

Document Reference:-		NPS/001/028	Document Type:-		Code of Practice			
Version:-	3.0	Date of Issue:-	March 2024		Page	1	of	19

NPS/001/028 – Technical Specification for Tower Steelwork and Fixings

1. Purpose

The purpose of this document is to detail the requirements of Northern Powergrid in relation to the products detailed within this document.

This document supersedes the following documents, all copies of which should be destroyed.

Reference	Date	Version	Title
NPS/001/028	March 2015	2.0	Technical Specification for Tower Steelwork and Fixings

2. Scope

This specification covers the material and manufacturing requirements utilised for Tower Steelwork and associated fixings.

The following appendices form part of this technical specification:

- Appendix 1 - Schedule of Items
- Appendix 2 - Addendum to Supplier Requirements
- Appendix 3 - Self certification conformance declaration
- Appendix 4 - Technical Information Check List

Document Reference:-		NPS/001/028	Document Type:-		Code of Practice			
Version:-	3.0	Date of Issue:-	March 2024	Page	2	of	19	

2.1. Contents

1. Purpose.....	1
2. Scope	1
2.1. Contents	2
3. Technical Requirements.....	4
3.1. Fabrication Drawings	4
3.2. New or Replacement Towers.....	4
3.3. Materials	4
3.3.1. Steel.....	4
3.3.2. Bolts, Nuts and Washers	5
3.4. Workmanship	5
3.4.1. Steel.....	5
3.4.1.1. General.....	5
3.4.1.2. Cutting	5
3.4.1.3. Drilling and Punching	6
3.4.1.4. Presswork and Bending.....	6
3.4.1.5. Welding.....	6
3.4.1.6. Erection Marks	7
3.5. Corrosion Protection.....	7
3.5.1. Galvanizing	7
3.5.2. Thermal Spraying	8
3.6. Erection Information	8
3.6.1. General.....	8
3.6.2. Site Storage	8
3.6.3. Damaged Steelwork	8
3.6.4. Damaged Galvanizing	8
3.7. Quality Assurance.....	9
3.7.1. General.....	9
3.7.2. Steel.....	9
3.7.3. Bolts.....	9
3.7.4. Welding	9
3.7.5. Tolerances	10
3.7.5.1. Steel Members	10
3.7.5.2. Bolts and Nuts.....	11
4. References	12
4.1. External Documentation.....	12

Document Reference:-		NPS/001/028	Document Type:-		Code of Practice			
Version:-	3.0	Date of Issue:-	March 2024		Page	3	of	19

4.2.	<i>Internal Documentation</i>	13
4.3.	<i>Amendments from Previous Version</i>	13
5.	Definitions	13
6.	Authority for Issue	14
6.1.	<i>CDS Assurance</i>	14
6.2.	<i>Author</i>	14
6.3.	<i>Technical Assurance</i>	14
6.4.	<i>Authorisation.....</i>	14
Appendix 1 - Schedule of Items		15
Appendix 2 - Addendum to Supplier Requirement		16
Appendix 3 - Self Certification Conformance Declaration		17
Appendix 3 Continued		18
Appendix 4 - Technical Information Check List.....		19

Document Reference:-		NPS/001/028	Document Type:-		Code of Practice			
Version:-	3.0	Date of Issue:-	March 2024	Page	4	of	19	

3. Technical Requirements

3.1. Fabrication Drawings

Tower Steelwork fabrication drawings shall normally be supplied to the steelwork fabricators by Northern Powergrid or its nominated tower contractor associated with the particular tower project being constructed.

Where individual replacement steelwork members are required to replace severely corroded members, this shall be achieved through the use of the nearest metric equivalent steelwork section.

Northern Powergrid subscribes to the Tower Library service and under the terms of this agreement drawings can be requested on most current or historical towers lines constructed including designs operating from 33 - 275kV.

The drawings can be requested by selected Northern Powergrid staff using one of the following search criteria:

- By quoting the contract number associated with the construction of the original overhead line
- By quoting the Feeder/Circuit name
- By quoting a known drawing number or a known family name e.g. PL16 D30 Std
- By quoting bar marks recorded from the existing tower members (Erection marks as detailed in clause 3.4.1.6)
- By providing photos of the towers

The higher up the list we can supply data the quicker, more accurate and the higher likely hood of success.

3.2. New or Replacement Towers

Where new or complete replacement towers are required they shall, unless agreed by the Project Manager, and be selected from one of the following standard tower families:

- L4 (m) – ENA TS 43-7 issue 3
- L7 (m) – ENA TS 43-9 issue 2
- L4 (m) 66 – Replacement for Nursling towers based on L4(m) design
- L3 (c)

3.3. Materials

3.3.1. Steel

All steel shall comply with the requirements of BS EN 10025-1, BS EN 10025-2, BS EN 10025-6 or BS EN 10210 part 1 and part 2 as appropriate and shall be suitable for all the usual fabrication processes, including hot and cold working within the specified ranges.

The quality of finished steel shall be in accordance with BS EN 10163 Part 1, 2 and 3 or BS EN 10210 part 1 and part 2 as appropriate. All steel shall be free from blisters, scale, laminations, segregations and other defects. There shall be no rolling laps at the toes of rolled sections or rolled-in mill scale.

Unless stated to the contrary in the Project Specification, the following grades of steel shall be applicable:

- Mild steel shall be grade S275JR;
- High tensile steel shall be grade S355JR for sections less than 20 mm thick and S355JO for sections greater or equal to 20 mm thick, except for plates which shall be greater or equal to 40 mm thick;

Document Reference:-		NPS/001/028	Document Type:-		Code of Practice			
Version:-	3.0	Date of Issue:-	March 2024	Page	5	of	19	

iii) Steel plates for folded, pressed braked or stretch bending pole supports shall be of a suitable grade to meet the recommendations of clause 7.4.3 of BSEN 50341 Part 1.

iv) Mild steel and high tensile hollow sections shall be grade S275J2H and S355J2H, respectively.

Steel section profiles shall be in accordance with the requirements of BS 4 Part 1, BS EN 10056, Parts 1 and 2, BS EN 10210 Parts 1 and 2 and BS EN 10279 as appropriate.

Hot rolled steel plates greater or equal to 3 mm thick shall be in accordance with BS EN 10029 or BS EN 10025 Part 1 and Part 6 as appropriate.

3.3.2. Bolts, Nuts and Washers

Unless stated to the contrary in the Project Specification, the following grades of steel shall be applicable:

- i) Steel for bolts smaller or equal to 12 mm diameter shall be grade S275JR;
- ii) Steel for bolts greater or equal to 16 mm diameter shall be to grade S355JR, unless otherwise agreed. Where bolts to this grade cannot be obtained, then they may be substituted with bolts to BS 4190 grade 8.8 providing the additional requirements regarding impact stress at low temperatures has been imposed. E.g. that Charpy values of 30J at -5°C have been specified;
- iii) Steel for non-structural step bolts shall be grade S275JR;
- iv) Nuts shall be grade S275JR;
- v) Holding down bolts shall be strength grade 8.8/10 to BS 4190, unless otherwise agreed.

Unless stated to the contrary in the Project Specification, bolts and nuts shall be ISO Metric Black Hexagon to BS 4190, and shall be threaded ISO Metric Course pitch to BS 3643-2, Tolerance Class 7H/8g.

Countersunk and other bolts without hexagon heads shall have slotted heads

All flat washers shall comply with the requirements of BS 4320 (legacy document), Form E, Grade 4.6. Unless specified to the contrary they shall be 3 mm thick. Pack washers shall have an external diameter of twice the nominal bolt diameter plus 15 mm, a hole with a diameter of the nominal bolt diameter plus 2 mm and a thickness as specified on the appropriate fabrication drawing.

3.4. Workmanship

3.4.1. Steel

3.4.1.1. General

The work shall be carried out in a thoroughly reliable and workmanlike fashion in order to ensure satisfactory assembly and erection, interchangeability of similar members, accuracy of dimensions and alignment of holes. Cognisance shall also be taken of the requirements of BS EN 1090-2.

Punched holes shall wherever practicable be jig, NC or CNC punched true to form and free from rags, burrs and distortions. Punches and dies shall be strictly monitored to ensure that any producing irregular holes or defects previously mentioned shall be immediately replaced. Drilled holes shall be clean, free from burrs and square to the surface of the material.

Hole diameters shall be in the black unless specified to the contrary. For bolts up to but not including 24 mm diameter – nominal diameter plus 1.5 mm. For bolts 24 mm diameter or greater – nominal diameter plus 2 mm.

3.4.1.2. Cutting

Cutting of materials by either cropping, shearing, guillotining will be permitted up to and including the thickness specified below:

Document Reference:-		NPS/001/028	Document Type:-		Code of Practice			
Version:-	3.0	Date of Issue:-	March 2024		Page	6	of	19

- Quality (sub-grade)
 - JR – 16 mm
 - JO – 20 mm

Materials of either greater thickness or higher quality (sub-grade) must either be machine flame-cut or cold sawn. Hand held flame-cutting is not permitted.

Where materials are cropped, sheared or guillotined, the finish edge shall be free from rags, burrs, notches and distortions. Flame cutting of grade S355 steel shall be preceded by a slight preheat by passing a flame over the area to be cut and cutting speed reduced in comparison to those normally used for grade S275 steel of similar thickness. The flame-cut edge shall be lightly dressed after cutting to remove notches etc.

3.4.1.3. Drilling and Punching

Punching of full sized holes will be permitted up to and including the thickness specified below:

- Quality (sub-grade)
 - JR - 16 mm
 - JO - 20 mm

No hole shall be punched where the thickness of the materials exceeds the finished diameter of the hole. Finished holes shall be true to form and free from rags, burrs and distortions.

Materials of either greater thickness or higher quality (sub-grade) must either be drilled to the final diameter or punched 3 mm undersize and core drilled to the final diameter.

The welding of misplaced holes is not permitted without prior approval of the Company's Project Manager. In the case where approval is granted, the new hole must be drilled where it passes through or adjacent to the weld area of the previous hole irrespective of material grade or thickness.

3.4.1.4. Presswork and Bending

All bends in grades S355JO and S355J2G3 steel more than 90 in 1 000 shall be made hot within the temperature range of 850°C to 1 000°C, but normal cold correction will be permitted. Means shall be provided for random checking of temperatures (e.g. Tempilsticks or Pyrometer).

Bends in grade S275JR steel plates up to 10 mm thick may be made cold up to including 1 750 in 1 000. Bends, open and close flanges in angle sections may be made cold up to including 575 in 1 000.

However, in both of the above cases, the Manufacturer shall take adequate precautions to avoid the risk of subsequent galvanizing embrittlement.

Bends shall be of an even profile and free from surface damage due to press tool indentations.

The formation of bends by the 'cut and weld' method unless specified on the appropriate fabrication drawings is not permitted without the prior approval of the companies overhead line standards manager.

3.4.1.5. Welding

All welding shall be carried out in accordance with the requirements of BS EN 1011-1 and BS EN 1011-2

Care shall be exercised with respect to welding procedures, welders' qualifications, electrodes, preheat, notch toughness and minimum yield strength of electrodes to ensure compliance with the requirements of the respective standards.

Document Reference:-		NPS/001/028	Document Type:-		Code of Practice			
Version:-	3.0	Date of Issue:-	March 2024	Page	7	of	19	

Preheating, where required, shall be checked by the use of Tempilstiks or similar over an area of 150 mm either side of the welded area.

Assembly (tack) welds shall be carried out to the same procedures and welding conditions as the main welds and shall be the lesser of 50 mm long or 4 × material thickness.

Stop-start positions shall be kept to a minimum and shall be kept clear by a minimum of 25 mm of all corners and edges of plates, i.e. the weld must be laid down continuously at these points. Where the first run in multi-run welds is larger than subsequent runs, welding should continue until completed, thereby ensuring the weld area is not allowed to cool. After completion, the welded unit should be allowed to cool slowly and should not be subject to draughts or low temperatures.

If the parent metal has specific requirements for strength, ductility and toughness the weld metal and the heat-affected zone shall exhibit comparable qualities as determined in the sample tests when qualifying the welding procedures.

Where materials are to be galvanized, all welds shall be continuous so as to ensure a pickle-tight connection and shall be thoroughly cleaned (preferably by shot-blasting) to remove all slag, manganese (Carbon Dioxide welding) and weld splatter.

3.4.1.6. Erection Marks

Before leaving the fabricator's works, all members shall be stamped with distinguishing numbers and/or letters corresponding to those on the general arrangement or fabrication drawings. Additionally, the agreed fabricator's identification symbol must appear adjacent to the erection mark.

Erection marks shall be stamped on before galvanizing, using characters at least 10 mm high and shall be clearly legible after galvanizing.

Erection marks shall be located as follows:

- All members – stamped within 600 mm of the end but clear of the holes;
- Plates or flat bars – stamped at the most suitable position between holes;
- Main legs and elevation diagonal members – stamped at the top of the bars;
- Horizontal members – stamped at either end of the bar;
- Steel pole sections – 100 mm either side of the joint.

Steel poles shall additionally be marked on the base adjacent to the earthing lug with the year of manufacture, the manufacturer's name and the Contract Reference.

Erection Mark coding shall be agreed with the Company's Project Manager. **This is a Hold Point.**

3.5. Corrosion Protection

3.5.1. Galvanizing

Unless stated to the contrary in the Project Specification, after completion of all fabrication processes (including all drilling, punching, stamping, cutting, bending and welding) support steelwork, including nuts, bolts and washers shall be hot dip galvanized and tested in accordance with the requirements of BS EN ISO 1461. Electro-galvanizing is not an acceptable alternative.

Excessively thick or brittle coatings due to high levels of silicon or phosphorous in the steel, which may result in an increased risk of coating damage and/or other features that make the final product 'not fit for purpose' shall be cause for rejection.

All materials prior to galvanizing shall be free from oil, grease or any substance which may adversely affect the quality of finish.

Document Reference:-		NPS/001/028	Document Type:-		Code of Practice			
Version:-	3.0	Date of Issue:-	March 2024	Page	8	of	19	

The preparation for galvanizing and the galvanizing itself shall not adversely affect the mechanical properties of the coated materials.

The minimum average coating thickness on tower members shall be 85 microns.

All bolts and screwed rods, including the threaded portions, shall be galvanised. The maximum average coating on nuts, bolts and washers shall be 43 microns. The threads shall be cleaned of all surplus spelter by spinning or brushing. Dies shall not be used for the cleaning threads other than nuts. Nuts shall be galvanized and tapped 0.4 mm oversize and threads shall be oiled.

Bolts shall be delivered with the nuts run up the full extent of the thread.

3.5.2. Thermal Spraying

Unless stated to the contrary in the Project Specification, where sections are too large or difficult to galvanize, they shall be protected against corrosion by thermally spraying a zinc coating on the base metal in accordance with the requirements of BS EN 2063-5. The zinc coating thickness shall not be less than 80 µm.

When this system is used, the inside of all hollow sections shall be similarly treated.

3.6. Erection Information

3.6.1. General

The Contractor shall provide the Engineer with a comprehensive method statement giving sequential details of the proposed erection methods including his intended programme. Where steel poles are joined using slip joints, the method statement shall include details of the application and the magnitude of the jacking force required to connect the pole sections.

Alternatively, where flanged bolts are used to connect pole sections, details of the installation torque and tighten sequence shall be included.

The erection shall be carried out in accordance with the guidance given in the relevant parts of BS 1090-2 and the current Health and Safety legislation.

It should be noted as a general requirement that no support erection can commence before approval of the method statement by the Project Manager has been obtained. This is a Hold Point.

3.6.2. Site Storage

All support steelwork stored at site shall be kept clear of the ground where possible. Contact with brackish water, or other substances likely to attack the galvanizing shall be avoided and all support members shall be kept in a clean and tidy condition. The stored steelwork shall be stored in such a manner as to ensure air circulation.

Preventive measures shall be taken to prevent deterioration of galvanized or other protective coatings during transit, storage and erection. Superficial rust stains shall be removed without causing damage to the protective coatings

3.6.3. Damaged Steelwork

Unless otherwise directed by the Project Engineer, steelwork damaged during offloading, transportation, storage or erection shall be replaced.

3.6.4. Damaged Galvanizing

Areas where galvanizing has been damaged during transit or by excessively rough handling may be renovated provided the total damaged area does not exceed 600 mm². The areas shall be renovated either using low melting point zinc alloy repair rods or zinc rich paint. This treatment may only be used to

Document Reference:-		NPS/001/028	Document Type:-		Code of Practice			
Version:-	3.0	Date of Issue:-	March 2024	Page	9	of	19	

remedy areas which have been adequately coated. It shall not be used to remedy defects due to faulty galvanizing.

3.7. Quality Assurance

3.7.1. General

If required by the Project Specification any or all of the following type and sample tests shall be undertaken:

- i) Design tests on lattice steel towers and steel poles in accordance with the requirements of this Specification and BS EN 60652;
- ii) Sample tests on lattice steel towers and steel poles in the accordance with the requirements of this Specification and BS EN 60652;

Routine tests on raw materials and fabricated individual members (components) of lattice steel towers shall be undertaken in accordance with the requirements of this Specification.

3.7.2. Steel

All steel ex-mills or received from merchants' stocks shall be marked to identify the casts from which it was made in accordance with Section 11 of BS EN 10025-1 and covered by a test (mill) certificate. The certificate shall clearly identify the mechanical, chemical and where specified the impact properties, the carbon equivalent values and the cast numbers, to prove compliance with Tables 2, 7 and 9 of BS EN 10025-2, and A3 of BS EN 10210-1.

In the event of test certificates being unobtainable the steelwork fabricator shall arrange, at his own cost, for the independent testing and analysis of the materials. Testing shall be in accordance with the requirements of Section 10 of BS EN 10025-1 and Section 9 of BS EN 10210-1.

Steel of different grades shall be stored separately prior to the commencement of fabrication. The material grades of individual pieces of steel shall be capable of positive identification at all stages of fabrication.

3.7.3. Bolts

Bolts and nuts shall be covered by the appropriate test certificate in respect of the test requirements stated in BS 4190.

3.7.4. Welding

Unless stated to the contrary in the Project Specification, all structural welded joints shall be undertaken using approved welding procedures in accordance with BS EN 15607:2003.

All welders shall be tested to meet the requirements of BS EN 278-1 using the appropriate test corresponding to the weld positions and parent methods to be used. Copies of the test certificates shall be made available to Northern Powergrid upon request. Northern Powergrid reserves the right to have any welding operators retested at any time at no extra cost to the contract.

Unless stated to the contrary all welding shall be subjected to a non-destructive testing (NDT) programme. Where necessary, this may involve the appointment by the fabricator of an independent NDT organisation approved by Northern Powergrid who will undertake the NDT programme.

The NDT organisation shall operatives suitably qualified in accordance with the requirements of BS EN 9712. The NDT organisation shall submit their proposed procedures for approval.

Where an independent NDT organisation is not appointed, the supplier shall arrange for the appropriate level of weld inspection to be undertaken, which shall not be less than the minimum requirements stated in Table 1.0 Reference should be made to the Project Specification for details of the required level of inspection.

Document Reference:-		NPS/001/028	Document Type:-		Code of Practice			
Version:-	3.0	Date of Issue:-	March 2024	Page	10	of	19	

All weld inspection / testing shall be undertaken within 48 hours after the completion of the respective weld. Weld inspection to Levels 4 and 5 is a Notification Point.

Copies of the NDT inspection reports for weld inspection levels 4 and 5 shall be available to Northern Powergrid. Those for weld inspection levels 2 and 3 shall be made available to Northern Powergrid upon request.

3.7.5. Tolerances

3.7.5.1. Steel Members

The fabrication tolerances after galvanizing, which are not to be considered cumulative, shall be as follows:

On linear dimensions of nominal sections as per BS 4, BS EN 10029, BS EN 10056-2, BS EN 10210-2 and BS EN 10279;

On overall length of the member	± 2 mm
On overall length of leg members (butt joints)	± 1 mm
On the squareness of cut members with respect to the length of the member	± 5.0 / 1 000
On the squareness of cut for leg members with butt joints	± 2.5 / 1 000
On centres of holes	± 1 mm
On centres of groups of holes	± 2 mm
On back-gauges	± 1 mm
On corresponding holes in opposite faces of angle or channel sections	± 1 mm
On specified hole diameter on the punch side (in the black) or where drilled	+ 0.3 mm,- 0 mm
Taper on punched holes as measured between the specified hole diameter on punch side and the hole diameter on the die's side (in the black) shall not exceed the larger of + 1.0 mm or $t / 10$ (where t is the thickness of metal)	
On specified bends in leg members	± 10 / 1 000
On specified bends in other members and plates, open and close flanges	± 20 / 1 000
On the specified included angle (in plan) between welded leg connections or bracing connection plates	± 10 / 1 000

The permitted tolerance from straightness after galvanizing shall be in accordance with BS EN 10056-2.

The checking of bend angles on legs is to be made over a length of 1 000 mm either side of the bend point in both the face and the heel angle. For other members and plates the checking length shall be made over a distance of 500 mm.

Document Reference:-		NPS/001/028	Document Type:-		Code of Practice			
Version:-	3.0	Date of Issue:-	March 2024		Page	11	of	19

3.7.5.2. Bolts and Nuts

Tolerances on bolts and nuts shall be in accordance with the requirements of BS 4190 with the following exceptions:

- Plus tolerance on bolt diameter (black) 0.1 mm
(after galvanizing) 0.3 mm
- Minus tolerance on bolt diameter (black) As BS 4190
- Tolerance on nominal length of bolt ± 1 mm
- Length of thread (where d is the bolt diameter, also below) $d + 10$ mm
- Length of thread (with lock nuts, M16 $d + 20$ mm
lock nuts to be standard full nut) M20 $d + 25$ mm
M24 $d + 30$ mm
- Distance from underside of bolt head to face of screw ring gauge which has been screwed as far as possible on the bolt by hand (where l is the nominal length) $l - (d + 10)$ mm
- Tolerance on distance from underside of bolt head to face of screw ring gauge above ± 0.5 mm

Document Reference:-		NPS/001/028	Document Type:-		Code of Practice			
Version:-	3.0	Date of Issue:-	March 2024		Page	12	of	19

4. References

4.1. External Documentation

The products described within this specification shall comply with the latest versions of the relevant International Standards, British Standard Specifications and all relevant Energy Networks Association Technical Specifications (ENATS) current at the time of supply

Reference	Title
BS EN 10025 - 1	Hot rolled products of structural steels. General technical delivery conditions.
BS EN 10025 - 2	Hot rolled products of structural steels. Technical delivery conditions for non-alloy structural steels
BS EN 1090 – 2	Execution of steel structures - Technical requirements for steel structures
BS 3643-2	ISO Metric threads. Limits and tolerances for course pitch screw threads.
BS 4190	Specification for ISO metric hexagon bolts, screws and nuts.
BS 4320 (legacy document for reference)	Specification for metal washers for general engineering purposes.
BS 6072	Methods for magnetic particle flow detection
BS EN 1011-1	Welding. Recommendations for welding of metallic materials. General guidance for arc welding
BS EN 10029	Specification for tolerance on dimensions, shape and mass for hot rolled steel plates 3 mm thick or above
BS EN 10056-1	Specification for structural steel equal and unequal angles. Dimensions
BS EN 10056-2	Specification for structural steel equal and unequal angles. Tolerance on shape and dimensions.
BS EN 1011-2	Welding. Recommendations for welding of metallic materials. Arc welding of ferritic steels
BS EN 10163-1	Specification for delivery requirements for surface conditions of hot rolled steel plates, wide flats and sections – General requirements.
BS EN 10163-2	Specification for delivery requirements for surface conditions of hot rolled steel plates, wide flats and sections – Plates and wide flats.
BS EN 10163-3	Specification for delivery requirements for surface conditions of hot rolled steel plates, wide flats and sections – Sections.
BS EN 10210-1	Hot finished structural hollow sections of non-alloy and fine grained structural steels – Technical delivery requirements.
BS EN 10210-2	Hot finished structural hollow sections of non-alloy and fine grained structural steels – Tolerance dimensions and sectional properties.
BS EN 10279	Rolled steel channels – Tolerances on shape, dimension and mass.
BS EN 15607	Specification and approval of welding procedures for metallic materials. General rules for fusion welding
BS EN 17640	Non-destructive examination of welded joints. Ultrasonic examination of welded joints.
BS EN 2063-5	Metallic and other inorganic coatings. Thermal spraying. Zinc, aluminium and their alloys.
BS EN 278-1	Approval testing of welders for fusion welding – Steels.
BS EN 9712	General principles for qualification and certification of NDT personnel.
BS EN ISO 1461	Hot dip galvanized coatings on fabricated iron and steel articles - Specifications and test methods
ENA TS 43-125	Design guide and technical specification for overhead lines above 45kV
ENA TS 43-7	132kV Steel Tower Transmission Lines: Specification L4(M)
ENA TS 43-9	132kV Steel Tower Transmission Lines: Specification L7(C)
IEC BS EN 60652	Loading tests on overhead line towers

Document Reference:-		NPS/001/028	Document Type:-		Code of Practice			
Version:-	3.0	Date of Issue:-	March 2024		Page	13	of	19

4.2. Internal Documentation

Reference	Title
NSP/004/030	Specification for the construction and refurbishment of 33-132kV tower lines

4.3. Amendments from Previous Version

Reference	Amendments
3.0	Replaced references to Project Engineer from Standards Engineer
4.2	Versions checked, updated and published dates removed
6.0	Section updated to reflect new structure

5. Definitions

Term	Definition
Company	Northern Powergrid
Company's Project Manager	The nominated Project Manager within the Northern Powergrid
Engineer	The nominated representative of Northern Powergrid
Hold Point	A stage in the material procurement or fabrication and/or workmanship process beyond which work shall not proceed without the documented approval of the engineer.
Notification Point	A stage in the material procurement or fabrication and/or workmanship process for which advanced notice of the activity is required to permit attendance.

Document Reference:-		NPS/001/028	Document Type:-		Code of Practice			
Version:-	3.0	Date of Issue:-	March 2024		Page	14	of	19

6. Authority for Issue

6.1. CDS Assurance

I sign to confirm that I have completed and checked this document and I am satisfied with its content and submit it for approval and authorisation.

		Date
Liz Beat	Governance Administrator	04/03/2024

6.2. Author

I sign to confirm that I have completed and checked this document and I am satisfied with its content and submit it for approval and authorisation.

Review Period - This document should be reviewed within the following time period.

Standard CDS review of 3 years	Non Standard Review Period & Reason	
No	Period: 5	Reason: Update will be dictated by contact renewal date or any significant changes in the specification or documents referenced.
		Date
S Salkeld	Policy and Standards Engineer	04/03/2024

6.3. Technical Assurance

I sign to confirm that I am satisfied with all aspects of the content and preparation of this document and submit it for approval and authorisation.

		Date
G Hammel	Senior Policy and Standards Engineer	07/03/2024

6.4. Authorisation

Authorisation is granted for publication of this document

		Date
P Black	Head of System Engineering	20/03/2024

Document Reference:-		NPS/001/028	Document Type:-		Code of Practice			
Version:-	3.0	Date of Issue:-	March 2024		Page	15	of	19

Appendix 1 - Schedule of Items

Project specific schedule of item

Tower Specification	Tower Type / Extension	Product Ref
<i>L4 (M)</i>	<i>D Std</i>	

Note – List of required tower types to be added to the schedule

Document Reference:-		NPS/001/028	Document Type:-		Code of Practice			
Version:-	3.0	Date of Issue:-	March 2024		Page	16	of	19

Appendix 2 - Addendum to Supplier Requirement

Supporting evidence of compliance with type tests shall be submitted with the completed tender document.

Manufacturers may provide alternative tenders for items not complying with the above specification. This shall be clearly stated together with detailed descriptions of any variation from the specification, together with drawings and test results.

The supplier shall provide with the tender full technical details of the equipment offered and shall indicate any divergence from these standards or specifications.

Tenderer shall submit at the time of tendering a sample of the proposed labelling for each product package type.

Document Reference:-		NPS/001/028	Document Type:-		Code of Practice			
Version:-	3.0	Date of Issue:-	March 2024	Page	17	of	19	

Appendix 3 - Self Certification Conformance Declaration

Tower Steelwork and associated fixings shall comply with the latest issues of the relevant national and international standards, including ENA TS 43-125. Additionally this technical specification is intended to amplify and/or clarify requirements relating to these Standards.

This self-declaration sheet identifies the clauses of the aforementioned standards relevant to Tower Steelwork and associated fixings for use on the Northern Powergrid distribution network. The manufacturer shall declare conformance or otherwise, clause by clause, using the following levels of conformance declaration codes.

Conformance declaration codes

N/A = Clause is not applicable/ appropriate to the product

Cs1 = The product conforms fully with the requirements of this clause

Cs2 = The product conforms partially with the requirements of this clause

Cs3 = The product does not conform to the requirements of this clause

Cs4 = The product does not currently conform to the requirements of this clause, but the manufacturer proposes to modify and test the product in order to conform.

Instructions for completion

- When Cs1 code is entered no remark is necessary
- When any other code is entered the reason for non-conformance shall be entered
- Prefix each remark with the relevant 'BS EN' 'IEC' or 'ENATS' as appropriate.

Manufacturer:

Product Reference:

Details of the Tower Design Specifications and tower type(s)

Name:

Signature:

Date:

NOTE: One sheet shall be completed for each item or variant submitted.

Document Reference:-		NPS/001/028	Document Type:-		Code of Practice			
Version:-	3.0	Date of Issue:-	March 2024	Page	18	of	19	

Appendix 3 Continued

Technical Specification ENA TS 43-125

Clause within this specification	Related clause within ENATS 43-125	Requirement	Conformance Code	Remarks
3.1	11.5.1	Materials - Steel		
	11.5.2	Materials – Bolts, nuts and washers		
	11.6.1.1	Steel - General		
	11.6.1.2	Cutting		
	11.6.1.3	Drilling & punching		
	11.6.1.4	Presswork & bending		
	11.6.1.5	Welding		
	11.6.1.5	Erection Marks		
	11.7.1	Galvanising		
	11.7.2	Thermal Spraying		
	11.8.3	Damaged Steelwork		
	11.8.4	Damaged galvanising		
	11.9.1	Quality Assurance - General		
	11.9.2	Steel		
	11.9.3	Bolts		
	11.9.4	Welding		
	11.9.5.1	Tolerances - Steel		
	11.9.5.4	Bolts and Nuts		

Document Reference:-		NPS/001/028	Document Type:-		Code of Practice			
Version:-	3.0	Date of Issue:-	March 2024		Page	19	of	19

Appendix 4 - Technical Information Check List

The following information shall be provided by the supplier for technical review by Northern Powergrid. Additional information shall be provided if requested.

Requirement	Provided (Y/N)
Copy of pricing schedule template populated with product names and codes	
Complete set of drawings for each variant and data sheets	
Appendix 2 – Completed Addendum to supplier requirements	
Appendix 3 – Completed self-certification conformance declaration	
Declaration of technical non-conformances	
Type test evidence	
Routine test plan/quality plan (example)	