

Vernagelen in de praktijk

Robert Schippers, 5 september 2006

- Inleiding
- Toepassingsgebied
- Type nagels
- Uitvoering

1. Stabilisatie van steile wanden



In Nederland?

Toepassingsgebied



2. Stabilisatie van ingravenen



In Nederland?



Toepassingsgebied



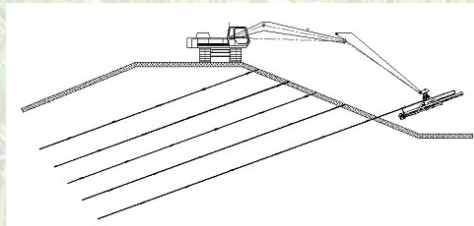
3. Rijbaanverbreding onder bestaand viaduct



In Nederland!

Toepassingsgebied

4. Verhogen stabiliteit bestaand talud



In Nederland!

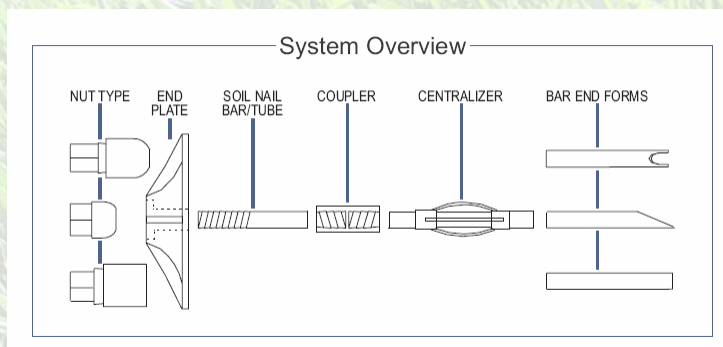
Toepassingsgebied

**Onderscheid naar
materiaalsoort**

**Stalen nagels
(corrosief)**

**Kunststof nagels
(niet corrosief)**

Type nagels



Type nagels



Technical Data

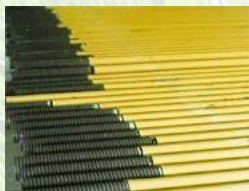
Bar Size	R25N	R32N	R32S	R38N	R51L	R51N	T76N	T76S
Diameter over threads (mm)	25	32	32	38	51	51	76	76
Effective external diameter of bar (mm)	22.5	29.1	29.1	35.7	47.8	47.8	71	71
Internal diameter of bar ^(a) (mm)	14	18.5	15	19	36	33	52	45
Effective cross sectional area of bar ^(a) (mm ²)	244	396	488	717	776	939	1835	2400
Ultimate strength (kN)	200	280	360	500	550	800	1600	1900
Yield strength (kN)	150	230	280	400	450	630	1200	1500
Steel Grade Yld/Ult (N/mm ²) ^(b)	660/805	560/720	570/740	540/700	580/690	670/840	660/880	630/790
E Modulus (N/mm ²)	214,200	207,800	212,800	206,600	204,700	214,000	205,400	214,000
Weight (kg/m)	2.3	3.4	4.1	6.0	7.0	8.4	15.2	19.7
Thread (left-hand)	ISO 10208			ISO 1720		MAI		
Maximum Drilling Depths ^(c) (m)	12	16	20	24	26	30	36	36

^(a) Figures quoted represent the average internal diameter of the bar

^(b) Based on characteristic steel strengths

^(c) Drilling depths are indicative only and subject to ground conditions and drilling methods.

Type nagels



PVC omhulling+vet



PVC omhulling+cement



Gegalvaniseerd



Epoxy coating

Type nagels

CARBOPREE

Caratteristiche meccaniche
 Mechanical characteristics
 Caractéristiques mécaniques

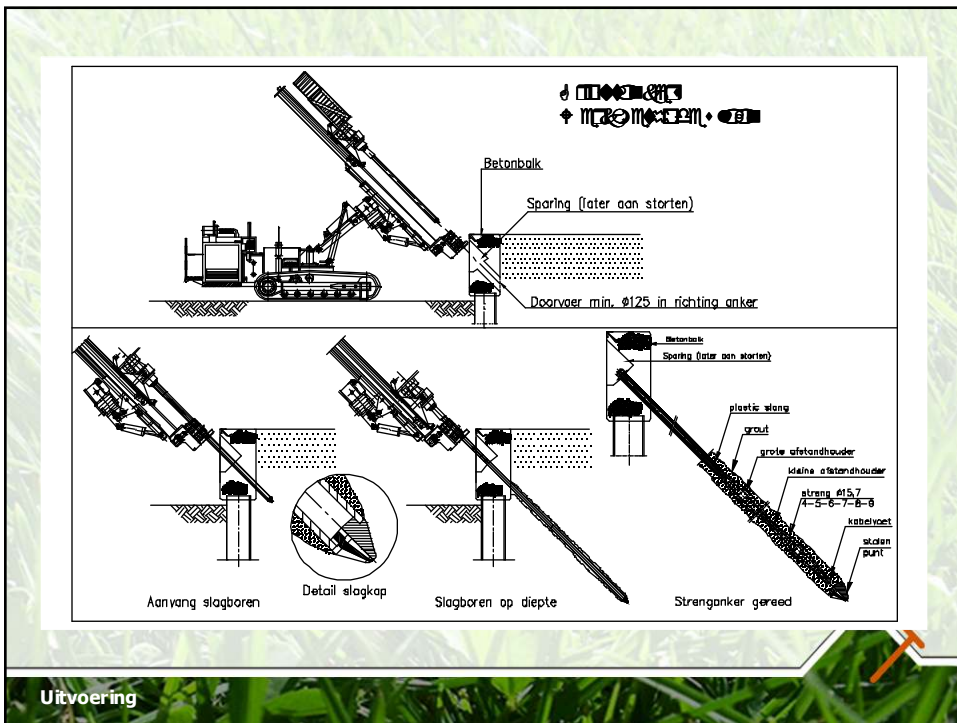
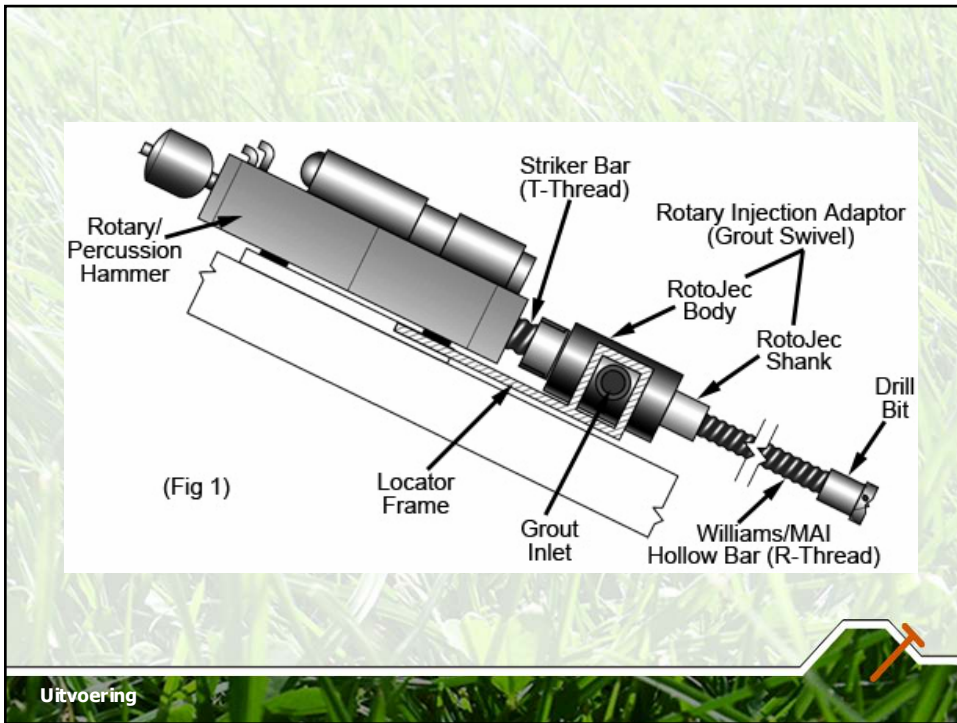
	Carbopree Rod HS 5	Carbopree Rod HS 7,5	Carbopree Rod HS 10	Carbopree Rod HS 12	Carbopree Rod HS 16	Carbopree Flat bar 30x4	Carbopree Flat bar 40x5
Tensile strength	2300 MPa	2300 MPa	2300 MPa	2300 MPa	2300 MPa	2100 MPa	2100 MPa
Tensile modulus of elasticity	130 GPa	130 GPa	130 GPa	130 GPa	130 GPa	115 GPa	115 GPa
Ultimate deformation	1,8 %	1,8 %	1,8 %	1,8 %	1,8 %	1,8 %	1,8 %
Size	Ø 5 mm	Ø 7,5 mm	Ø 10 mm	Ø 12 mm	Ø 16 mm	30x4 mm	40x5 mm
Nominal area	19 mm ²	44 mm ²	78 mm ²	113 mm ²	200 mm ²	120 mm ²	200 mm ²
Ultimate load	44 KN	101 KN	180 KN	260 KN	460 KN	250 KN	420 KN
Linear weight	40 gm/m	75 gm/m	130 gm/m	195 gm/m	340 gm/m	180 gm/m	300 gm/m

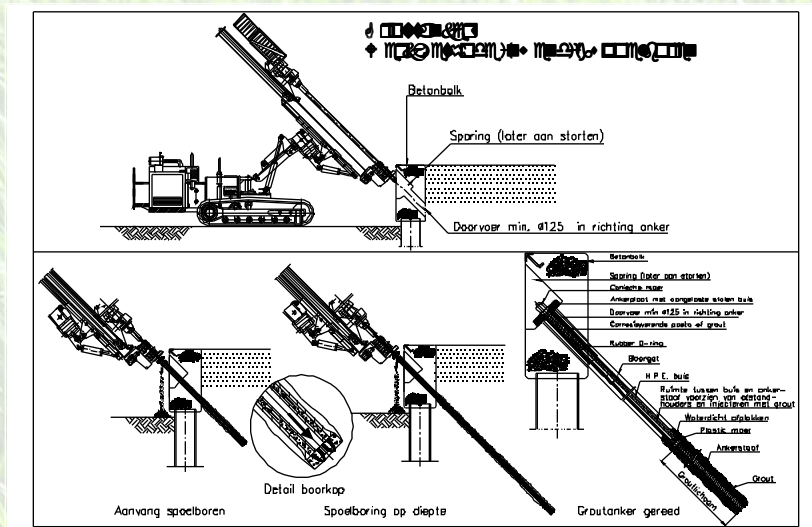
Type nagels



Type nagels







Uitvoering