Use of Inorganic Lead at Work NOHSC: 2015. The Contractor shall manage the removal of hazardous coatings in accordance with the Safe Work Australia, Abrasive Blasting Code of Practice and AS 4361.1.
2. Notwithstanding any provision of hazardous coatings levels in existing paint provided by the Principal, the Contractor is responsible for the identification and assessment of paint and the management of any hazardous materials at the Site.

## 9. SURFACE PREPARATION

### Preliminary Cleaning

1. Weld spatter, surface irregularities and sharp edges shall be removed by the contractor. All steel used shall be checked for sharp edges and where found shall be reworked to a minimum 2 mm radius. Large deposits of bird droppings and other deleterious material shall be removed manually for disposal as per statutory regulations. Deposits of oil and grease shall be removed by solvent cleaning in accordance with AS 1627.1.
2. Where salt contamination of surfaces is possible, testing shall be carried out in accordance with the requirements of AS 3894.6 Method A. If chloride levels exceed 50mg/m<sup>2</sup>, a **HOLD POINT** shall apply.

### Final Cleaning

3. All surfaces shall be dry abrasive blast cleaned back to the metal, removing all rust, mill scale, weld slag, paint, or any extraneous material, in accordance with AS 1627.4, "Metal finishing - Preparation and pre-treatment of surfaces Part 4: Abrasive blast cleaning of steel", to the Class of finish specified by the Principal or if nothing is specified, Class Sa 2½. The class to be as described in AS 1627.9, "Metal finishing Part 9: Preparation and pre-treatment of surfaces – Pictorial surface preparation standards for painting steel surfaces".
4. After-blast cleaning shall be carried out in accordance with AS 1627.4 Clause 5.4.
5. All blast cleaned surfaces shall be over coated within 4 hours of completion of blast cleaning, or before discolouration occurs, whichever is the sooner.
6. After completion of cleaning but prior to the application of any protective treatment a **HOLD POINT** shall apply.

### Surface Profile Height

7. All surface profile readings shall be within the range of 45 to 80 µm, when measured in accordance with TP 800 Method 2. A minimum of 5 tests shall be carried out to establish the profile height range delivered by the abrasive blasting process. This process shall be repeated for each abrasive blast cleaning operator.
8. The Contractor shall prepare a test area to confirm that the abrasive blasting process and materials can produce the specified profile height.
9. Provision of the results from the test area shall constitute a **HOLD POINT**

## 10. APPLICATION OF PAINT

### Deviations from Manufacturer's Data Sheets

1. Any deviations from the manufacturer's data sheet shall be authorised in writing by the paint manufacturer. Copies of such authorisation shall be forwarded to the Principal's Representative at least 48 hours prior to the application of paint.
2. Provision of the authorisation shall constitute a **HOLD POINT**.

**Safety Precautions**

3. The Contractor shall abide by all recommendations provided on the paint manufacturer's safety data sheets and shall ensure that work and work-site procedures are carried out in strict accordance with the *Work Health and Safety Act 2012 (SA)*.
4. Safety data sheets, shall be available on site for any paints, solvents and other liquids on site.

**Bunding**

5. All hazardous substances and other flowable materials shall be stored within separate banded areas. The capacity of each banded area shall be equal to the volume of substances stored, plus 20%. The volume of stored material shall not exceed this calculated volume.

**Mixing and Thinning**

6. All paints, thinners, solvents and any other liquids shall be mixed within banded areas. All paints shall be thoroughly mixed before use to ensure that it is homogeneous and if required shall be agitated during application to keep the paint homogeneous in accordance with the manufacturer's written recommendations.
7. If paints are thinned on site, the Contractor shall ensure that volatile organic compound (V.O.C.) exposure standards in the Hazardous Chemicals Information System (HCIS) are met.
8. Liquid wastes shall be disposed of in accordance with the requirements of the EPA and statutory requirements.

**Tinting**

9. Where successive coats of the same colour are to be used or have been specified, alternate coats shall be tinted off-shade sufficiently to produce enough contrast to indicate separate coats and complete coverage of the surface.

**Application and Climatic Conditions**

10. Paints shall be applied in accordance with AS2312.1.
11. All paints shall be applied within a screened area and in accordance with the paint manufacturer's written instructions.
12. Paint shall not be applied if any of the following conditions occur, or are expected to occur, during the application and initial curing period:
  - (a) the ambient temperature is below 10°C or the minimum temperature specified in the manufacturer's written recommendations;
  - (b) rain, fog, mist, strong winds or dusty conditions;
  - (c) moisture is present on the steel surface;
  - (d) the temperature of the steel is less than 3°C above the dew point at the time of coating; or
  - (e) the relative humidity exceeds 80%.
13. Dew point shall be calculated from wet and dry bulb temperatures measured using a calibrated sling psychrometer. Any thermometer corrections required by the calibration record shall be applied to all readings. The surface temperature gauge shall be calibrated and any corrections required shall be applied when measuring steel surface temperature. Only calibrated and corrected sling psychrometers shall be used for the determination of relative humidity.

**Stripe Coating**

14. Unless specified otherwise, stripe coating to AS 2312.1 is required wherever AS 2312.1 states that it is advisable or recommended.
15. A stiff, stripe coating brush shall be used to apply stripe coats to welds, crevices, mouse holes, fixing holes, fixings and rivets.

## 11. FILM THICKNESS

### Measurement of Dry Film Thickness

1. The dry film thickness shall be measured in accordance with TP 913 and the dry film thickness range shall be determined in accordance with TP801. Minimum and maximum specified values shall include the estimated uncertainty of measurement. Results shall be recorded on AS 3894.12: "Site Testing of Protective Coatings. Inspection report—Coating or an approved equivalent.
2. Measurement of the profile induced error shall be carried out on the first day of surface preparation and reported prior to application of the first coat of paint. The profile error induced in the dry film thickness gauge shall be added to the minimum and maximum values provided.
3. The measurement and acceptance of surface profile induced error shall constitute a **HOLD POINT**.
4. All single point readings (as defined in SSPC-PA 2) of dry film thickness shall be within the range specified. If the thickness is not within the specified range, a **HOLD POINT** shall apply. The Contractor's disposition shall be in accordance with the manufacturer's recommendations and shall take into account any difficulties with over-coating a product with itself.
5. Prior to each application of each coat, a **HOLD POINT** shall apply.

### Test Frequency

6. The frequency of single point measurements shall be the greater of 3 readings per square metre; and
  - (a) For main bridge girders, 1 reading for each lineal metre of girder (taken on each facet of the girders).
  - (b) For cross bracing members, 1 set of readings for each 500 millimetres of girder length Single point measurements shall be (taken on each facet).
  - (c) For plates as specified in SSPC-PA 2.

## 12. CONTINUITY TESTING

1. If specified by the Principal, the Contractor shall undertake Continuity Testing.
2. Continuity Testing shall be performed in accordance with AS 3894.1.
3. At the completion of Continuity Testing and when full cure is complete (as determined by AS 3894.4), a **HOLD POINT** shall apply.

## 13. REPAIR OF PROTECTIVE TREATMENT

1. The Contractor shall repair any defective or damaged areas, which includes any acts of vandalism and any scaffold shadow areas.
2. The Quality Plan shall include a proposal for the repair of damaged areas. This proposal shall include repair methods for minor damage (i.e. where the substrate is not visible) and for major damage (i.e. the damage penetrates the substrate).
3. Provision of the proposal for the repair of damaged areas shall constitute a **HOLD POINT**.

## 14. REPORTING

1. The Contractor shall record all relevant details of the painting process each day, including the information specified in:

AS 3894.10	"Site Testing of Protective Coatings. - Inspection Report – Daily Surface and Ambient Conditions"
AS 3894.11	"Site Testing of Protective Coatings. - Equipment Report"
AS 3894.12	"Site Testing of Protective Coatings. - Inspection Report – Coating"
AS 3894.13	"Site Testing of Protective Coatings. - Inspection Report – Daily"
AS 3894.14	"Site Testing of Protective Coatings. - Inspection Report – Daily Painting"



2. The Contractor may use the above forms or an approved equivalent.

**15. HOLD POINTS**

1. The following is a summary of Hold Points referenced in this Part:

CLAUSE REF.	HOLD POINT	RESPONSE TIME
2.4	Submission of Quality Plan documentation	7 days
3.5	Provision of representative sample abrasive and APAS paint records	24 hours
5.4	Provision of program of work	48 hours
5.6	Prior to commencement of any cleaning process	48 hours
5.8	Provision of the minimum average illuminance	2 hours
9.2	Following the completion of cleaning treatment and prior to the application of primer.	2 hours
9.7	Prior to the application of any protective treatment	Refer to the Principal
9.9	Results demonstrating specified profile height can be achieved.	2 hours
10.2	Deviations from Manufacturers instructions	48 hours
11.3	Measurement and acceptance of surface profile induced error	2 hours
11.4	Disposition regarding the under- or over-application of paint	24 hours
11.5	Prior to application of each coat of paint.	24 hours
12.3	Continuity Testing (if specified) once coating is fully cured	24 hours
13.3	Provision of the proposal for the repair of damaged areas	24 hours

**16. VERIFICATION REQUIREMENTS AND RECORDS**

**Test Records**

1. The Contractor shall undertake the testing specified in this Clause and shall supply written evidence of compliance with the lot package.
2. All records shall then be certified correct by the Contractor and provided within 18 hours of the completion of a day's work.

**Table 16.5 Testing Details**

CLAUSE REF.	SUBJECT	PROPERTY	TEST PROCEDURE	TEST FREQUENCY	ACCEPTANCE LIMITS
3.2	Abrasive	Level of dissolved salt content	TP 765	One test for each source of supply	< 0.01%
5.7	Lighting	Illuminance	AS 1680.2.0 Table 2	Once for each work area prior to commencement of work	> 300 lux
9.7	Surface Profile	Surface Profile Height	TP800 Method 2.	5 tests for each blast cleaning operator	45 to 80 µm
11.1	Paint Application	Dry film thickness	TP 913	Refer Clauses 11.1-11.4 "Measurement of Dry Film Thickness"	As specified by the Principal
11.1	Paint Application	Dry film thickness range	TP 801	Refer Clauses 11.1 - 11.4 "Measurement of Dry Film Thickness"	As specified by the Principal
12	Continuity Test (If specified by the Principal)	Defects per unit area tested	AS 3894.1	After final coat unless specified by the Principal	Nil

**Other Records**

3. The Contractor shall supply the following records:

<b>CLAUSE REF.</b>	<b>SUBJECT</b>	<b>RECORD TO BE PROVIDED</b>
2	Calibration of Equipment	AS 3894.11: Equipment report
3.1 (a)	APAS approved material	APAS record of supply
3.1 (b)	Non- APAS approved material	Evidence of conformance
10.10, 11,& 12	Climatic conditions, ambient / surface conditions, surface preparation details, painting details, dry film thickness	AS 3894 Parts 10, 12, 13, 14 and / or equivalent

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