NPS/001/020 – Technical Specification for Stay Ground Anchors for Overhead Lines

1. Purpose

The purpose of this document is to outline the technical requirements for stay anchor systems for overhead line distribution networks of Northern Powergrid.

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

Reference	Version	Date	Title
NPS/001/020	5.0	Nov 2017	Technical Specification for Stay Ground Anchors for Overhead Lines

2. Scope

This document applies to products for both the AB Chance Anchor Drive System and the Platipus Utility System. Both systems are currently in use within Northern Powergrid.

This document includes details for specified materials and sizes to national and industrial standards.

2.1. Contents

3. Technical Requirements

3.1. General

Ground anchor systems shall generally satisfy the requirements of ENA TS 43-91: Issue 6 – 2016.

Within Northern Powergrid there is a requirement for two systems for the application of stay anchor systems: -

a) Chance Anchor Drive System

b) Platipus Utility System.

Products from alternative suppliers that can be applied with the use of existing Northern Powergrid plant and machinery are acceptable with items detailed in Appendix 1.

3.2. AB Chance Anchor Drive System

Products are required for the Mid-strength Series Pisa Anchor Augured System. They include 200mm, 250mm and 300mm single square helix with a 75mm pitch and a 6000 foot-pound typical working torque.

They are used in conjunction with 25mm diameter rods, 1065mm and 2135mm in length. The rods should be capable of being extended by means of a coupler and have a UTS of 133.4kN.

The stay is terminated onto rods with a turnbuckle barrel that comes complete with a thimble and lock nut.

Alternative offers may be considered providing compliance with the above requirements can be proven.

3.2.1. Materials

Rods will be manufactured from Mild Steel Grade 42A in compliance with BS 7886.

Tubes will be manufactured from Heavy Gauge Steel tube in accordance with BS EN 10255.

3.2.2. Finish

All steel parts shall be galvanised to BS EN 1461. External threads are to be brush galvanised with internal threading carried out after galvanising. Threads shall be coarse pitch class 7H/8g to BS 3643 and supplied with an adequate coating of oil.

3.3. Platipus Utility System

The Platipus percussion driven B6 anchor shall be supplied with a 2m x 10mm plastic impregnated tendon. The means of adjustment is by a M20 x 230mm tubular bodied turnbuckle with a threaded oval eye each end shall be complete with two lock nuts. The stay attachment is by means of a thimble manufactured to ENA TS 43-91 Fig. 10.

The anchor assembly shall have the ability to attain a minimum proof load value of 30kN with the ability to achieve a theoretical minimum failing load of 65kN.

3.3.1. Materials

The anchor shall be manufactured from Cast Spheroidal Graphite Iron in accordance with BS EN 1563. The tendon shall be manufactured from 7 stranded, herringbone construction steel wires in accordance with BS 302 and impregnated with black UV stable polypropylene that also forms a 1.5mm outer coating.

The turnbuckle shall be manufactured in accordance with BS EN 10255.

The stay thimble shall be manufactured in accordance with BS EN 13411.

3.3.2. Finish

All steel parts shall be galvanised to BS EN 1461 after machining.

3.4. Installation

AB Chance Anchor Drive and Platipus Systems shall be installed in accordance with NSP/004/104 - Guidance on the type and installation requirements for stays.

4. References

4.1. External Documentation

All equipment covered by this specification shall be in accordance with the latest versions of ENATS, BS EN, IEC and other relevant standards except where varied by this specification.

In this respect the following documents are particularly relevant: -

Reference	Title
BS 3643: 2007	ISO Metric Screw Threads
BS 7668: 2016	Weldable structural steels. Hot finished structural hollow sections in weather resistant steels
BS EN 10255: 2004	Non-alloy steel tubes suitable for welding and threading
BS EN 12385 - 1: 2002	Stranded Steel Wire Ropes
BS EN 13411 - 1: 2002	Terminations for Steel Wire Ropes
BS EN 1461: 2022	Hot Dipped Galvanise Coatings on Fabricated Iron and Steel Articles
BS EN 1563: 2018	Founding, Spheroidal Graphite Cast Irons
ENA TS 43-91: Issue 6 - 2016	Stay Strands and Stay Fittings for Overhead Lines

4.2. Internal Documentation

Reference	Title
NSP/004/104	(OHI 4) Guidance on the Types and Installation Requirements for Stays

4.3. Amendments from Previous Version

Reference	Description
Whole Document	Document reviewed no changes required. Doc republished to grid - LB 22/05/2023 Doc approved by email Paul Black 15/05/2023

5. Definitions

Reference	Definition
n/a	

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	22/05/2023

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 Years	Reason: Update will be dictated by contact renewal date or any significant changes in the specification or documents referenced.
Should this document be displayed on the Northern Powergrid external website?		**Yes**
		Date
Steve Salkeld	Policy and Standards Engineer	30/01/2023

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
Ged Hammel	Senior Policy and Standards Engineer	30/01/2023
Joseph Helm	Policy and Standards Manager	30/01/2023

6.4. Authorisation

Authorisation is granted for publication of this document.

		Date
Paul Black	System Engineering Manager	15/05/2023

Appendix 1 – Schedule of Items

AB Chance Anchor Drive System

Commodity Code	Description
224881	10" Single Helix Assy 1" UNC Female
224899	12" Single Helix Assy 1" UNC Female
217448	Product Code Special 03 Barrel Turnbuckle c/w Eye, Thimble & Locknut
226175	1" x 7ft Rod c/w Locknut Threaded to YE spec 1" UNC Male
222414	Coupling 18mm x 26mm Rod 1" UNC Female
226183	Rod 1050mm x 1" C/W Locknut 1" UNC Mal

Platipus Utility System

Commodity Code	Description
242611	Platipus B6 Anchor: With 2m x 10mm Plastic Impregnated Tendon Attached To An M20 Turnbuckle & ENA Type Thimble

Appendix 2 - Logistical Requirements

To enable Northern Powergrid to store the product(s) in accordance with the manufacturer's recommendations the Tenderer should provide details of the recommended storage environment with respect to each tendered product.

Details should be provided where relevant in respect to the minimum and maximum exposure levels, frequency of exposure and duration of exposure of the packaged item with respect to;

* Ambient temperature
* Humidity
* Water
* Dust
* Atmospheric corrosion
* Impact
* Vibration
* Solar radiation

The Tenderer shall ensure that each item is suitably packaged and protection to maintain the product and packaging as "fit for service" prior to installation taking account of the potential for an outdoor storage environment. All packaging shall be sufficiently durable giving regard to the function, reasonable use and contents of the packaging. Where product packages tendered are made up of sub packages all the sub packages shall unless varied by this specification, be supplied securely packaged together. Where items are provided in bagged/boxed form the material from which the bags are manufactured shall be capable of sustaining the package weight and resisting puncture by the materials within. Tenderer shall submit at the time of tendering the details of the proposed packaging (i.e. materials composition and structure) to be used for each product. Where the Tenderer is unable to provide packaging suitable for outdoor storage then this should be stated at the time of tender.

Palletised goods shall be supplied on standard 1200mm x 1000mm pallets.

Clearly legible, easily identifiable, durable and unambiguous labelling shall be applied to each individual and where relevant multiple package of like products. Where products packages tendered are made up of sub packages each sub packages shall be marked. As a minimum requirement the following shall be included;

* Manufacturer's trademark or name
* Supplier's trademark or name
* Description of item
* Date of packaging and/or batch number
* Northern Powergrid product code
* Weight
* Shelf Life

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

Appendix 3 – Self Certification Conformance Declaration

Stay Ground Anchors shall comply with the latest issues of the relevant industry, national and international standards, including ENATS 43-91
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 Stay Ground Anchors for Overhead Lines 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 the supplier shall provide evidence of conformance
- When any other code is entered the reason and supporting evidence for non-Conformance shall be entered
- Prefix each remark with the relevant 'BS EN' or 'ENATS' as appropriate

Manufacturer:

Product Reference:

Name:

Signature:

Date:

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

- **ENATS 43-91**

Clause/Sub-clause	Requirement	Conformance Code	Remarks
4.1	Materials		
5	Stay Rods		
8	Stay Attachments		

Appendix 4 – Technical Information Check Sheet

Suppliers are requested to provide all the relevant information listed below and complete the table confirming if it is included in the tender submission.

Requirement	Provided (Y/N)
Full product descriptions and part number/reference	
Appendix 3 – Completed self-certification conformance declaration	
Product Data Sheet	
Type test evidence	
Routine test plan (example)	
Packaging/delivery information	