DIN EN 1993-3-1/NA:2024-09 (E)

National Annex - Nationally determined parameters - Eurocode 3: Design of steel structures - Part 3-1: Towers, masts and chimneys - Towers and masts

Contents

Page

Foreword 5

NA.1 Scope 6

NA.2.1 General 6

NA.2.2 National provisions 7

NCI re 1.2 Normative references 7

NDP re 2.1.1(3)P 8

NDP re 2.3.1(1) 8

NDP re 2.3.2(1) 8

NDP re 2.3.6(2) 8

NDP re 2.3.7(1) 9

NDP re 2.3.7(4) 9

NDP re 2.5(1) 9

NDP re 2.6(1) 9

NDP re 4.1(1) 9

NDP re 4.2(1) 9

NDP re 5.1(6) 9

NDP re 5.2.4(1) 9

NDP re 6.1(1) 9

NDP re 6.3.1(1) 10

NDP re 6.4.1(1) 10

NDP re 6.4.2(2) 10

NDP re 6.5.1(1) 10

NDP re 7.1(1) 10

NCI re 9.1 10

NDP re 9.5(1) 10

NDP re A.1(1) 11

NDP re A.2(1)P (2 places) 11

NCI re Annex B 11

NCI re Annex C 11

NDP re D.1.1(2) 11

NDP re D.1.2(2) 11

NDP re D.3(6) (2 places) 11

NDP re D.4.1(1) 12

NDP re D.4.2(3) 12

NDP re D.4.3(1) 12

NDP re D.4.4(1) 12

NCI re Annex F 12

Annex NA.B (normative) Assumptions for wind actions 13

NA.B.1 NCI General 13

NA.B.1.1 NCI Scope 13

NA.B.1.2 NCI Symbols and indices 13

NA.B.2 NCI Wind force coefficient 14

NA.B.2.1 NCI General 14

NA.B.2.2 NCI Reference area 15

NA.B.2.3 NCI Determination of the wind force coefficient 15

NA.B.3 NCI Gust response of lattice towers 24

NA.B.3.1 NCI Criteria for static methods 24

NA.B.3.2 NCI Equivalent static method 25

NA.B.3.3 NCI Crosswind vortex vibrations 26

NA.B.4 NCI Response of guyed masts 27

NA.B.4.1 NCI General 27

NA.B.4.2 NCI Criteria for static methods 27

NA.B.4.3 NCI Equivalent static methods 28

NA.B.4.4 NCI Spectral analysis method 32

NA.B.4.5 NCI Vortex-excited vibrations 32

NA.B.4.6 NCI Guy vibrations 33

NA.B.4.7 NCI Natural frequency of free-standing towers 34

NA.B.4.8 NCI Natural frequency for cantilevered guyed masts 34
Annex NA.C (normative) Ice loading and combinations of ice with wind 36
NA.C.1 NCI General 36
NA.C.2 NCI Ice loading 36
NA.C.3 NCI Ice weight 37
NA.C.4 NCI Wind and ice 37
Annex NA.F (normative) Execution and monitoring of conditions 38
NA.F.1 NCI Execution 38
NA.F.2 NCI Monitoring of conditions 39
NA.F.3 NCI Main inspection 39
Annex NA.I (normative) Additional technical regulations 40
NA.I.1 NCI Persons falling in safety harnesses 40
NA.I.2 NCI Information on the calculation of bracing 40
NA.I.3 NCI Bolted connections 40
NA.I.4 NCI Minimum thickness 40
NA.I.5 NCI Cross-section bracing 40
NA.I.6 NCI Wire rope grips 41
NA.I.7 NCI Bolts 41
NA.I.8 NCI Insulators and protective fittings 41
NA.I.8.1 NCI General 41
NA.I.8.2 NCI Ceramic insulators 41
NA.I.8.3 NCI Safety and routine testing of ceramic insulators subjected to pressure 42
NA.I.8.4 NCI Other insulators 42
NA.I.9 NCI Foundations 42
NA.I.9.1 NCI Concrete foundations 42
NA.I.9.2 NCI Anchoring 42
NA.I.9.3 NCI Auxiliary anchors 43
NA.I.10 NCI Corrosion protection 43
NA.I.10.1 NCI General 43
NA.I.10.2 NCI Coatings 43
NA.I.11 NCI Lightning protection and earthing systems 44

NA.I.12 NCI Installation aids 45

NA.I.13 NCI Equipment for accessing and inspecting the structure, fall protection 45

NA.I.13.1 NCI General 45

NA.I.13.2 NCI Ladders 45

NA.I.13.3 NCI Safety equipment on working platforms and walkways 45

NA.I.13.4 NCI Access to guys 46

NA.I.13.5 NCI Openings in hollow masts 46

Bibliography 47

Figures Figure NA.B.1 -- Definition of the face 16

Figure NA.B.2 -- Wind incidence factor K 19

Figure NA.B.3 -- Force coefficients cf,S,0 for lattice structures with square or triangular cross-section 21

Figure NA.B.4 -- Load cases for lattice towers 25

Figure NA.B.5 -- Application of patch loads 30

Figure NA.B.6 -- Typical wind directions to be considered 31

Figure NA.B.7 -- Example of the effective length Lj for guyed masts 32

Figure NA.B.8 -- Basic value clat,0 for the aerodynamic excitation force coefficient as a function of the strake length lw (applies for Sc 8) 33

Figure NA.B.9 -- Coefficients for determining the natural frequency according to Equation (NA.B.29) 35

Figure NA.F.1 -- Erection tolerances 39

Figure NA.I.1 -- Example of the earthing of a guyed mast 45

Tables Table NA.1 -- Characteristic values for the Hertz pressure of steel bearings 10

Table NA.A.2 -- Partial factors G and Q for actions 11

Table NA.B.1 -- Typical force coefficients, cf,A,0 and cf,G,0, for individual members 22

Table NA.I.1 -- Ceramic insulators 42