PART S36 PROTECTIVE TREATMENT OF STRUCTURAL STEELWORK (PREVIOUSLY COATED)

CONTENTS

1. GENERAL

.1 This Part specifies the requirements for the supply and application of protective treatment to steelwork which has been previously painted. Refer to the **Contract Specific Requirements** for 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

AS 1576.1	Scaffolding general requirements.
AS 1580	Paints and related materials – Methods of test
AS 1627	Metal finishing – Preparation and pre-treatment of surfaces
AS 1680.2.4	Interior lighting – industrial tasks and processes
AS 2312.1	Guide to the protection of structural steel against atmospheric corrosion by the use of protective coatings. Paint Coatings
AS 2700	Colour standards for general purposes
AS 3894.1	Site testing of protective coatings. – Non-conductive coatings-Continuity testing-High voltage (brush) method
AS 3894.4	Site testing of protective coatings. – Assessment of Degree of Cure
AS 3894.6	Site testing of protective coatings. – Determination of residual contaminants
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
AS 4361.1	Lead paint removal – Industrial applications.

DPTI

TP765	Determination of Total Dissolved Salts of Abrasive Blast Medium
TP800	The Determination of Surface Profile, Abrasive Blast Cleaned Steel Substrates
TP801	The Development of Dry Film Thickness Requirements for Coatings on Structural Steelwork (Abrasive Blast Cleaned)
TP910	Paint Sampling and Testing
TP911	Water Sediment Testing – Lead Abatement Projects
TP912	Air Monitoring – Lead Abatement Projects
TP 913	The Measurement of Dry Film Thickness of Coatings on Structural Steelwork (Abrasive Blast Cleaned).
TP 914	Soil Testing – Lead Abatement Projects

SafeWork Australia

NOHSC: 1012	National Standard for the Control of Inorganic Lead at Work
NOHSC: 2015	National Code of Practice for the Control and Safe Use of Inorganic Lead at Work
Code of Practice	Abrasive Blasting
HCIS	Hazardous Chemicals Information System **(**hcis.safeworkaustralia.gov.au**)**

The Society for Protective Coatings

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

The following abbreviations may be used in this Contract:

ACA	Australasian Corrosion Association
APAS	Australian Paint Approval Scheme (refer www.apas.gov.au)
EPA	Environmental Protection Authority
NACE	National Association of Corrosion Engineers
PCCP	Painting Contractors Certification Program (refer www.apas.gov.au/pccp)
SSPC	The Society For Protective Coatings

2. QUALITY REQUIREMENTS

.1 The Contractor must be prequalified to PCCP to the Class specified in the **Contract Specific Requirements**.

.2 At a minimum, the Contractor's Quality Plan must include the following documents, procedures and/or instructions:

(a) Inspection and Test Plan, in accordance with Part G20;

(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 must 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 must 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 must 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 must be submitted. The initial sampling rate must be the cube root of the number of bulk bags, and all samples taken must be tested.

.4 Should any batch tested fail to comply with the specified requirements, all remaining bulk bags must be tested. Any abrasive which fails to comply with specification requirements must 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 must be garnet and must not be recycled. Abrasive must be clean, dry and free from extraneous material such as dirt, gravel and organic matter and must 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) must be 0.01% when determined in accordance with TP 765.

.8 The grade of abrasive used must be such that the surface profile produced complies with the requirements of Clause 9.3 “Surface Profile Height”.

Packaging, and Transportation of Abrasive

.9 Blast media must be delivered to the applicator's premises in the manufacturer's containers, unopened and with the label intact. The following information must 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 9.12, paint products must be APAS approved.

.11 The colour of the external finish coat must be specified in accordance with AS 2700. The decorative final coat must provide complete coverage to a hiding power chart as described in AS 1580.213.1.

.12 Paints must be delivered to the applicator's premises in the manufacturer's containers, unopened and with the label intact. The following information must 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 must be studied; and

(j) The Manufacturer's Safety Data Sheets.

.13 All the above information must 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 must 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 must include:

(a) A suitably qualified and experienced Painting Quality Management Representative (PQMR) who must personally carry out all testing as described in the Contractor's approved Inspection and Test Plan and maintain associated diary records. The PQMR must be qualified to NACE CIP 1 or ACA Coating Inspector at a minimum.

(b) A supervisor with at least 3 years experience on projects of a similar size and scope to this work, who must be on site at all times whilst work is in progress. The supervisor must 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 must 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 must 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

Program

.1 At least one week prior to the commencement of any work associated with protective treatment, the Contractor must submit a complete detailed program of work showing all activities required for cleaning and application of protective treatment.

.2 The program must 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 must provide the Proncipal 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 must 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 must provide the scaffolding in accordance with AS 1576.1. Sufficient artificial lighting must be provided within the contained area, as a supplement to any natural lighting present. The minimum average illuminance over the area of inspection must be 300 lux and must 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 must implement Emission Control to the standard specified in the Contract Specific Requirements, or if nothing is specified, in accordance with AS 4361.1 Level A. The design of scaffolding and work platforms must be such that the work area is sealed to prevent uncontrolled leakage of dust, waste and debris.

Structural Integrity

.2 The containment must 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 must 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 must be effectively bunded to contain all waste.

.4 Where non-transparent containment materials are used, sufficient lighting must 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 must be used to direct water away from the work area.

Dust Collection

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

7. ENVIRONMENTAL MANAGEMENT

.1 For general environmental requirements, refer to Part G50 “Environmental Management Requirements”.

.2 Lead or other hazardous paint management must be in accordance with the requirements of AS 4361.1. All dust produced by the abrasive blast cleaning process must be effectively contained, filtered, stored and disposed of in such a way as the prevent any impact on the environment. An approved lead paint management procedure must be in place prior to commencement of contract works on site.

.3 Full time air monitoring must take place during all lead management operations, in accordance with TP912. Visual monitoring must 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 must 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 must 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 must 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 in the contract specific requirements as hazardous, all work on site must 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 must manage the removal of lead in accordance with the Safe Work Australia, Abrasive Blasting Code of Practice and AS 4361.1.

.2 Notwithstanding any provision of lead levels in existing paint in the C**ontract Specific Requirement**, 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 must be removed by the contractor. All steel used must be checked for sharp edges and where found must be reworked to a minimum 2 mm radius. Large deposits of bird droppings and other deleterious material must be removed manually for disposal as per statutory regulations. Deposits of oil and grease must be removed by solvent cleaning in accordance with AS 1627.1.

.2 Where salt contamination of surfaces is possible, testing must be carried out in accordance with the requirements of AS 3894.6 Method A. If chloride levels exceed 50mg/m^2, a **HOLD POINT** shall apply.

Final Cleaning

.3 All surfaces must 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 in the contract specific requirements 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 must be carried out in accordance with AS 1627.4 Clause 5.4.

.5 All blast cleaned surfaces must be over coated within 4 hours of completion of blast cleaning, or before discolouration occurs, whichever is the sooner.

.6 All surface profile readings must be within the range of 45 to 80µm, when measured in accordance with TP800 Method 2. A minimum of 5 tests must be carried out to establish the profile height range delivered by the abrasive blasting process. This process must be repeated for each abrasive blast cleaning operator.

.7 After completion of cleaning but prior to the application of any protective treatment a **HOLD POINT** shall apply.

Surface Profile Height

.8 All surface profile readings must be within the range of 45 to 80µm, when measured in accordance with TP800 Method 2. A minimum of 5 tests must be carried out to establish the profile height range delivered by the abrasive blasting process. This process must be repeated for each abrasive blast cleaning operator.

.9 The Contractor must prepare a test area to confirm that the abrasive blasting process and materials can produce the specified profile height.

.10 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 must be authorised in writing by the paint manufacturer. Copies of such authorisation must 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 must abide by all recommendations provided on the paint manufacturer's safety data sheets and must 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 must be stored within separate bunded areas. The capacity of each bunded area must be equal to the volume of hazardous substances stored, plus 20%. The volume of stored material must not exceed this calculated volume.

Mixing and Thinning

.6 All paints, thinners, solvents and any other liquids must be mixed within bunded areas. All paints must be thoroughly mixed before use to ensure that it is homogeneous and if required must 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 must 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 must 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 must be applied within a screened area and in accordance with the paint manufacturer's written instructions.

.12 Paint must 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 must be calculated from wet and dry bulb temperatures measured using a calibrated sling psychrometer. Any thermometer corrections required by the calibration record must be applied to all readings. The surface temperature gauge must be calibrated and any corrections required must be applied when measuring steel surface temperature. Only calibrated and corrected sling psychrometers must 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 must be used to apply stripe coats to welds, crevices, mouse holes, bolt holes and rivets.

11. FILM THICKNESS

Measurement of Dry Film Thickness

.1 The dry film thickness must be measured in accordance with TP 913 and the dry film thickness range must be determined in accordance with TP801. Minimum and maximum specified values must include the

estimated uncertainty of measurement. Results must 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 must 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 must 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 must be within the range specified. If the thickness is not within the specified range, a **HOLD POINT** must apply. The Contractor's disposition must be in accordance with the manufacturer's recommendations and must 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 must 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 must be (taken on each facet).

(c) For plates as specified in SSPC -PA 2

12. CONTINUITY TESTING

.1 If specified in the **Contract Specific Requirements**, the Contractor must undertake Continuity Testing.

.2 Continuity Testing must 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 must repair any defective or damaged areas, which includes any acts of vandalism and any scaffold shadow areas.

.2 The Quality Plan must include a proposal for the repair of damaged areas. This proposal must 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 must 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	Submission of Quality Plan documentation	7 days

CLAUSE REF.	HOLD POINT	RESPONSE TIME
3.1	Provision of representative sample abrasive and APAS paint records	24 hours
5.1	Provision of program of work	48 hours
5.2	Prior to commencement of any cleaning process	48 hours
5.3	Provision of the minimum average illuminance	2 hours
9.1	Following the completion of cleaning treatment and prior to the application of primer.	2 hours
9.3	Results demonstrating specified profile height can be achieved.	2 hours
10.1	Deviations from Manufacturers instructions	48 hours
11.1	Measurement and acceptance of surface profile induced error	2 hours
11.1	Disposition regarding the under- or over-application of paint	24 hours
11.1	Prior to application of each coat of paint.	24 hours
12	Continuity Testing (if specified) once coating is fully cured	24 hours
13.	Provision of the proposal for the repair of damaged areas	24 hours

16. VERIFICATION REQUIREMENTS AND RECORDS

Test Records

.1 The Contractor must undertake the testing specified in this Clause and must supply written evidence of compliance with the lot package.

.2 All records must then be certified correct by the Contractor and provided within 18 hours of the completion of a day's work.

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%
5.3	Lighting	Illuminance	AS 1680.2.0 Table 2	Once for each work area prior to commencement of work	> 300 lux
9.3	Surface Profile	Surface Profile Height	TP800 Method 2.	5 tests for each blast cleaning operator	50 to 100µm
11.1	Paint Application	Dry film thickness	TP 913	Refer Clause 11.1	Refer **Contract Specific Requirements**
11.1	Paint Application	Dry film thickness range	TP 801	Refer Clause 11.1	Refer **Contract Specific Requirements**
12	Continuity Test (If specified in the **Contract Specific Requirements**)	Defects per unit area tested	AS 3894.1	After final coat unless specified otherwise in **Contract Specific Requirements**	Nil

Other Records

.3 The Contractor must supply the following records:

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