

# Electricity Specification 326

Issue 2      May 2021

## Substation Security Doors



## Amendment Summary

| ISSUE NO.<br>DATE                 | DESCRIPTION   |
|-----------------------------------|---|
| <b>Issue 2</b><br><b>May 2021</b> | Reformatting of this ES into the new format and UU drawing numbers changed as marked.<br><br>Prepared by: Kelvin Smith<br>Approved by: Policy Approval Panel<br>and signed on its behalf by Steve Cox, Engineering and Technical Director |

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## 1 Introduction

This Electricity Specification (ES) sets out the requirements for security doors as fitted to substations owned by Electricity North West Limited (Electricity North West)

## 2 Scope

The substation doors covered by this specification are security doors for use at brick built indoor type substations at Distribution substations, Primary substations, Bulk Supply Points (BSP) and Grid Supply Points (GSP).

This specification embraces 3 types of Substation security door, Type A (Steel), Type B (Aluminium Construction / GRP Faced), and Type C (Timber), as described under Technical Particulars (see [Section 6](#)). The type to be specified for a particular application will be influenced by the site security risk assessment, fire rating requirements and also whether the substation is a new build or is being refurbished. In general, application shall be as shown below:

|               | BSP AND GSP | PRIMARY   | DISTRIBUTION  |
|---------------|-------------|---|---|
| <b>Type A</b> | Preferred   | High risk sites or special fire rating requirements | High risk sites or special fire rating requirements |
| <b>Type B</b> | N/A         | Preferred   | Referred  |
| <b>Type C</b> | N/A         | N/A   | Subject to site specific Approval                   |

All BSP, GSP and high-risk site doors, louvers and hardware shall have a minimum security rating of Security Equipment Assessment Panel (SEAP) level 2. Alternative security certification bodies such as the Loss Prevention Certification Board – Loss Prevention Standard (LPS) 1175 Level 3 or higher may be acceptable subject to the Tenderer clearly demonstrating a satisfactory service history over a significant period of time, subject to the approval of the Electricity North West Plant Policy Manager.

### 3 Definitions

|                       |  |
|-----------------------|--|
| <b>Approval</b>       | Sanction by the Electricity North West Plant Policy Manager that specified criteria have been satisfied  |
| <b>Contractor</b>     | The person or person's firm or company, including personal representatives, successors and permitted assigns, who's Tender has been accepted by Electricity North West.  |
| <b>GRP</b>            | Glass Reinforced Plastic   |
| <b>Specification</b>  | The Specifications and schedules (if any) agreed by the parties for the purpose of the Contract.   |
| <b>Sub-Contractor</b> | Any person (other than the Contractor) named in the Contract for any part of the Works or any person to whom any part of the Contract has been sub-let with the consent in writing of the Electricity North West Plant Policy Manager, and the legal representatives, successors and assigns of such person. |
| <b>Supplier</b>       | Any person or person's firm or company who supplies goods to Electricity North West or to its Contractor.  |
| <b>Tender</b>         | An offer in writing to execute work or supply goods at a fixed price.  |
| <b>Tenderer</b>       | The person or person's firm or company, including personal representatives, successors and permitted assigns, invited by Electricity North West to submit a Tender.  |

## 4 General Requirements for Approvals and Testing

### 4.1 Product not to be Changed

No change in the product, packaging or labelling shall be made after Approval has been granted without prior notice to the Electricity North West Plant Policy Manager, and receipt of a written agreement to the proposed change from the Electricity North West Plant Policy Manager.

### 4.2 Electricity North West Technical Approval

The Tenderer shall submit, with this Tender, proposals for testing which will demonstrate, to the satisfaction of the Electricity North West Plant Policy Manager, compliance with this Specification. Such tests shall be carried out without expense to Electricity North West.

Alternatively, technical reports and other data may be submitted that the Tenderer considers will demonstrate, to the satisfaction of the Electricity North West Plant Policy Manager, compliance with this Specification. Acceptance of this evidence shall be at the discretion of the Electricity North West Plant Policy Manager but will not be unreasonably withheld.

Approval shall be 'factory specific' and is not transferable to another factory without the written Approval of the Electricity North West Plant Policy Manager.

The Supplier and product shall comply with all the relevant requirements of Electricity North West document CP311.

### 4.3 Quality Assurance

The Tenderer shall confirm whether or not Approval is held in accordance with a quality assurance scheme accredited under ISO 9000. If not, the Tenderer shall submit a statement of the quality assurance procedures employed to control the quality of the product, including the performance of Suppliers and Sub-Contractors.

The right is reserved for the repeat of such tests, from time to time, that the Electricity North West Plant Policy Manager may deem to be reasonably necessary to demonstrate continued compliance with the Specification.

The Tenderer shall submit, with the Tender, a list of tests and inspections which are carried out on the product prior to despatch which shall demonstrate, to the satisfaction of the Electricity North West Plant Policy Manager, fitness for installation and service.

The Tenderer shall provide free of charge to Electricity North West such samples as may, in the opinion of the Electricity North West Plant Policy Manager, be reasonably required for inspection and/or retention as quality control samples. The Electricity North West Plant Policy Manager will confirm the requirement for samples at the time of Tendering.

The right is reserved for inspections to be made of Tenderer's facilities, from time to time, as deemed reasonably necessary by the Electricity North West Plant Policy Manager to ensure compliance with this Specification and any Contract of which it forms a part.

The Tenderer shall submit, with the Tender, such details of product packaging disposal, as will enable Electricity North West to comply with the requirements of BS EN ISO 14001 - Environmental Management Systems.

## 4.4 Formulation

The Tenderer shall submit, with the Tender, such details of the formulation and use of the product and associated substances as will enable Electricity North West to comply with the obligations of the Health and Safety at Work Act 1974 and the Control of Substances Hazardous to Health Regulations 2002 (COSHH), in the use, storage and disposal of the product. The Tenderer may stipulate, prior to submission of such information, that it is to remain confidential, and the Electricity North West Plant Policy Manager will, if requested, confirm agreement to this prior to receipt of the information.

## 4.5 Identification Markings

The Tenderer shall submit, with the Tender, details of markings which it is proposed to apply to the product or packaging to identify manufacturing batches or items. The forms and content of such markings shall be subject to the Approval of the Electricity North West Plant Policy Manager and shall in all cases include the Electricity North West approved description and commodity code number.

The Tenderer shall submit, with the Tender, such details of marking gross weight on components, assemblies and packages, as will enable Electricity North West to comply with the Health and Safety Manual Handling Operation Regulations, for components, assemblies and packages supplied with a gross weight over 1kg. The forms and content of such markings shall be subject to the Approval of the Electricity North West Plant Policy Manager.

## 4.6 Minimum Life Expectancy

The minimum life expectancy of all products covered by this Specification is 30 years.

# 5 Requirements for Type and Routine Testing

The Electricity North West Plant Policy Manager shall set out the requirement of the following tests to be carried out by the Supplier at the Supplier's cost.

## 5.1 Requirement for Type Tests at Suppliers Premises

These are a series of one-off type tests, which are carried out to ensure the satisfactory performance of the product design, under extremes of operating stresses, and of endurance, as may be appropriate, to be determined by the Electricity North West Plant Policy Manager.

These may or may not be destructive tests.

## 5.2 Requirement for Routine Tests at the Supplier's Premises

These tests may be required to be carried out on every individual unit or component, as specified, or at some regular frequency to be determined by the Electricity North West Plant Policy Manager.

The results of these tests may be required to be supplied to Electricity North West with each unit purchased or retained for inspection, at a period to be determined by the Electricity North West Plant Policy Manager.

## 6 Technical Requirements

### 6.1 Type A Doors (Steel)

#### 6.1.1 General Requirements

- (a) Site specific fire risk assessment shall be provided by the Electricity North West Civil Projects Manager.
- (b) A minimum of a two hour fire rating (BS476 Pt22).
- (c) Full perimeter weather seals and sills, including sill over top perimeter to prevent driving rain and drips.
- (d) Security strip to mask gaps at the leading edge of door leaves.
- (e) All joints shall be weather sealed.
- (f) Dimensions shall be as per the relevant Electricity North West drawing.

#### 6.1.2 Frame

- (a) Double rebate profile.
- (b) Formed from 1.5mm minimum thickness zinc coated steel sheet to BS1449 and BS EN 10152, and incorporate welded corners.
- (c) Frame fixing holes to be concealed with plastic plugs or similar and shall not be accessible externally.
- (d) All BSP, GSP and Primary double door sets shall have a removable threshold and transom for Plant Delivery. All removable thresholds shall be weather tight to prevent moisture ingress.

#### 6.1.3 Door Leaves

- (a) 45mm minimum thickness, flush double skin leaves.
- (b) Formed from 1.2mm minimum thickness zinc coated steel sheet to BS1449 and BS EN 10152, with a continuous edge seam interlock construction and inverted channels welded to the top and bottom of the leaf.
- (c) Resin impregnated honeycomb core, laminated to the inside faces of the door skins.
- (d) All removable threshold panels shall be of similar construction to the door leaves.

#### 6.1.4 Finish

- (a) Polyester powder coating appropriate for either inland or coastal situation (site specific requirement).
- (b) Colour to be site specific (see [section 6.6](#) for allowable colours).



### 6.1.5 Optional Extras for Distribution Substations

- (a) Porthole to allow cable access when doors are locked. This shall be a 150mm x 150mm clear opening. The opening shall be provided by means of a panel which is only removable from the inside of the door.
- (b) Any ventilation louvres required shall be in stainless steel or coloured to match the finish.

## 6.2 Type B Doors (Aluminium Construction / GRP Faced)

### 6.2.1 General Requirements

- (a) Site specific fire risk assessment shall be provided by the Electricity North West Civil Projects Manager.
- (b) System based on extruded aluminium sections.
- (c) Aluminium hardened and tempered.
- (d) All joints shall be weather sealed.
- (e) Full perimeter weather seals and sills, including sill over top perimeter to prevent driving rain and drips.
- (f) Dimensions shall be as per the relevant Electricity North West drawing.

### 6.2.2 Frame

- (a) 4-sided aluminium frame with low profile stainless steel sill.
- (b) Integral jacking channels to both jambs and head to close gap between frame and building.
- (c) Frame fixing holes to be concealed with plastic plugs or similar and shall not be accessible externally.
- (d) All BSP, GSP and Primary double door sets shall have a removable threshold and transom for Plant Delivery. All removable thresholds shall be weather tight to prevent moisture ingress.

### 6.2.3 Door Leaves

- (a) Rigid aluminium door cores constructed from 2 interlocking structural aluminium trays filled with non-hygroscopic, closed cell rigid polyurethane foam.
- (b) Door exterior facings to be 2mm thick GRP of the required colour, UV stable and pigmented throughout.

### 6.2.4 Finish

- (a) Anti-vandal finish on the exterior GRP with smooth inner faces.
- (b) Colour to be site specific (see [section 6.6](#) for allowable colours).
- (c) The door finish (prior to application of GRP facing) shall be anodised satin silver AA25.

## 6.2.5 Optional Extras for Distribution Substations

- (a) Porthole to allow cable access when doors are locked. This shall be a 150mm x 150mm clear opening. The opening shall be provided by means of a panel which is only removable from the inside of the door.
- (b) Any ventilation louvres required shall be in anodised aluminium or coloured to match the finish with dimensions as per Electricity North West drawing ES 352 A2 010 02F

## 6.3 Type C Doors (Timber) – Distribution Substations only

The preferred option for Distribution Substations shall be Aluminium doors with GRP exterior facing. However, timber doors may be used on a site-specific basis subject to approval of the Electricity North West Plant Policy Manager.

### 6.3.1 General Requirements

- (a) Site specific fire risk assessment shall be provided by the Electricity North West Civil Projects Manager.
- (b) Doors and frame shall be constructed from knot free hardwood, such as West African Iroko.
- (c) Any ventilation louvres required shall be in anodised aluminium or coloured to match the finish with dimensions as per Electricity North West drawing ES 352 A2 010 02F.
- (d) The finish materials and textures can be varied to suit the site. The door colours shall be as per [section 6.6](#) and primer/undercoat/gloss coats shall be applied.
- (e) All timber used shall be procured from a sustainable source.

### 6.3.2 Standard Door Design

- (a) Match boarded double door with 125mm x 50mm timber top and stiles, 197mm x 30mm bottom rail and middle rail. Brace to be 146mm x 30mm.
- (b) Match boarding to be primed prior to fixing and meeting stiles to be rebated.
- (c) Bottom rail must be placed lower than the floor level by approx. 15mm, otherwise a threshold detail will be required.

Note: The frame size may be required to be altered depending on the size of the doors. The door structure may be required to match the existing surrounding area, in which case site specific approval shall be obtained.

- (d) Variation to the standard door design can be 44mm thick external Weather and Boil Proof Plywood (WBP) door blanks with all exposed and cut edges hardwood lipped using exterior waterproof glue.
- (e) The completed door shall provide a minimum 1hour fire resistance. (BS476 Pt22). Substations within an occupied property where the door does not open on an exterior wall, shall be constructed to provide a 2 hour fire resistance (BS476 Pt22).
- (f) Full perimeter weather seals and sills, including sill over top perimeter to prevent driving rain and drips.

### 6.3.3 Optional Extra

Porthole to allow cable access when doors are locked. This shall be a 150mm x 150mm clear opening. The opening shall be provided by means of a panel which is only removable from the inside of the door.

## 6.4 Hardware for BSP, GSP and Primary Substation Doors

The hardware for use on BSP, GSP and Primary Substations shall be as follows:

### 6.4.1 Locks

- (a) Three-point locking system with panic push bar on the active leaf.
- (b) Turning hasp and staple (excluding padlock) or latch operated by cylinder lock (site specific requirement). The hasp and staple shall be able to accept a padlock with a 9.5mm shackle as per ES309. The turning hasp and staple shall have an anti-climb/anti-vandal cover, which is subject to Approval by the Electricity North West Plant Policy Manager.
- (c) Stainless steel lock guard for fitting over escutcheon (where required).

### 6.4.2 Hinges

Hinges are subject to Approval by the Electricity North West Plant Policy Manager and shall be either

- (a) Three stainless steel vandal resistant security hinges
- or
- (b) Full length stainless steel (304 grade) piano vandal resistant security hinge.

### 6.4.3 Other

- (a) Heavy duty garage doors stays (minimum length 450mm) shall be fixed to each leaf with cord operated automatic stop unless door leaf width not allow.
- (b) Rigid plastic "Push Bar to Open" sign.
- (c) Two spring loaded shoot bolts (minimum length 200mm) shall also be fitted to the passive leaf. If door height is above 2.2m, extra-long shoot bolts shall be fitted to the top of the door.

## 6.5 Hardware for Distribution Substations Doors

### 6.5.1 Locks

- (a) Locks shall be Legge L8767SCP euro cylinder mortice lock or similar. A rebate set is required for double wood door sets.
- (b) The internal requirement shall be a satin chrome spring lever handle whilst external shall be finger pull to euro profile.
- (c) One locking plate shall be supplied as per ES352 Electricity North West drawing 900350-020.
- (d) Mortice lock shall be fitted 1000mm above floor level and the locking plate shall be no higher than 1600mm above floor level.

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## 6.5.2 Hinges

Hinges shall be either

- (a) Three 102 x 76 x 3mm ball bearing satin stainless steel to each door leaf.
- or
- (b) Full length stainless steel (304 grade) piano.

## 6.5.3 Other

- (a) Two spring loaded shoot bolts (minimum length 200mm) shall also be fitted to the passive leaf. If door height is above 2.2m, extra long shoot bolts shall be fitted to the top of the door.
- (b) Heavy duty garage door stays (minimum length 450mm) shall be fixed to each leaf with cord operated automatic stop unless door leaf width will not allow.

Extras can include if required:

- (a) Emergency exit bar to replace spring handle
- (b) Emergency green interior colour to exit door
- (c) Heavy duty Eurolock guard to accept Electricity North West padlock to replace finger pull

## 6.6 Door Colours

Door colours shall generally be to the following BS 4800 colour codes, but requirements will be confirmed for specific sites, subject to approval of the Electricity North West Plant Policy Manager.

### 6.6.1 Distribution Substations

|   |                           |
|---|---------------------------|
| Exterior faces                          | Dark Green (14.C.40)      |
| Exterior faces in coastal locations     | Grey (18.B.25)            |
| Interior faces (Aluminium/GRP doors)    | Mill finish aluminium     |
| Interior faces (Steel and Timber doors) | As per Exterior faces     |
| Interior faces of panic doors           | Emergency Green (14.E.53) |

### 6.6.2 BSP, GSP and Primary Substations

|                                   |   |
|-----------------------------------|---|
| Exterior faces                    | Dark Green (14.C.40) or Brown (06.C.39) |
| Interior faces of panic doors     | Emergency Green (14.E.53)               |
| Interior faces of all other doors | Magnolia (08.B.15)                      |

## 7 Documents Referenced

| DOCUMENTS REFERENCED  |   |
|---|---|
| <b>Health and Safety at Work Act 1974</b>                           |   |
| <b>Health and Safety Manual Handling Operation Regulations 1992</b> |   |
| <b>Control of Substances Hazardous to Health Regulations 2002</b>   |   |
| <b>ISO 9000</b>   | Quality Systems   |
| <b>EN ISO 14001</b>   | Environmental Management Systems  |
| <b>BS476 Pt22</b>   | Fire Tests on Building Materials and Structures. Methods for Determination of the Fire Resistance of Non-load Bearing Elements of Construction                                  |
| <b>BS1449</b>   | Steel Plate, Sheet and Strip. Carbon and Carbon-manganese Plate, Sheet and Strip. General Specification   |
| <b>BS4800</b>   | Colour Specification for Schedule of Paint Colours for Building Purposes  |
| <b>BS EN 10152</b>  | Electrolytically Zinc Coated Cold Rolled Steel Flat Products. Technical Delivery Conditions   |
| <b>CP311</b>  | Equipment Approval Policy and Processes   |
| <b>ES309</b>  | Locks for Substations and Associated Plant  |
| <b>ES352</b>  | Design of Distribution Substations and Transforming Points  |
| <b>LPS1175</b>  | Requirements and testing procedures for the LPCB approval and listing of intruder resistant building components, strong points, security enclosures and free standing barriers. |

## 8 Keywords

Security; Substation.

## Appendix A – Conformance Declaration

### SECTION-BY-SECTION CONFORMANCE WITH SPECIFICATION

The Tenderer shall declare conformance or otherwise for each product/service or range of products/services, section-by-section, using the following Conformance Declaration Codes.

#### Conformance Declaration Codes:

|              |  |
|--------------|--|
| <b>N/A =</b> | Clause is not applicable/appropriate to the product/service.   |
| <b>C1 =</b>  | The product/service conforms fully with the requirements of this clause.   |
| <b>C2 =</b>  | The product/service conforms partially with the requirements of this clause.   |
| <b>C3 =</b>  | The product/service does not conform to the requirements of this clause.   |
| <b>C4 =</b>  | The product/service does not currently conform to the requirements of this clause, but the manufacturer proposes to modify and test the product in order to conform. |

**Manufacturer:**

**Product/Service Description:**

**Product/Service Reference:**

**Name:**

**Company:**

**Signature:**

**SECTION-BY-SECTION CONFORMANCE**

| Section | Section Topic  | Conformance Declaration Code | Remarks *<br>(must be completed if code is not C1) |
|---------|--|------------------------------|--|
| 1       | Scope – Door Security Rating                             |                              |  |
| 4.1     | Product not to be changed                                |                              |  |
| 4.2     | Electricity North West Technical Approval                |                              |  |
| 4.3     | Quality Assurance  |                              |  |
| 4.4     | Formulation  |                              |  |
| 4.5     | Identification Marking                                   |                              |  |
| 4.6     | Minimum Life Expectancy                                  |                              |  |
| 4.7     | Product Conformity                                       |                              |  |
| 5.1     | Requirement for Type Tests at the Suppliers' Premises    |                              |  |
| 5.2     | Requirement for Routine Tests at the Suppliers' Premises |                              |  |
| 5.3     | Requirement for On Site Tests                            |                              |  |
| 6.1     | Type A Doors (Steel)                                     |                              |  |
| 6.2     | Type B Doors (Aluminium/FRP Faced)                       |                              |  |
| 6.3     | Type C Doors (Timber) for Distribution Substations Only  |                              |  |



|     |   |  |  |
|-----|---|--|--|
| 6.4 | <b>Hardware for BSP, GSP and Primary Substation Doors</b> |  |  |
| 6.5 | <b>Hardware for Distribution Substation Doors</b>         |  |  |
| 6.6 | <b>Door Colours</b>                                       |  |  |

**Additional Notes:**