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MODEL CLAUSES FOR CIVIL ENGINEERING WORKS

SECTION 172 PROTECTIVE COATING OF NEW STRUCTURAL STEELWORK

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SECTION 172

PROTECTIVE COATING OF NEW STRUCTURAL STEELWORK

Coating works **172.001** The protective coating system(s), coatings, sealants etc., shall be in accordance with Appendix 172/1.

Areas to receive partial protective coating systems shall be as specified on the Contract Drawings.

Blast cleaning of surfaces **172.002** Prior to the application of the protective coating system, all permanent structural steelwork (excepting that to be hot dipped galvanized - unless a particularly heavy coating weight of zinc is required) shall be dry abrasive blast-cleaned to provide a minimum surface standard of either;

- i) Sa2½ to BS EN ISO 8501-1, or
- ii) where a thermally sprayed metal coating is to be applied, Sa3 to BS EN ISO 8501-1.

For a hot dipped galvanized coating (unless a particularly heavy coating weight is required) the preferred method of surface preparation is light abrasion by flash blast cleaning.

Temporary steelwork shall be blast-cleaned and primed where rust staining on or from it could affect the permanent works.

Preparation prior to blast cleaning **172.003** Prior to blast cleaning;

- i) sharp edges shall be provided with a 1 mm chamfer in accordance with BS EN ISO 12944-3 Figure D5,
- ii) corners shall be rounded, and welds smoothed with all weld spatter removed,
- iii) oil, grease and other contaminants shall be removed using an emulsifiable degreaser followed by washing with fresh water: alkaline cleaning solutions shall not be used.

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Blast cleaning: abrasives **172.004** Except where flash blasting cleaning is used and unless otherwise agreed with the Employer's Representative, only grit abrasives complying with the requirements of BS EN ISO 8504-2 shall be used. The abrasive shall be capable of providing a sharp, angular blast profile of 70 to 100 microns amplitude (that is, a mean peak to valley height (R_{tm}) of 70 to 100 microns). The amplitude of the blast profile shall be at least as coarse as Segment 2 but no coarser than Segment 3 when assessed in accordance with BS EN ISO 8503-2 (this is at least 'MEDIUM G' profile grade). The direct measurement of amplitude can be undertaken in accordance with BS EN ISO 8503-5 or other agreed method. At no point shall the measured amplitude be less than 60 microns.

Flash blast cleaning shall be undertaken using a fine expendable abrasive, such as furnace slag or mineral abrasives, and a pressure no greater than 2.7 bars (40 psi) to give a surface profile of 20 to 30 microns.

Blast cleaning: recycling of grit **172.005** Only metallic grit abrasives shall be recycled and the equipment shall effectively remove debris, dust and fines. Where recycling is used, a balanced abrasive mix shall be maintained so that the amplitude of the final surface profile is consistent.

Application of blast Primer **172.006** Before applying the blast Primer, residual dust and debris shall be removed from the blast-cleaned areas using a soft dusting brush, or a vacuum cleaner, or clean dry compressed air, or a combination of these. The level of residual dust shall be assessed in accordance with BS EN ISO 8502-3, and residual dust levels shall not be worse than Class 1.

The initial coat of the blast Primer shall be applied to blast-cleaned steel before the prepared surface shows any deterioration and in all cases within 4 hours of the completion of the blast cleaning. Where flash blast cleaning is undertaken, the initial coat shall be applied within 1 hour of the completion of the blast cleaning.

The primed surface shall be applied by an airless spray process to give a complete obscuring coat at the specified dry film thickness.

The blast Primer shall be protected from moisture and atmospheric contamination until the application of the next coat of the protective coating system has been completed.

Sprayed metal coatings **172.007** The application of sprayed metal coatings shall only be carried out by a specialist Contractor who is accepted by the Employer's Representative for that work.

Aluminium and zinc metal sprayed coatings shall comply with BS EN ISO 2063.

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Unless otherwise agreed with the Employer's Representative, adhesion tests shall be done on test plates prepared and coated alongside the parts being treated. The minimum adhesion of such coatings, when tested in accordance with BS EN ISO 4624 or BS EN ISO 16276-1 shall be 70 kgf/cm² (1000 psi).

Sprayed metal shall be applied using the oxygen/fuel gas process. The sprayed metal coating shall be continuously applied to each 0.5 m² of the run or the area of the component, whichever is the lesser, until the specified thickness has been achieved.

The sprayed metal coating shall be applied to blast-cleaned steel before the prepared surface shows any deterioration and in all cases within 4 hours of the completion of the blast cleaning. Throughout this period, the surfaces of the steelwork to be coated shall be protected against the weather and contamination.

Immediately following the application of a sprayed metal coating, all sprayed metal surfaces, excepting faying surfaces and abutting surfaces, shall be sealed with Item 7.1.1 as defined in NR/L3/CIV/039. Faying surfaces and abutting surfaces shall be masked or given other equivalent protection until assembly of the piece.

Hot dip galvanizing

172.008 Galvanizing shall only be undertaken by a member of the Galvanizers' Association or other equivalent European organisation.

As a minimum, galvanizing shall meet the requirements of BS EN ISO 1461 and a certificate of product conformity should be obtained from the galvanizer.

Mordant Wash (or T-Wash) (Item 5.13.11 as specified in NR/L3/CIV/039) may be used to prepare the surface where, and only where, it has been endorsed by the coating manufacturer. Mordant Wash shall not be used on weathered galvanized surfaces. New galvanized steelwork that is to be treated with Mordant Wash shall not have any passivation treatment applied by the galvanizer. The Mordant Wash shall be applied until an even black colouration is produced over the entire galvanized surface. The Mordant Wash shall not be allowed to pool. When an even black colouration does not occur with a single application of Mordant Wash, the surface shall be further washed, degreased and abraded with a non-metallic abrasive pad followed by further applications of Mordant Wash until the required finish is achieved. All loose corrosion products and excess Mordant Wash shall be removed from the treated surfaces by washing with fresh water, and the treated surface then allowed to dry thoroughly prior to the application of the coatings.