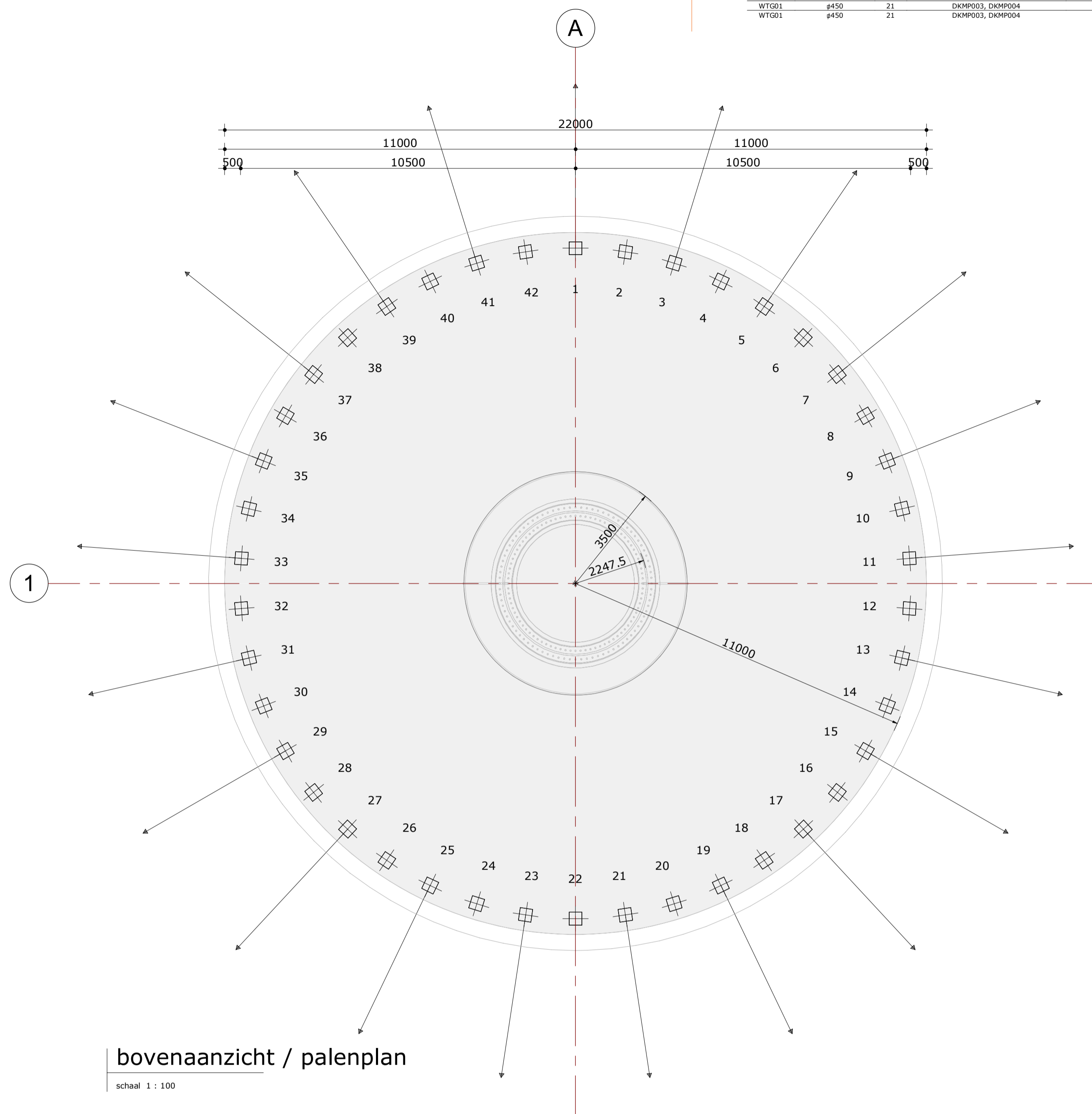


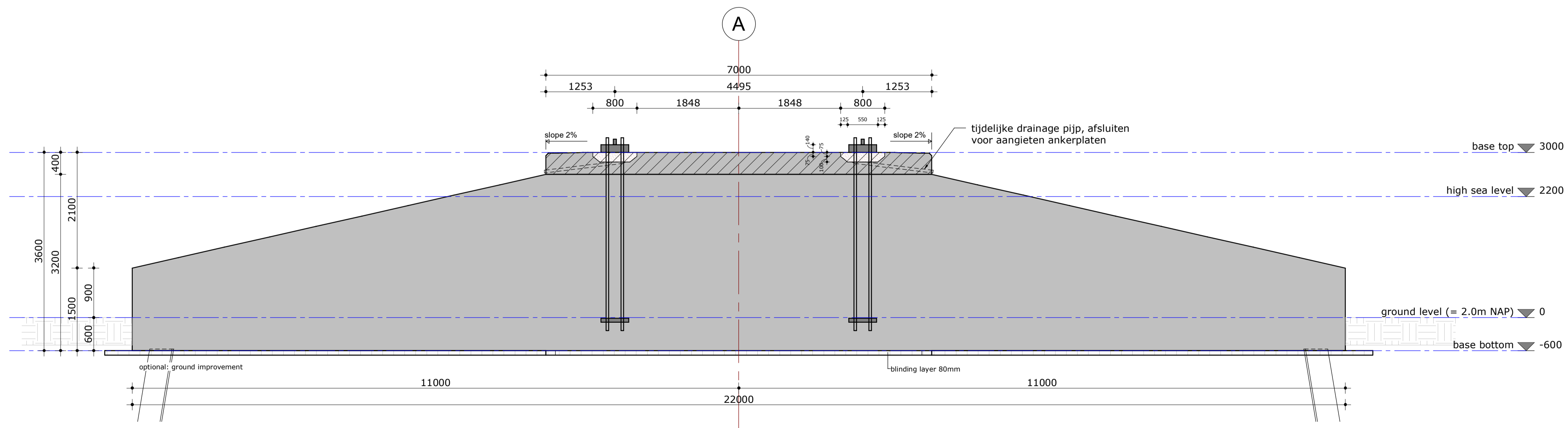
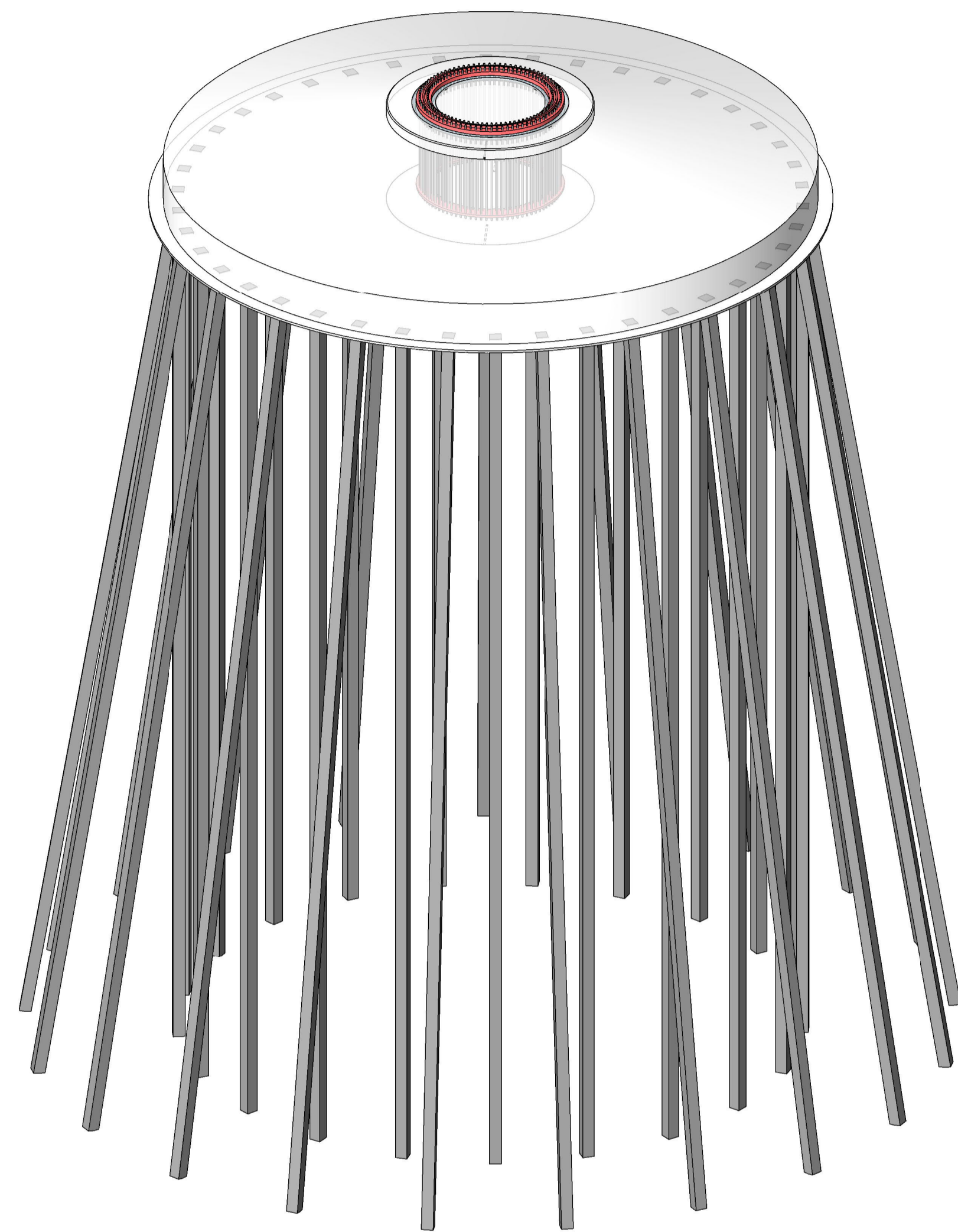
Palenstaat

locatie	paal type	aantal	sondering	schoorstand (X op 1)	gem. maaiveld (mm i.r.t. NAP)	b.k. fundering (mm i.r.t. NAP)	ok. fundering (mm i.r.t. NAP)	paalpuntniveau (mm i.r.t. NAP)	netto paal lengte incl. schoorstand (mm)	belasting (druk) F _{v,d} (kN)	belasting (trek) F _{t,d} (kN)	dwarskracht F _{v,z,d} (kN)	schaarstmoment M _{o,d} (kNm)	kopmoment M _{o,d} (kNm)
WTG01	4450	21	DKMP003, DKMP004	0	+2000	5000	1400	-29500	30930	1884	440	73	32.5	150
WTG01	4450	21	DKMP003, DKMP004	6	+2000	5000	1400	-29500	31357	1884	440	73	32.5	150



bovenaanzicht / palenplan

schaal 1 : 100



doorsnede over as 1

schaal 1 : 50

Materiaaloverzicht

ter informatie

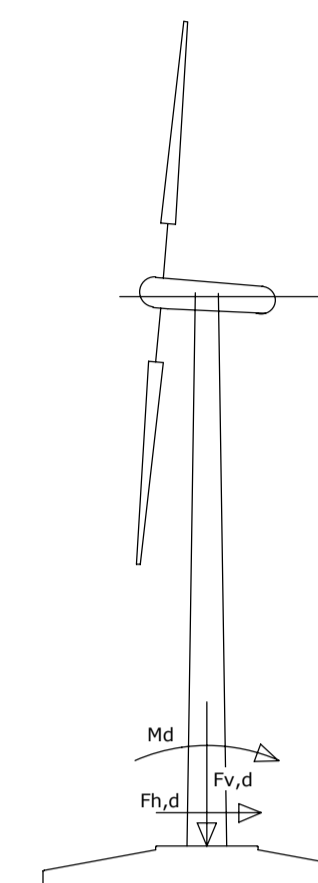
Element	Kwaliteit	Hoeveelheid
Fundatie	C30/37	876 m ³
Werkvloer	C12/15	33.2 m ³
Grout	C100/115	1.8 m ³
Fundatie top	C55/67	13.4 m ³

Turbine specificaties

WTG01: GE Renewable Energy
power output: 4.8 MW

F_{v,d} : 6892 / 10338 kN
F_{t,d} : 1231 kN
M_d : 189390 kNm

Gevolgklasse: CC3
Betrouwbaarheidsklasse: RC3
Ontwerp levensduur: 25.0 jaar

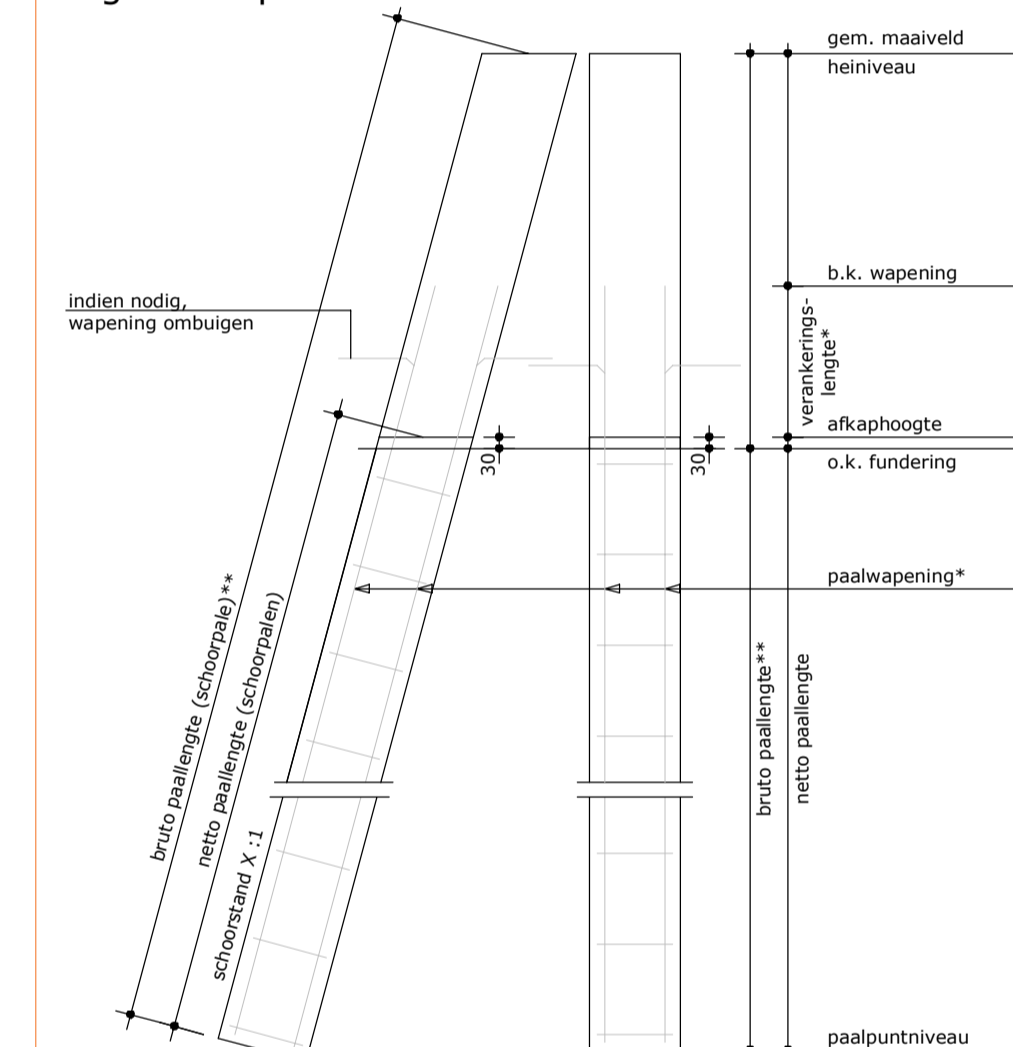


rekenwaarden extreme mastvoetbelastingen

zie specificaties turbinefabrikant: GE project 1215339, 1.0 / 16-07-2020

torenverankering conform specificaties fabrikant: 445W4958, 0.0 / 15-03-2017

Algemeen paaldetail



- * paalwapening en verankering lengte volgens uitwerking aannemer/leverancier (voor verankering lengte altijd een minimum van 1200 mm aanhouden)
- bij bepalen paalwapening moet vermoegingsbelasting in beschouwing worden genomen
- stelwapening en eerste meters paalwapening onder peer niet lassen, lengte te bepalen door detailberekening derden.
- lassen aan wapening is niet toegestaan, tenzij overeengekomen met de ontwerper
- ** definitieve paallengte te bepalen door aannemer, afhankelijk van uitvoeringsmethode

Architect

Projectcode: A1 Formaat: A1 Schaal: As indicated

Onderwerp: windturbine foundation shape and pile plan WTG01

Fase: DO Status:

Datum: Wijz. Omschrijving wijziging: Opgesteld:

Datum: Omschrijving uitgifte: Opgesteld:

Datum: Verificatie: Datum: Autorisatie:

Discipline: Civil Engineering Tekeningnummer:

ATTACHMENT XX:
CODES AND STANDARDS APPLICABLE TO THE
WORKS

Codes and standards applicable to the Works (non-limitative list):

NEN 1010	Safety requirements for low voltage installations
NEN 3140	Operation of electrical installations – Low voltage
NEN 3650	Requirements for pipeline systems
NEN 3651	Additional requirements for pipelines in or nearby important public works
NEN 3840	Operation of electrical installations – High voltage
NEN 8005	Dutch supplement to NEN-EN 206: Concrete - Specification, performance, production and conformity
NEN 9997-1	Geotechnical design of structures - Part 1: General rules
NEN-EN 206	Concrete - Specification, performance, production and conformity
NEN-EN 547	Safety of machinery – Human body dimensions
NEN-EN 795	Personal protective equipment against falls from a height. Anchorage devices Requirements and testing
NEN-EN 1461	Hot dip galvanized coatings on fabricated iron and steel articles
NEN-EN 1808	Safety requirements for suspended access equipment - Design calculations, stability criteria, construction - Examinations and tests
NEN-EN 1838	Lighting applications – Emergency Lighting
NEN-EN 1990	Basis of structural design NEN-EN 1990 Basis of structural design including the Dutch National Annexes (such as but not limited to NEN-EN 1991, NEN-EN 1992, NEN-EN 1993, NEN-EN 1994, NEN-EN 1997 and NEN-EN 1998)
NEN-EN 10025	Hot rolled products
NEN-EN 10080	Steel for the reinforcement of concrete
NEN-EN 10204	Material certification
NEN-EN 12385	Steel wire ropes – Safety
NEN-EN 12390	Testing hardened concrete - Part 1: Shape, dimensions and other requirements for specimens and moulds
NEN-EN 12390-2	Testing hardened concrete - Part 2: Making and curing specimens for strength tests
NEN-EN 12464	Light and Lighting – Lighting of work places
NEN-EN 13306	Maintenance terminology
NEN-EN 13460	Maintenance. Documents for maintenance
NEN-EN 13670	Execution of concrete structures
NEN-EN 50110	Operation of electrical installations – General requirements
NEN-EN 50160	Voltage characteristics of electricity supplied by public distribution systems
NEN-EN 50172	Emergency escape lighting systems
NEN-EN 50180	Bushings above 1 kV up to 52 kV and from 250 A to 3,15 kA for liquid filled transformers
NEN-EN 50522	Earthing of power installations exceeding 1 kV a.c.
NEN-EN 50308	Wind turbines; Requirements for design, operation and maintenance
NEN-EN-IEC 60071	Insulation co-ordination
NEN-EN-IEC 60076	Power transformers

NEN-EN-IEC 60099	Surge arresters - Part 4: Metal-oxide surge arresters without gaps for a.c. systems
NEN-EN-IEC 60214	Tap-changers
NEN-EN-IEC 60287	Electric cables – Calculation of the current rating
NEN-EN-IEC 60296	Specification for unused mineral insulating oils for transformers and switching gear
NEN-EN-IEC 60502	Power cables with extruded insulation and their accessories for rated voltages above 1 kV ($U_m = 1,2$ kV) up to 30 kV ($U_m = 36$ kV) – Test methods and requirements
NEN-EN-IEC 60793-1	Optical fibres - Measurement methods and test procedures
NEN-EN-IEC 60853-2	Calculation of the cyclic and emergency current rating of cables
NEN-EN-IEC 60974	Optical fibre cables
NEN-EN-IEC 61000	Electromagnetic compatibility (EMC)
NEN-EN-IEC 61400-1	Wind turbines Design requirements
NEN-EN-IEC 61400-11	Acoustic noise measurement techniques
NEN-EN-IEC 61400-12	Power performance measurements of electricity producing wind turbines (including IEC 61400-12-1:2017 lidar measurements & IEC 61400-12-2:2013/COR1:2016 Power performance of electricity-producing wind turbines based on nacelle anemometry / Corrigendum 1)
NEN-EN-IEC 61400-13	Measurement of mechanical loads
NEN-EN-IEC 61400-14	Declaration of apparent sound power level and tonality values
NEN-EN-IEC 61400-21	Measurement and assessment of power quality characteristics of grid connected wind turbines
NEN-EN-IEC 61400-22	Conformity testing and certification
NEN-EN-IEC 61400-23	Full-scale structural testing of rotor blades
NEN-EN-IEC 61400-24	Lightning protection
NEN-EN-IEC 61400-25	Communications for monitoring and control of wind power plants
NEN-EN-IEC 61439-1	Low-voltage switchgear and control gear assemblies; type-tested and partially type-tested assemblies
NEN-EN-IEC 60204-1	Safety of machinery; Electrical equipment; General requirements
NEN-EN-IEC 61869	Instrument transformers
NEN-EN-IEC 61936-1	Power installations exceeding 1 kV a.c. - Part 1: Common rules
NEN-EN-IEC 62271	High-voltage switchgear and controlgear
NEN-EN-IEC 62305	Protection against lightning
NEN-EN-ISO 4309	Cranes - Wire ropes - Care and maintenance, inspection and discard
NEN-EN-ISO 9000	Quality management systems -- Fundamentals and vocabulary
NEN-EN-ISO 9001	Requirements for a quality management system
NEN-EN-ISO 11801	Structured cabling Optical Fibre Cables
NEN EN-ISO 12100	Safety of machinery - General principles for design - Risk assessment and risk reduction
NEN-EN-ISO 12944	Paint and varnishes – Corrosion protection of steel structures by protective paint systems
NEN-EN-ISO 14001	Environmental Management
NEN-EN-ISO 14122	Safety of machinery - Permanent means of access to machinery

NEN-EN-ISO 22476	Geotechnical investigation and testing -- Field testing
NEN-EN-ISO 31000	Risk Management
NEN-EN-ISO 31010	Risk assessment techniques
NEN-EN-ISO 45001	Occupational health and safety (or predecessor OHSAS 18001)
NEN-EN-ISO 90003	Software engineering - Guidelines for the application of ISO 9001 to computer software
SCC (VCA**)	Safety Health and the Environment (SHE) Checklist Contractor NL
CUR 2001-4	Funderingsberekeningen
BRL 2356/01	In de grond gevormde palen – General Parts and Appendix E
Dutch grid codes	Netcode Electriciteit, Systeemcode Electriciteit, Meetcode Electriciteit, including Requirements for Generators (Rfg)
DIN EN 60567*VDE 0370-9	Ölgefüllte elektrische Betriebsmittel
DIN VDE 0298-4	Verwendung von Kabeln und isolierten Leitungen für Starkstromanlagen
IEC 60364-5-52	Low-voltage electrical installations - Part 5-52: Selection and erection of electrical equipment - Wiring systems