

**Project No.** 150457

**Client:** Council of the Isles of Scilly

**Tender Issue** 10/11/2017

**STRIDE TREGLOWN**  
ARCHITECTURE

## **Carn Gwavel School**

**10 November 2017**

**This document includes:**

Code	Section	Revision	Dated
Z11	Purpose made metalwork		

## **Z11 Purpose made metalwork**

To be read with Preliminaries/ General conditions.

### **310 MATERIALS GENERALLY**

- Grades of metals, section dimensions and properties: To appropriate British Standards. When not specified, select grades and sections appropriate for the purpose.
- Prefinished metal: May be used if methods of fabrication do not damage or alter appearance of finish, and finish is adequately protected.
- Fasteners: To appropriate British Standards and, unless specified otherwise, of same metal as component being fastened, with matching coating or finish.

### **320 STEEL LONG AND FLAT PRODUCTS**

- Hot rolled structural steels (excluding structural hollow sections and tubes): To BS EN 10025-1.
- Fine grain steels, including special steels: To BS EN 10025-3 and -4.
- Steels with improved atmospheric corrosion resistance: To BS EN 10025-5.

### **330 STEEL PLATE, SHEET AND STRIP**

- Plates and wide flats, high yield strength steel: To BS EN 10025-6.

### **340 HOT ROLLED STEEL PLATE, SHEET AND STRIP**

- Flat products, high yield strength for cold forming: To BS EN 10149-1, -2 and -3.
- Carbon steel sheet and strip for cold forming: To BS EN 10111.
- Narrow strip, formable steel and steel for general engineering purposes: To BS 1449-1.8 and BS 1449-1.14.

### **350 COLD ROLLED STEEL PLATE, SHEET AND STRIP**

- Steel sections: To BS EN 10162.
- Flat products, high yield strength micro-alloyed steels for cold forming: To BS EN 10268.
- Carbon steel flat products for cold forming: To BS EN 10130 and BS EN 10131.
- Uncoated carbon steel narrow strip for cold forming: To BS EN 10139 and BS EN 10140.
- Narrow strip steel for general engineering purposes: To BS EN 10132-1, -2, and -3.
- Carbon steel flat products for vitreous enamelling: To BS EN 10209.

### **360 COATED STEEL FLAT PRODUCTS**

- Hot dip zinc coated carbon steel sheet and strip for cold forming: To BS EN 10346 and BS EN 10143.
- Hot dip zinc coated structural steel sheet and strip: To BS EN 10143 and BS EN 10346.
- Hot dip zinc-aluminium (za) coated sheet and strip: To BS EN 10346.
- Hot dip aluminium-zinc (az) coated sheet and strip: To BS EN 10346.
- Organic coated flat products: To BS EN 10169.

### **370 STEEL STRUCTURAL HOLLOW SECTIONS (SHS)**

- Non alloy and fine grain steels, hot finished: To BS EN 10210-1 and -2.
- Non-alloy and fine grain steels, cold formed welded: To BS EN 10219-2.
- Weather resistant steels, hot finished: To BS 7668.

**380 OTHER STEEL SECTIONS**

- Equal flange tees: To BS EN 10055.
- Equal and unequal angles: To BS EN 10056-1 and -2.
- Wire, carbon steel for general engineering purposes: To BS 1052.
- Wire and wire products, general: To BS EN 10218-2.
- Tubes:
  - Seamless circular: To BS EN 10297-1.
  - Seamless cold drawn: To BS EN 10305-1.
  - Welded and cold sized square and rectangular: To BS EN 10305-5.
  - Welded circular: To BS EN 10296-1.
  - Welded cold drawn: To BS EN 10305-2.
  - Welded cold sized: To BS EN 10305-3.

**400 STAINLESS STEEL PRODUCTS**

- Chemical composition and physical properties: To BS EN 10088-1.
- Sheet, strip and plate: To BS EN 10088-2.
- Semi-finished products bars, rods and sections: To BS EN 10088-3.
- Wire: To BS EN 1088-3.
- Tubes:
  - Welded circular: To BS EN 10296-2.
  - Seamless circular: To BS EN 10297-2.

**410 ALUMINIUM ALLOY PRODUCTS**

- Designations:
  - Designation system, chemical composition and forms: To BS EN 573-1, -2, -3 and -5.
  - Temper designations: To BS EN 515.
- Sheet, strip and plate: To BS EN 485-1 to -4.
- Cold drawn rods, bars and tubes: To BS EN 754-1 and -2.
- Extruded rods, bars, tubes and profiles: To BS EN 755-1 and -2.
- Drawn wire: To BS EN 1301-1, -2 and -3.
- Rivet, bolt and screw stock: To BS 1473.
- Structural sections: To BS 1161.

**420 COPPER ALLOY PRODUCTS**

- Sheet, strip, plate and circles for general purposes: To BS EN 1652.
- Sheet and strip for building purposes: To BS EN 1172.
- Rods: To BS EN 12163.
- Profiles and rectangular bars: To BS EN 12167.
- Wire: To BS EN 12166.
- Tubes: To BS EN 12449.

**FABRICATION**

**515 FABRICATION GENERALLY**

- Contact between dissimilar metals in components: Avoid.
- Finished components: Rigid and free from distortion, cracks, burrs and sharp arrises.
  - Moving parts: Free moving without binding.
- Corner junctions of identical sections: Mitre.

**520 COLD FORMED WORK**

- Profiles: Accurate, with straight arrises.

**525 ADHESIVE BONDING**

- Preparation of surfaces of metals to receive adhesives:
  - Degrease.
  - Abrade mechanically or chemically etch.
  - Prime: To suit adhesive.
- Adhesive bond: Form under pressure.

**527 WELDING Metals .**

- Welding procedures:
  - Method and standard: Metal arc welding to BS EN 1011-1 and -2..
  - Welding Procedure Specification (WPS): Submit 2 copies before commencement of welding.
- Preparation:
  - Joint preparation: Clean thoroughly.
  - Surfaces of materials that will be self-finished and visible in the completed work: protect from weld splatter.
- Jointing:
  - Joints: Fully bond parent and filler metal throughout with no inclusions, holes, porosity or cracks.
  - Dissimilar metals: Filler metal grade to be approved by a qualified metallurgist.
  - Strength requirements: Welds to achieve design loads.
  - Heat straightening: Submit proposals.
  - Complex assemblies: Agree priority for welding members to minimize distortion caused by subsequent welds.
  - Tack welds: Use only for temporary attachment.
  - Jigs: Provide to support and restrain members during welding.
  - Filler plates: Submit proposals.
  - Lap joints: Minimum 5 x metal thickness or 25 mm, which ever is greater.
  - Weld terminations: Clean and sound.

**530 STAINLESS STEEL FABRICATION**

- Guillotining or punching: Do not use for metal thicknesses greater than 10 mm.
- Thermal cutting:
  - Carbonation in the heat affected zone: Remove, after cutting.
- Bending:
  - Plates or bars: Cold bending radius not less than material thickness.
  - Tubes: Cold bending radius not less than 2 x tube diameter.
- Welding: In addition to general welding requirements:
  - Protect adjacent surfaces from weld spatter.
  - Pickle all welds before post fabrication treatments.
- Protection: Provide protection to fabricated components during transit and on site.

**555 BRAZING**

- Standard: To BS EN 14324.
- Testing:
  - Destructive testing: To BS EN 12797.
  - Nondestructive testing: To BS EN 12799.

## **FINISHING**

- 710 FINISHING WELDED AND BRAZED JOINTS VISIBLE IN COMPLETE WORK
- Standard: To BS EN ISO 8501-3.
    - Preparation grade: TBC.
  - Butt joints: Smooth, and flush with adjacent surfaces.
  - Fillet joints: Neat.
  - Grinding: Grind smooth where indicated on drawings.
- 745 PREPARATION FOR APPLICATION OF COATINGS
- General: Complete fabrication, and drill fixing holes before applying coatings.
  - Paint, grease, flux, rust, burrs and sharp arrises: Remove.
- 750 LIQUID ORGANIC COATING FOR ALUMINIUM ALLOY COMPONENTS
- Standard: To BS 4842.
- 760 ZINC AND CADMIUM PLATING OF IRON AND STEEL SURFACES
- Zinc plating: To BS EN ISO 2081.
  - Cadmium plating: To BS EN ISO 2082.
- 770 CHROMIUM PLATING
- Standard: To BS EN ISO 1456.
- 780 GALVANIZING
- Standard: To BS EN ISO 1461.
  - Preparation:
    - Vent and drain holes: Provide in accordance with BS EN ISO 14713-1 and -2. Seal after sections have been drained and cooled.
    - Components subjected to cold working stresses: Heat treat to relieve stresses before galvanizing.
    - Welding slag: Remove.
    - Component cleaning: To BS EN ISO 8501-3.
    - Grade: TBC.
- 790 VITREOUS ENAMELLING
- Standard: To BS EN ISO 28722.
  - Substrate metal: Steel to BS EN 10209.

## **COMPLETION**

- 910 DOCUMENTATION
- Submit:
    - Manufacturer's maintenance instructions.
    - Guarantees, warranties, test certificates, record schedules and log books.
- 920 COMPLETION
- Protection: Remove.
  - Cleaning and maintenance: Carry out in accordance with procedures detailed in fabricators' guarantees.