

PAINTING SPECIFICATIONS

1.0 General

This Specification has been prepared for the use of BPC and by their Contractors as a reference document for the re-painting of BPS 11kV substation buildings.

This Specification covers the minimum requirements of BPC as regards HSE, materials, personnel, surface preparation, coating application, testing and inspection requirements to be employed.

The Contractor shall provide all labour, materials, and equipment to perform all operations necessary to all painting works specified in the Contract.

Unless stated specifically in the Contract, the costs of all scaffolding works shall be borne by BPC.

2.0 Workmanship

All work shall be undertaken by thoroughly qualified painters in a neat and workmanlike manner. If the paint system is applied using spray system, the painters must wear suitable respiratory protective equipment such as face respirator and goggles.

All work which shows carelessness or lack of skill in execution or is defective due to any other cause will be rejected and shall be repaired to the satisfaction of the BPC Contract Owner.

3.0 Paint Brand

All paint brands listed in this specification are for illustration purposes only. The paint brands to be used for the works are specified in the Contract. Unless specifically stated in the Contract, alternative brands will not be permitted.

If the paint brand has not been specified in the Contract, or alternative brands are permitted, the Contractor must inform during the Tender which paint brand they will use for the works. In case of alternative brands, the alternative products must be at least of similar performance or quality as the specified brand and the C.O. reserves the right to reject the alternative brands.

4.0 Painting and Coating Materials

The Contractor shall submit their detailed coating system proposals to BPC for prior review and approval. The Contractor shall demonstrate to the Company both the technical soundness and life-cycle cost effectiveness of their proposed paint systems. These proposals shall include:

- the coating system detailing the type of paints to be used including the surface preparation;
- repair method(s) and up-to-date Technical and Safety Data Sheets of the paints to be used
- independent test reports on testings conducted
- Reference listing and performance records of where the proposed paint systems has been applied successfully

Unless stated otherwise, paints, varnishes and other coating materials shall be suitable for internal and external use in tropical climate. Approved brands are Jotun, Berger, TOA and Imperial Chemical Industries (ICI).

Priming and undercoats shall be from the same manufacturer as the finishing coat, and shall be of a type recommended by the manufacturer for the type of surface to which they are applied.

Black bituminous paint shall comply with B.S. 3416 Type 1 Class B for general use or Type 2 for drinking water tanks. Knotting shall comply with B.S. 1336. Varnishes shall be clear and transparent.

All materials are to be delivered to the site in the original sealed containers bearing the manufacturer's label and stored in areas protected from high temperatures. Batch deliveries of materials are to be dated for use in order of delivery.

Paints other than water based and bituminous paints are to be delivered in containers of not more than 5 litres capacity.

5.0 Colour Scheme

The final coat of a coating system shall be of a colour in accordance with the original colour scheme of the surface to be painted.

The RAL – colour system shall be used to define the required paint colour finishes.

6.0 Stopping Materials

Stopping materials for:-

- a. concrete, plastering or brickwork shall be of similar material to the background and finished with a similar texture.
- b. asbestos cement and asbestos based insulating board shall be either a plaster based filler for internal work or a cementitious based filler for external work.
- c. internal woodwork, hardboard, fibre board and plywood shall be a cellulose based filler or putty tinted to match the colour of the undercoat.
- d. external woodwork shall be white lead paste with or without the addition of red lead complying with B.S. 217 Type 2 and shall be tinted to match the colour of the undercoat.
- e. clear finished woodwork shall have its stopping tinted to match the surrounding woodwork.

7.0 Surfaces Preparation

For maximum paint performance it is essential that surfaces to be painted or coated shall be adequately prepared. They shall be completely dry and free from burrs, rust, loose scale, dirt, dust, grease, oil and other foreign matter before any paint is applied.

Remove or mask all attached accessories such as ironmongery, hinges, sockets, windows, wall fixtures, etc from surfaces to be painted and re-fix where applicable on completion of work. All adjoining or nearby surfaces which may be affected by the works from dropping, splatter or wind-blown paint shall be sufficiently covered or protected during painting works.

Ensure that the primer of pre-primed surfaces is in good condition and firmly adhering. Touch up where necessary. Allow surfaces to dry thoroughly before painting. Brush down all surfaces immediately before painting to remove dust, dirt and loose material.

7.1 Surface Preparation by Ultra High Pressure Water Cleaning

Ultra-high pressure (UHP) water cleaning may be used for the removal of degraded paint or coating.

For UHP water cleaning, the Contractor shall submit a detailed proposal to BPC for review and approval. As a minimum, the proposal shall detail the followings:-

- The UHP water cleaning procedure including technical and HSE data of the equipment, accessories and consumables
- The type and concentration of any chemicals (e.g. inhibitor) to be used
- The proposed paint/coating system to be used including technical/HSE data sheets and compatibility with existing paint, surface preparation method and inhibitor used.
- Safe handling and disposal procedures for both chemical and debris.
- Reference listing, independent test reports and performance records where this proposed system has been applied successfully.

At the discretion of the Company, the Contractor may be required to conduct a trial or demo to demonstrate the suitability of their proposal.

7.2 Surface Preparation by Manual/Power Tool Cleaning

Manual or power-tool cleaning shall only be utilised with prior written approval of BPC using a detailed procedure indicating specific areas intended for power tool cleaning, and the method used. It shall be confined to minor areas of coating damage that are to be repaired

Where the work areas cannot accommodate a power disc, power impact tools shall be applied (vibratory and rotary hammers, needle guns, chisels) followed by brush cleaning.

When manual or power-tool cleaning is allowed, the surface produced shall be left degreased and roughly abraded. The prepared surfaces shall never be left polished or burnished.

8.0 Preparation of Plaster, Concrete and Brickwork

Remove plaster or mortar splashes by scraping and stop all holes, cracks, defects, etc. Remove all traces of mould oil by scrubbing with water and detergent and rinsing with clean water. Use a stiff brush and damp cloth to remove efflorescence and continue treatment until surface remains clean for 48 hours.

On all surfaces previously painted, where paint shows faults such as blistering, chalking, crazing, discolouration, efflorescence flaking, sagging and saponification, such areas shall be stripped, scrubbed, wiped down and cleaned thoroughly and washed with fresh water and left dry for 24 hours. These surfaces shall be treated as new surfaces and application of approved primer shall be applied.

Black stains and fungus on the concrete surfaces shall be thoroughly scraped off, washed down using pressured jet wash, stiff and brisk brush and with one part of Chlorox to four parts of water and wash off with fresh water and let it dry for at least 24 hours. Chip off organic or inorganic substances on walls and re-patch with mortar to smooth surfaces.

9.0 Preparation of Plasterboard

Fill minor imperfections with the same filler used for jointing the plasterboard. Repair any damage to the paper surface in accordance with the plasterboard manufacturer's recommendations.

10.0 Preparation of Asbestos Cement and Insulation Boards

Remove plaster or mortar splashes. Stop all holes and imperfections with approved filler after priming.

11.0 Preparation of Metalwork

Lead, aluminium and copper surfaces shall be washed with soap and water, roughened with abrasive paper, washed with white spirit and cleaned off. Zinc or galvanised surfaces shall be degreased with white spirit and washed with clean water to remove any salts. Iron and steel surfaces shall have rust, mill scale, welding slag and flux residue removed by wire brushing, scraping, hammering, flame cleaning, etc.

Pre-primed iron and steel surfaces shall have defective primer, rust and loose scale removed back to bare metal and be patched primed to match existing. Remove dirt and grease from satisfactorily prime surfaces and rub down lightly.

12.0 Preparation of Woodwork

Cut out large, loose or resinous knots and plug with sound wood. Apply two thin coats of knotting to minor knots. Punch all nail heads well below the surface. Stop nail heads and other imperfections with approved filler. Rub down timber surfaces.

Fill plywood surfaces to be painted with a plaster or cellulose based filler after priming and rub down.

13.0 Varnishing

Varnishing shall have a glossy coating free from runs and specks when dry. Varnished work which is tacky two or three days after application shall be washed off with turpentine and re-varnished at the Contractor's own cost.

14.0 Textured Paint

Textured paint shall be Aica Kogyo "Jolypate", TOA "Texture" or other approved equivalent soft texture finish and applied strictly in accordance with the manufacturer's recommendations.

15.0 Sample Areas

Execute sample areas of the various paint finishes as instructed by the C.O.

16.0 Painting Workmanship

An ample supply of clean dust sheets to protect the work shall be ready at hand during painting works. Suitable moveable receptacles shall be provided for liquid waste which shall on no account be thrown down any drain, sink, lavatory, etc.

No exterior or exposed painting work shall be carried out under adverse weather conditions such as extremes of temperature, rain and mist or when the surfaces are damp.

Paints shall be thoroughly stirred to attain an even consistency before use unless recommended otherwise by the manufacturer.

Priming coats shall be applied by brush and worked into surfaces, joints, angles and end grain. Subsequent coats may be applied by brush, roller or spray.

Backs of timber frames and linings and bottoms of doors shall be primed before fixing. Prime rebates and beads before glazing. Prime and paint or seal putty after glazing and extend coating on to glass up to sight line.

Each coat of paint shall be thoroughly dry, faced up, rubbed down with abrasive paper and cleaned off before application of subsequent coats.

17.0 Repair of Coating Defects

The Contractor shall submit repair procedures for BPC's approval prior to the works being performed. Before application of any coat of material, all damages to previous coat shall be repaired. All loose paint shall be removed to a firm and feathered edge. All surface irregularities and contaminants shall be removed. These surfaces may require abrading to obtain a suitable surface for painting.

18.0 Cleaning

Upon completion, remove paint, varnish or adhesive stains from floors, walls and glass. Touch up completed paint as necessary and leave in a clean and perfect condition.

19.0 Inspection Records and Reports

Before any painting activities commence the Contractor shall submit an inspection procedure report indicating inspections and tests to be conducted during preparation and application of the paint system for approval by the Company.

During the work, daily reports shall be prepared and retained by the Contractor, giving details on weather conditions, particulars of application, e.g. surface preparation, number of coats applied, type of materials applied, testing and inspection results required by this specification

BPC shall have the right to inspect the paint work at all stages of preparation and to reject any tools, instruments, materials, equipment or work which do not conform to the minimum requirements of this Specification.

At the discretion of the Company random paint samples may be taken for analysis and check against the paint specification.

Prior to final acceptance of the paint work an inspection shall be made. The Contractor and the Company shall both be represented and they shall sign an agreed inspection report.

These reports shall include as a minimum:

a) General

- Names of the Contractor and the responsible personnel.
- Dates when work was carried out.

b) Materials preparation

- Equipment and techniques used.
- Materials receipt condition.
- Type and calibration of instruments used.

c) Environmental conditions

- Weather and ambient conditions.
- Painting periods

d) Surface preparation

- Condition of surface before preparation.
- Tools and methods used to prepare surface.
- Condition after preparation.
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e) Paints and painting

- Information on systems being applied.
- Mixing and testing prior to application.
- Paint application techniques.

f) Testing

- Type of quality control checks carried out, and results.
- Compliance or otherwise with specification.

20.0 Health, Safety and Environment

Prior to start of painting work, the painting Contractor shall submit for BPC approval their detailed Risk Assessment and Method Statement (RAMS).

All relevant requirements of BPC shall be met. Of particular importance are the requirements for dry/wet blasting and power tool cleaning and for scaffolding access platform. Environmental pollution, e.g. lead concentration in the air and ground associated with blast cleaning of existing lead/chromate containing paints, shall be controlled.

The recommendation for personal protection and for protective equipment shall be followed.

Spray guns and accessories shall be properly maintained, operated and earthed to prevent them from building up an electrostatic charge by the movement of paint.

Storage, handling, mixing, and application of the paints and coating materials shall be done strictly in accordance with manufacturers' recommended procedures and hardware of assurance of personal safety. Safety precautions shall be clearly described on the technical data sheets of paints and coating materials supplied, as well as on the paint containers.

Lead containing paints, coal-tar containing epoxy and/or urethane paints shall not be used because of the associated health and environmental concerns.

Paints and other coatings specified in this Specification shall not contain any components which are considered to be carcinogenic or toxic (eg. isocyanates) which can be released during application, in service or during removal.

Statutory requirements for levels of VOCs (volatile organic compounds) are to be met. Current UK Regulations are covered by the Environmental Protection Acts 1990.

21.0 Painting Contractor Responsibilities

The painting Contractor shall be responsible for:

- a. Their quality of workmanship, which shall be performed in accordance with this Specification and all other relevant documents such as site regulations, safety rules, referred standards and codes, etc. Deviation shall not be allowed unless duly authorized in writing by BPC.
- b. The protection of all equipment, structures and any other areas from mechanical damage, environmental damage, paint droppings, or overspray.
- c. Earthing of all painting and electrical equipment and accessories.
- d. Taking all necessary precautions to avoid or minimise interference with the execution of other contractors' work in the affected vicinity.
- e. Maintenance of their painted works until completion of the contract. This shall include the repair of any damages.
- f. The characteristics and performance of their paints and paint materials obtained from the paint Manufacturer. The characteristics shall be obtained via the provision of separate technical, and health and safety data sheets.
- g. Provision of all painting, thinning and cleaning materials, tools, site accommodation, transport services, and competent supervision, necessary for the satisfactory completion of the works.
- h. Use of qualified surface preparation operators (eg. blast clean, power or hand tool clean and UHP water clean) and qualified painters. The Contractor shall conduct necessary trade tests to qualify their surface prep. operators and painters
- i. Use of qualified Coating Inspectors to minimum of 3 years coatings/painting work experience.
- j. Supply each coating inspector with all necessary inspection and test equipment/tools for the performance of the works
- k. The calibration of all inspection and test equipment/tools shall be in accordance with the manufacturers' recommendations.
- l. Control and safe disposal of waste resulting from the Contractor's painting and coating activities, in accordance with site regulations and specific contract requirements.
- m. Maintaining all facilities, tools and equipment in a good, clean and operable condition. Spray guns, brushes, mini blast pots, paint pots and the like shall be regularly cleaned and shall be suitable for their purpose.
- n. The supply of all necessary equipment and weather protection for the painting works.
- o. The storage and preparation of paints and other coating materials shall be in accordance with the manufacturer's instructions.

ATTACHMENT 1

PAINTING PROCEDURE QUALIFICATION

Before commencing a painting project, the Contractor shall submit his painting procedure to BPC for approval and qualification testing. Only Contractor's qualified painting procedures shall be applied.

The qualification of a painting procedure shall involve:

- Submission by the Contractor of a written painting procedure for BPC's approval. The procedure shall state the coating system, the paint manufacturer, the paint technical and HSE data sheets, the standard of surface preparation, the application techniques, the equipment involved, and the methods of inspection.
- The Contractor shall also submit independent test reports, reference listings and performance reports to demonstrate where this proposed paint system has been used successfully within other similar industrial companies.
- Upon approval of the written painting procedure and at the discretion of the Company, a procedural qualification test shall be conducted by the Contractor (at their own cost), following the written procedure and using the specified contractors equipment, and simulating as close as practical the anticipated prevailing conditions during actual painting job.