Department of Transport and Main Roads

Technical Specification

Transport and Main Roads Specifications
MRTS83 Anti-Graffiti Protection

July 2025

(ATS 5820 Anti-Graffiti Coatings, Ed 1.1 August 2024)

Queensland Government

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Purpose

This ancillary document outlines the adopted national Austroads Technical Specification ATS 5820 *Anti-Graffiti Coatings* and modified Queensland-specific content with tracked changes.

The following table summarises the relationship between the Austroads Technical Specification ATS 5820 *Anti-Graffiti Coatings* and this document:

Type of Content	Display
National content adopted	National content adopted
National content not adopted	~~National content not adopted~~
Queensland-specific content	Queensland-specific content

About this document

The document adopts and modifies Austroads Technical Specification ATS 5820 *Anti-Graffiti Coatings* as part of national harmonisation. It sets out the requirements for the supply and application of anti-graffiti coating systems to roadwork and bridgework structures.

How to use this document

This document includes the national guidance and Queensland-specific advice while following the structure established in Austroads Technical Specifications.

Queensland-specific advice includes practices which vary from national practice because of local environmental conditions (such as geography, soil types, climate); different funding practices; local research; local legislation requirements; and to expand instruction on particular issues.

This document:

- sets out how the Austroads Technical Specification ATS 5820 *Anti-Graffiti Coatings* applies in Queensland
- has precedence over the Austroads Technical Specification ATS 5820 *Anti-Graffiti Coatings* when applied in Queensland
- has the same clause numbering and headings as the Austroads Technical Specification ATS 5820 *Anti-Graffiti Coatings*.

Transport and Mains Roads provides an ancillary document which outlines adopted national and modified Queensland-specific content with tracked changes. To access a copy click on the below link: Ancillary documents for harmonised Technical Specifications.

Terminology

The following general amended definitions apply when reading this document.

Reference to…	Means
Shall	Denotes mandatory requirements.
Must	Denotes mandatory requirements.
Principal	The State of Queensland acting through the Department of Transport and Main Roads.
Administrator	The Administrator will be responsible for the overall administration of this Contract.

Contents

1 Scope

1.1 This ~~Austroads~~ Technical Specification ~~ATS 5820~~ specifies the requirements for the supply and application of anti-graffiti coating systems to structures, roadside furniture and traffic controller boxes. It excludes the application of coating systems to the face of traffic signs.

1.2 This Technical Specification shall be read in conjunction with MRTS01 *Introduction to Technical Specifications*, MRTS50 *Specific Quality System Requirements* and other Technical Specifications as appropriate.

1.3 This Technical Specification forms part of the Transport and Main Roads Specifications Manual.

2 Definitions

2.1 The definitions in AS/NZS 2310 apply to this Technical Specification.

3 Referenced documents

3.1 ~~The following documents are referenced in this Specification.~~The requirements of the referenced documents listed in Table 3.1 below apply to this Technical Specification. Where there are inconsistencies between this Technical Specification and the referenced documents, the requirements in this Technical Specification shall take precedence.

Table 3.1 – Referenced documents

Reference	Title
~~Austroads~~	
~~ATS 5343~~	~~*Coating of Concrete*~~
~~AGBT/T750-20~~	~~*Anti-graffiti Coatings – Test Method*~~
Australian / New Zealand Standards	
AS/NZS 1580~~.108.2~~	*Paints and related materials - Methods of test ~~Dry film thickness - Paint inspection gauge~~*
~~AS 1580.408.5~~	~~*Paints and related materials - Methods of test Adhesion - Pull Off Test*~~
~~AS 1580.403.1~~	~~*Paints and related materials - Methods of test - Scratch resistance*~~
~~AS 1580.481.1.2~~	~~*Paints and related materials - Methods of test Coatings - Exposed to weathering - Discolouration (including bronzing)*~~
~~AS/NZS 1580.481.1.11~~	~~*Paints and related materials - Methods of test Coatings - Exposed to weathering - Degree of chalking*~~
~~AS/NZS 1580.481.1.12~~	~~*Paints and related materials - Methods of test Coatings - Exposed to weathering - Degree of colour change*~~
AS 1627.1	*Metal finishing, Preparation and pre-treatment of surfaces – Removal of oil, grease and related contamination*
AS 1627.4	*Metal finishing, Preparation and pre-treatment of surfaces – Abrasive blast cleaning of steel*
AS/NZS 2310	*Glossary of paint and painting terms*
AS/NZS 2311	*Painting of Buildings*
AS/NZS 2312.1	*Guide to the protection of structural steel against atmospheric corrosion by the use of protective coatings – Part 1: Paint Coatings*

Reference	Title
AS 2700	*Colour Standards for General Purposes*
AS/NZS 4548.5	*Guide to long-life coatings for concrete and masonry - Part 5: Guidelines to methods of test*
ASTM International	
ASTM D4263 83	*Standard Test Method for Indicating Moisture in Concrete by the Plastic Sheet Method*
ASTM D4414 95	*Standard Practice for Measurement of Wet Film Thickness by Notch Gauge*
Australian Paint Approval Scheme (APAS)	
-	~~*Specifications 1441 and 1442*~~
APAS-1441	*Permanent Graffiti Barrier*
APAS-1442	*Temporary Graffiti Barrier*
Transport and Main Roads Technical Documents	
MRTS01	*Introduction to Technical Specifications*
MRTS50	*Specific Quality System Requirements*

4 Quality system requirements

4.1 The Contractor must prepare and implement a Quality Plan that includes:

a) details of the proposed coatings, including the manufacturer's instructions, specifications, Materials Safety Data Sheets and Materials Technical Data Sheets

b) ~~Unless the coating system is included in an approved/registered products system applicable in the jurisdiction where the work is being carried out, test certificates (not more than 24 months old) and records of the past performance of the proposed coatings which demonstrate compliance with this Specification~~evidence of product registration

c) names, experience and qualifications of the coatings application supervisor and key personnel

d) a detailed work method statement (WMS)~~/~~ or procedures for substrate preparation, operation of equipment and application of the coatings, and

e) inspection and test plans (ITPs) that will verify conformance with this Technical Specification.

4.2 The WMS, ~~/~~procedures and ITPs must:

a) cross reference all applicable Technical Specification clauses, and

b) identify all performance requirements and Hold Points. **Hold Point 1 Record**

HOLD POINT 1	
Process Held	Commencement of surface preparation and application of the coating.
Submission Details	The Quality Plan must be provided at least 21 days prior to the commencement of the coating application.

5 Contractor competency

5.1 The Contractor warrants that they (or the subcontractor~~, if the repair work is being undertaken by a subcontractor~~) are suitably skilled and experienced in undertaking the application of coatings to concrete.

5.2 The coatings application supervisor must be suitably trained and qualified in all aspects of application techniques and must be present at all times during the application of the coating.

5.3 Personnel applying the coatings must be suitably trained and skilled in the application of coatings to concrete.

6 Materials

~~6.1 Unless:~~

~~a) the coating is an approved/registered product included in an approved/registered products system applicable in the jurisdiction where the work is being carried out~~

~~b) the Contract documents permit coating approved under Australian Paint Approval Scheme Specifications No 1441 (Non-Sacrificial) and 1442 (Sacrificial), or~~

~~c) it is specified in other Contract documents that product testing is not required~~

~~the coating must be tested in accordance with Test Method AGBT/T750-20 to demonstrate compliance with Table 6.1.~~

6.1 The coating must be a registered product.

6.2 Registration shall in accordance with the *Product Index for Bridge and Other Structures*, by either submittal of:

a) evidence of approval by APAS under Specification No 1441 (Non-Sacrificial) or 1442 (Sacrificial), or

b) test results in accordance with Test Method AGBT/T750-20 demonstrating compliance with Table 6.2.

Table 6.~~1~~2 – Test Method AGBT/T750 acceptance criteria

Property	Test	Acceptance criteria
Graffiti removal 24 hours after graffiti application	AGBT/T750.4.2	Min 4
Graffiti removal 72 hours after graffiti application	AGBT/T750.4.2	Min 4
Graffiti removal after artificial weathering	AGBT/T750.4.2	Min 4
Graffiti removal after artificial salt spray exposure	AGBT/T750.4.2	Min 4
Attack on the coating by alternative removal agents - mineral turpentine	AGBT/T750.4.3	Not more than 10% of the coating removed
Adhesion to selected substrates - concrete	AS 1580.408.5	> 2.0 MPa

Property	Test	Acceptance criteria
Scratch resistance of coating after 7 days, applied to compressed cement sheet	AS/NZS 1580.403.1	≤ 600 grams
Burn resistance of coating after 7 days, applied to compressed cement sheet	AGBT/T750.4.6	Equal or greater burn resistance when compared to cured exterior acrylic paint
Weathering resistance of coating (without graffiti applied)	AGBT/T750.4.7	
Discolouration	AS/NZS 1580.481.1.2	≤ 2 after exposure to 1000 hours ~~QUV~~
Degree of chalking	AS/NZS 1580.481.1.11	≤ 2 after exposure to 1000 hours ~~QUV~~
Degree of colour change	AS/NZS 1580.481.1.12	≤ 2 after exposure to 1000 hours ~~QUV~~
Liquid permeability of the coating (sacrificial coatings only)	AGBT/T750.4.8	Coating fully penetrated into substrate

~~6.2~~6.3 Unless noted otherwise in this Technical Specification~~specified otherwise on the drawings or other Contract documents,~~ the anti-graffiti coating system must be non-sacrificial, ~~which complies with the following in that it~~and:

a) be~~is~~ an acrylic copolymer, acrylic epoxy, polyurethane or polyurea type

~~b) is clear or pigmented to a specified colour~~

~~c) is non-yellowing and UV resistant for its guaranteed exposure life~~

~~d) exhibits low dirt retention capability~~

~~e) is impermeable to chlorides, water, carbon dioxide and acid rain but allows the transmission of water vapour~~

~~f)~~b) carry~~ies~~ a guaranteed outdoor exposure life of not less than 10 years and a guaranteed 'Graffiti Removal' life of at least 8 cycles of defacement and removal from the date of application.

~~6.3~~6.4 If a sacrificial anti-graffiti coating is specified, it must carry a guaranteed outdoor exposure life of not less than 5 years from the date of application.

~~6.4~~6.5 Where a primer or undercoat is required as part of the anti-graffiti coating system, it must be a different colour to the final nominated colour and in accordance with AS 2700.

~~6.5~~6.6 All coats in the system must be of the same brand and compatible with each other. The coating pigments must be colourfast, and not subject to fading or discolouration.

7 Protection of works, people and property

7.1 The Contractor must:

a) protect the surfaces listed in Clause 12.2 and any other surfaces which are to remain uncoated (such as previously painted surfaces, services, bearings, joints, and nameplates) during the surface preparation process and during coating application processes

b) remove all coating drips and droppings, smudges and over spray from all surfaces, including surfaces not being treated

c) except to the extent permitted under the Contract, not disrupt the passage of people and vehicles, and

d) ensure that the coated works are protected from adverse conditions, dust and debris during the curing period of the coating system in accordance with the requirements of Clause 8.1.

7.2 Spray painting must not be carried out within ~~ten~~ 10 metres of buildings, footpaths, roadways, pedestrians or vehicles unless less protective measures or methods are used.

7.3 At all times while work is under way on site, the Contractor must regularly remove all waste (including spent abrasive, liquids, packaging and general rubbish) from the site. Waste must be handled, transported and disposed of in accordance with any environmental requirements / regulations applicable to the works.

8 Surface preparation

8.1 This Technical Specification applies to bricks, sandstone, limestone, timber, acrylic plastic, painted steel, previously painted surfaces and cementitious substrates (such as normal concrete, lightweight concrete, glass fibre reinforced concrete, concrete blocks and cement render). However, to achieve the required level of performance, substrates other than sound concrete may require additional preparation treatment which is not described in this Specification.

8.2 The surface preparation must be in accordance with this Technical Specification, the manufacturer's instructions / recommendations and AS/NZS 2311 or AS 1627.1 as appropriate.

8.3 All dust, dirt and other surface contaminants must be removed. The surface must then be washed with water so grease and oil contaminants, including remnants of curing membranes, are removed from the surface by the use of appropriate solvents or detergents followed by the water washing in accordance with AS 1627.1.

8.4 The substrate must be free of all graffiti, graffiti shadows, paints, or any other surface contaminants that would be visible through the coating.

8.5 Where shadows of previously removed graffiti are likely to be clearly visible through a coating, a suitable anti bleed stain sealer must be applied prior to the application of any subsequent coatings.

8.6 Where required to promote adhesion of the coating system, some concrete and other substrate surfaces may be cleaned by whip blasting with a fine grade garnet or surface etched with an approved acid wash followed by a water wash in accordance with AS 1627.1. Any abrasive blast cleaning must be carried out in accordance with AS 1627.4 and applicable regulations.

8.7 Where a non-sacrificial anti-graffiti coating is used, any highly porous substrates must be pre-treated (such as a pore filling primer coat) to ensure that the surface is suitable for the application of a final anti-graffiti finish. For relatively soft surfaces, the primer and/or finish coat must also offer surface binding and toughening effect.

8.8 The Contractor's Inspection and Test Plan must include requirements for the inspection and recording of the following attributes:

a) surface moisture conditions of concrete and other substrates must satisfy the manufacturer's recommendations

b) moisture content of concrete and other substrates must be free of water back pressure to satisfy the manufacturer's recommendations in accordance with ASTM D4263 83

c) the degree of surface cleanliness is as specified

d) immediately before painting, the prepared surface has had all loose dust and other foreign material removed, and

e) the surface is not contaminated after preparation and before painting.

8.9 The areas to be treated with anti-graffiti protection coating under the Contract are stated in Clause 3 of Annexure MRTS83.1.

9 Handling and storage of coated material

9.1 Materials must remain in their original, sealed containers until time of use and must be stored in strict accordance with the manufacturer's instructions / recommendations.

9.2 All material must be brought to site in the original unopened cans clearly labelled with the appropriate manufacturer's name, product type, reference number and batch number.

9.3 The Contractor must provide, for each batch of coating material, a copy of the manufacturer's information as specified below:

a) manufacturer's name and address

b) product reference

c) batch number / identification

d) certificate of date of manufacture.

9.4 The Contractor must maintain records showing which elements were treated with each coating batch.

9.5 Materials stored beyond the manufacturer's recommended shelf life must not be used. The material must be used in the order of manufacture.

9.6 All coating materials must be free from contamination, gelling, drying out, heavy skin formation and severe segregation of ingredients when used.

9.7 Coating materials that have exceeded the pot life recommended by the manufacturer must not be used.

9.8 The Contractor's Inspection and Test Plan must include requirements for the inspection and recording of the following:

a) materials are the correct materials for the system which is to be applied

b) material containers are sound and not damaged in any way which may have caused or will cause the contents to deteriorate

c) the material in the containers has not dried, gelled, formed a heavy skin or unduly settled

d) the material is stirred, mixed, or thinned in accordance with the manufacturer's recommendations, multi part materials are mixed in the correct proportion, a reaction time for multi part materials if specified by the material manufacturer must be allowed and materials must not be used once their pot life has expired, and

e) the application method is appropriate for the material.

10 Environmental conditions

10.1 Coating systems must not be applied under any of the following conditions:

a) windy conditions where over spray and/or spatter may be generated

b) wind borne debris is likely to contaminate the uncured surface of the freshly applied coating

c) the ambient temperature exceeds 35°C or is below 10°C

d) the relative humidity exceeds 85%

e) where rain spatter, or run off, including leakage through deck joints, may contaminate the surface and adversely affect the adhesion to the substrate

f) the substrate surface is wet or damp

g) the surface temperature of the substrate is less than 3°C above the dew point calculated in accordance with AS/NZS 2312.1 or exceeds 40°C.

10.2 If the environmental conditions deteriorate during the application process and no longer comply with Clause 10.1, the work must be discontinued and if necessary, newly coated surfaces must be protected from damage.

10.3 The environmental conditions must be measured, recorded and assessed against the above requirements once every four hours of each shift or more frequently during periods when the weather is rapidly changing. A calibrated commercially available hygrometer (psychrometer) or electronic climatic measuring gauge must be used to determine the parameters which require readings.

10.4 The Contractor’s procedures must include provisions for the management of adverse environmental conditions, including the suspension of work where appropriate.

11 Trial application

11.1 A trial application of the coating system (including surface preparation) must be conducted on a test area of the actual substrate of not less than 10 m² or a test panel made from identical substrate. The test area or test panel must be prepared, coated and tested in an identical manner to the full scale coating system and demonstrate that the coating system will comply with this Technical Specification. **Hold Point 2 Record**

HOLD POINT 2	
Process Held	Commencement of the full scale coating works.
Submission Details	Submission of the test panel and/or notification of the trial application must be provided at least 14 days prior to the commencement of coating work.

11.2 Actual coverage rates of the coating system must be recorded in order that due allowance may be made in the full scale application for rough, irregular or highly absorbent concrete substrate. Any additional requirements or observations must be recorded and considered for the full scale application.

11.3 If the trial application does not comply with the requirements of this Technical Specification, the deficiencies must be rectified (which may include testing of any new materials / methods) and a further trial coating must be prepared until the performance criteria of this Technical Specification are met.

12 Application of the anti-graffiti coating systems

12.1 The application of coating systems must be carried out in accordance with:

a) the manufacturer's instructions/recommendations (including drying and curing requirements and overcoating time intervals for the prevailing environmental conditions)

b) this Technical Specification, and

c) AS/NZS 2311 or AS/NZS 2312 (as appropriate). **Witness Point 1**

WITNESS POINT 1	
Process Held	Commencement of the full scale coating works.
Submission Details	Notification of the proposed date for commencement of the surface preparation and coating works.

12.2 Anti-graffiti coating must not be applied to the following surfaces or materials:

a) steel coated with thermoset coatings (for example, Colorbond steel)

b) stainless steel

c) hot dipped galvanized steel

d) hot-dipped zinc / aluminium alloy coated steel (for example, Zincalume steel)

e) weather resistant steel complying with AS/NZS 3678 Grade WR350 or AS/NZS 1594 Grade HW350, or similar.

12.3 Anti-graffiti coating systems must not be applied earlier than specified in Table 12.3.

Table 12.3 – Minimum time required between substrate placement and application of anti-graffiti coating systems

Substrate	Minimum elapsed time after placement of substrate (days)
Cast In-Situ Concrete or Non-Accelerated Cured Precast Concrete	28 (1)
Steam or Radiant Heat Cured Concrete	14
Repair of concrete using proprietary cementitious materials	14
Repair of concrete using normal concrete	28

(1) However, an anti-graffiti coating may be applied between 14 and 28 days after concrete placement if it can be established, using a commercially available calibrated moisture meter, that the concrete moisture content is less than 10% and the concrete surface is dry at the time of application.

12.4 The substrate must not be coated until it is surface dry. Sufficient time must elapse between coatings to allow the initial coat to dry and cure.

12.5 The finished coating must be smooth, of uniform thickness, colour and appearance and without runs, beads or surface crazing. It must be free of any defects that may impair the performance or appearance of the coating for the life of the coating.

12.6 For penetrating anti-graffiti coating systems applied to full saturation, the minimum amount of penetration into the substrate and minimum application rate must be in accordance with the manufacturer's recommendations.

12.7 If the coating is to be applied to an equipment housing (for example, a traffic controller housing), the following applies:

a) any decals must be removed prior to the application of the coating and replaced afterwards

b) the applied coating must not impede the function or operation of key locks, latches, doors or photocells, and

c) any air vents must be sealed during spraying to prevent the ingress of moisture and/or paint into the interior.

12.8 The Contractor’s Inspection and Test Plan must include requirements for the inspection and recording of the following attributes:

a) surface moisture conditions of the substrate must satisfy the manufacturer’s recommendations

b) the moisture content of concrete and other substrates must be free of water back pressure to satisfy the manufacturer’s recommendations, in accordance with ASTM D4263 83:2012

c) the environmental conditions, as specified in Clause 10, must be satisfied

d) uniformity, colour, gloss, opacity and appearance of the top coat must be in accordance with the requirements of the Technical Specification, and

e) the top coat must be free of any defects that may impair the performance or appearance of the coating for the life of the coating.

13 Testing

13.1 All test certificates must be issued by a laboratory that is accredited by NATA or a member of the International Laboratory Accreditation Cooperation.

13.2 Following application of the final coat, the coating must be tested for compliance with Table 13.2 and the following:

a) 85% of DFT measurements must be more than 90% of the specified thickness, and

b) 85% of DFT measurements taken in the 1 m² test area must be more than the specified thickness. **Record**

Table 13.2 – Final coat testing requirements

Property	Minimum frequency	Test method	Acceptance criteria
Bond strength	1 test per 50 m²	Aluminium dollies with a minimum diameter of 50 mm in accordance with AS 1580.408.5.	2.0 MPa
WFT	1 test per 50 m²	ASTM D4414	≥ 175 µm
DFT	1 test per 50 m²	AS 1580.108.2 using a paint inspection gauge	≥ 100 µm

1. Bond Strength is tested 14 days after application.
2. The DFT of a coating may be measured using the coating remnants attached to the aluminium dollies from the adhesion testing provided the coating remains intact.
3. The number of tests of each property must not be fewer than 3 in total.
4. Where an anti-graffiti coating is also used as an anti-carbonation coating its minimum DFT must be 150 µm ~~and must comply with the requirements of ATS 5343 for anti-carbonation coatings~~.

14 Coating repairs

14.1 Non-compliant work includes:

a) a failure to comply with any specified environmental constraint

b) a failure to comply with the manufacturer's instructions or any requirement of this Technical Specification, and

c) yellowing, loss of adhesion, or colour change of the coating at any time during the defects liability period.

14.2 Any non-compliant work must be repaired so that the work complies with this Technical Specification. This may include removal of the coating, followed by surface preparation and application of a new coating.

14.3 Prior to commencement of the repair work, the Contractor must prepare a procedure for that repair work and provide details of the scope of the repair work. **Hold Point 3 Record**

HOLD POINT 3	
Process Held	Commencement of repair work.
Submission Details	Details of the scope of the repair work and a procedure for the repair work must be provided at least 7 days prior to the commencement of the repair work.

15 Requirements for future maintenance of coatings

15.1 Prior to the completion of the works, the Contractor must provide the manufacturer's recommendations in regard to the following:

a) the methods of preparation to be used in the event that re-coating of the coated surface is required

b) which types of coating, other than the original product, are compatible with the finish coat for re-coating purposes, and

c) the technique which can be used to repair local damage to the coating, with particular reference to colour and gloss matching of finish coats applied after a time lapse of 5 years.

15.2 The most appropriate techniques for cleaning of the finish coat to remove surface soiling must be used, with particular reference to ease of removal of graffiti or glued posters, where possible, without damage to the existing finish.

~~Annexure~~Appendix A: Summary of Hold Points, Witness Points, Milestones and Records

General requirements for Hold Points, Witness Points, Milestones and Records, are specified in Clause 5.2 of MRTS01 *Introduction to Technical Specifications*.

The Hold Points, Witness Points, Milestones and Records~~following is a summary of the Witness Points/Hold Points that apply to this Specification and the Records~~ that the Contractor must submit to the ~~Principal~~ Administrator to demonstrate compliance with this Technical Specification, are summarised in Table A. There are no Milestones defined.

Table A – Hold Points, Witness Points, Milestones and Records

Clause	Hold point	Witness point	Milestone	Record
4.2	1. Submission of Quality Plan and Acceptance of Supplier			Quality Plan, including details of approvals, certification and/or test results
11.1	2. Commencement of the full scale coating works			Submission of the test panel and/or notification of the trial application
12.1		1. Notification of the proposed date for commencement of the surface preparation and coating works		
13.2				Test Results
14.3	3. Commencement of repair work			Procedure for repair work