

# 7 FABRICATION

## 7.1 General

- 7.1.1** The work should be fabricated in accordance with general arrangement, component and assembly drawings. These should have been commented upon by the design team where appropriate. The fabrication team should be involved in the Facade contractors' design development

It is recommended that the fabricator should produce a quality plan in line with the principles and guidelines of Section Six of this document to demonstrate his capabilities and commitment.

- 7.1.1.1 Material used in the fabrication should be of a type to achieve the required performance and appearance. Materials should comply with the recognised national standards and match approved samples.

Materials delivered should have supporting documentation verifying compliance with the project's requirements.

- 7.1.1.2 Methods used in the fabrication should be selected to achieve the specified appearance and performance. Methods used should be based upon the use of suitable equipment and experienced operatives.

Method statements should contain control procedures to ensure compliance with the project requirements.

- 7.1.1.3 Control samples should be produced to adequately demonstrate the standard of workmanship and finish required. Where appropriate range samples should be established to assist in quality control procedures.

## 7.2 Tolerances

- 7.2.1** The work should be fabricated to the figured dimensions indicated within agreed permissible deviations.

Permissible deviations should be established at the design stage and be appropriate for the materials and method employed such as to achieve the project requirements for appearance and fit. These requirements are outlined in the relevant CWCT Standard.

## 7.3 Components

- 7.3.1** Metals should comply with Clauses 4.2, 4.3 and 4.4 of the document and be of the appropriate grade and thickness to achieve the appearance and performance required, taking into account the methods to be employed.

Metals should be used in a manner to produce the greatest degree of uniformity in appearance; for example the grain direction of rolled material can affect its appearance.

- 7.3.1.1 Metals should be formed to the required shapes without flaws and defects. Profiles produced should be consistent throughout their length and within agreed tolerances.

Bent shapes should have straight arrises and be free from grain separation, stretch marks, oil canning and other forms of distortion.

Extrusions should be within the tolerance limits of BS 1474.

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Milled shapes visible in the finished work should have true surfaces and be free from tool marks, steps, indentations and unevenness.

- 7.3.1.2 Metals should be machine cut and drilled wherever possible. Cut surfaces should be true to line and level and free of burrs. Cut section which forms the contact surfaces of joints should be free of irregularities and unevenness and dressed for welding as necessary.

Grinding of non-ferrous metals should be carried out using iron-free materials to avoid contamination by corrosion.

- 7.3.1.3 Metals should be welded in accordance with the relevant standards using methods to avoid distortion and discolouration of visible surfaces. Welds should be fully bonded throughout their length without holes, inclusions, cracks or porosity such that the long term performance is not compromised and the welds are strong enough for the design requirements. Welds should be ground smooth and flush with adjoining surfaces where visible or impinging on other work. Site welding should not be carried out without prior agreement.

Welding procedures should comply with BS 4870.

Welding competence of operatives should comply with either BS 4871 or BS 4872.

Welding of steel using arc method should comply with BS 5135.

Welding of stainless steel using TIG method should comply with BS 7475

Welding of aluminium using TIG method should comply with BS 3019 or using MIG method should comply with BS 3571.

- 7.3.2** Glass should comply with Clause 4.6 of this document and be of the appropriate type and thickness to achieve the appearance and performance required.

Glass should be within the established range samples and used in a manner to produce the greatest degree of uniformity in appearance.

- 7.3.2.1 Glass should be cut in accordance with the Glass and Glazing Federation and manufacturer's recommendations to produce 'clean-cut' edges with the required tolerances. Cutting, drilling, edge and surface treatments should be carried out before any heat treatment.

- 7.3.2.2 Sealed double glazing units should have the required glass configuration and spacer size, with all seals continuous.

Units which contain different glass types or surface finish should be adequately identified to ensure correct orientation. When required glass should be permanently marked to identify its type.

## **7.4 Assembly**

- 7.4.1** Components should be checked for compliance with approved drawings prior to assembly in accordance with the agreed quality procedures.

Final assembly should be carried out in the shop as far as possible.

Certain components should be assembled prior to the application of coatings or finishes, eg welded or curved components visible in the final works.

- 7.4.2** Metal to metal joints should be accurately formed without lipping and offsets in visible surfaces unless designed otherwise. Joints should be rigidly secured to prevent all but designed movement, unless shown otherwise. Where required joints should prevent leakage of air and water.
- 7.4.2.1 Welded joints should be welded continuously along the line of contact where shown or required for proper assembly. Welds on visible surfaces should match or blend with adjoining surfaces as necessary. It should be noted that on some finishes it is not possible to avoid weld staining on visible surfaces, and where not acceptable other jointing techniques should be employed.
- 7.4.2.2 Mechanically fastened joints should be fixed with concealed fasteners in a manner to prevent rotation and produce 'hairline' contact lines, except as required by movement. Where necessary joints should be reinforced with cleats and sleeves for strength, alignment and sealing.

Cleats and sleeves should accurately interlock with the profile of components to be jointed and provide a surface suitable for the proper bedding of sealants.

- 7.4.2.3 Movement joints should be capable of accommodating all anticipated movement and operate smoothly without binding or causing noise or vibration. Movement joints should comply with the requirements of the relevant CWCT Standard.
- 7.4.3** Laminating should be performed with non-water degradable adhesives in a manner to provide full contact between contact surfaces. Adhesives must be used in accordance with the manufacturer's recommendations. Visible surfaces should be free from undulations, irregularities, warping and other defects. Control samples should be agreed prior to fabrication.

#### **7.4.4 Gaskets**

Gaskets should comply with clause 4.8 of this document and be installed in accordance with the manufacturer's recommendations and utilising the correct tools.

#### **7.4.5 Sealants**

Sealants should comply with clause 4.9 of this document and be of the appropriate type to achieve the appearance and performance required. Sealants should be applied to clean surfaces, primed as necessary, in accordance with the manufacturers' recommendations and procedures agreed following adhesion and application tests. Conditions of application should be conducive to producing satisfactory results and avoid inducing undue stress in uncured material.

It is recommended that the sealant manufacturer reviews the application of his materials. Quality control adhesion tests should be carried out throughout the period of manufacture to monitor the effectiveness of the material and application techniques.

##### **7.4.5.1 Bedding Sealants**

Bedding sealants should be continuous and without voids.

##### **7.4.5.2 Joint Sealants**

Joint sealants should be continuous and without voids with the required depth-to-width ratio to accommodate expected movements. Sealants should be applied against a backing material as necessary to control the depth and provide isolation as required. Exposed faces should be tooled to remove voids and match approved samples.

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### 7.4.6 Thermal Insulation

Insulation should comply with clause 4.10 of this document and be of the appropriate type and thickness to achieve the performance requirements, taking account of any need for inherent rigidity in the material. Insulation should be extended full thickness over the entire area to be insulated and tightly fitted at terminations and penetrations to eliminate voids and cold bridges.

### 7.4.7 Vapour Control Layers

Vapour control layers should comply with clause 4.11 of this document.

Vapour control layers should be continuous and sealed at all joints, penetrations and terminations to achieve the performance required. Vapour control layers should be securely attached to components and accommodate all expected movement of assemblies.

### 7.4.8 Finishes

7.4.8.1 All finishes should be in accordance with the respective clause in Section Five of this document.

They should be applied to an agreed procedure and in accordance with any relevant standards and reviewed by the manufacturer.

All components and assemblies should be cleaned and finished in the factory prior to delivery to site. Finishes should be applied to all visible surfaces of non-ferrous metals and to all surfaces of ferrous metals, in accordance with an agreed schedule.

7.4.8.2 Coating and finishes should match agreed control samples as defined in clause 7.1.1.3.

### 7.5 Material Protection

7.5.1 Materials, assembled units, elements of framing and all components should be protected in such a manner that will prevent damage, distortion, uneven weathering or degradation under normal conditions of handling and storage. Particular attention should be given to the protection of edges, projecting flanges, corners and other vulnerable areas.

7.5.2 Where possible suitable temporary coating and coverings should be provided to protect the work until completion of the installation. Protection should avoid development of non-uniformity of appearance in finishes, and should not impart a residue which would adversely affect the adhesion of sealants, or cause other deleterious effects in the work. Protection should be capable of being temporarily removed when requested to allow inspection of finishes, and completely removed when no longer required.