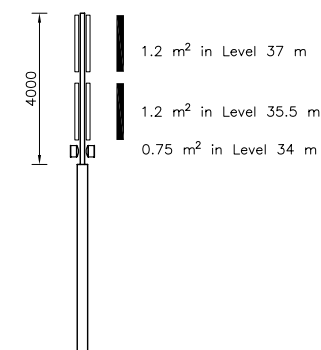


Allowable Tolerance for Placement of Guy Foundation:

$$D_{MIN} \leq D_1 \leq D_2 \leq D_3 \leq 2 \cdot D_{MIN}$$



Antenna loads

NOTE:

General note, see drawing GRP-G-001.

Codes:
The Guyed Rooftop Poles for is designed according to the following Polish Standards:

- PN-77/B-02011 "Obciążenie wiatrem", Dec. 1977.
- PN-90/B-03200 "Konstrukcje stalowe", 1990.
- PN-79/B-03204 "Maszty oraz wieże radiowe i telewizyjne" (Steel structures, Radio and television masts, Design rules, 1979).

Safety coefficient for steel yield is 1.15. Safety coefficient for guy ropes is 2.09. The poles are not designed for ice loads.

Wind climate:
The guyed rooftop poles are designed for windzone II and terrain category A. Pole top level above terrain is 38 m.

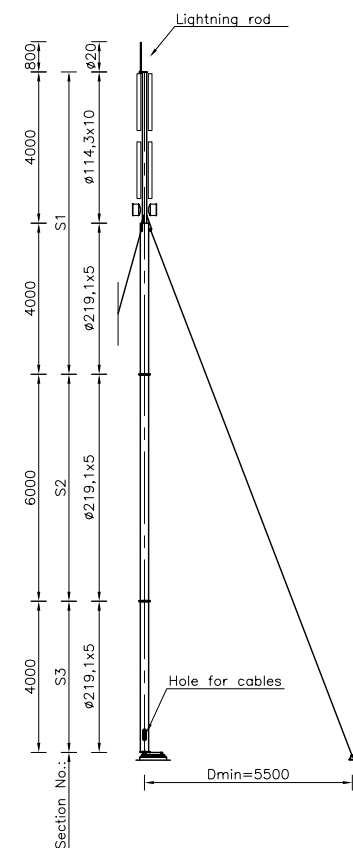
Load:
Antenna load: 1,2 m² in level 37 m
1,2m² in level 35,5 m
0,75 m² in level 34,0 m

Antenna feeders are placed inside the pole from roof level to 4 m under top pole level. The guyed rooftop poles are equipped with Söll Safety Rail system, type Y-spar from roof under top pole level.

Guy:
Guy ropes are of the spiral strand type. The rope dimension is Ø10.8 mm with an area of 69 mm² and the construction 1x19. Wires are hot dip galvanised. Minimum breaking load of guys is 90 kN and modulus of elasticity is 160.000 MPa. Guy tensioners are of the type 3 4191 03 (M16 x 300) from Necks Electric.

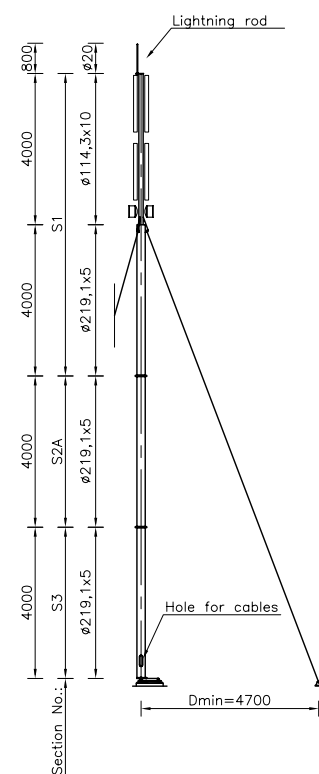
Guy ropes are attached to the mast sections by means of a short guy tensioner. The same system is used at the foundation. The lengths of the guys are cut at site by the contractor responsible for the erection of the guyed rooftop pole.

Fastening to roof:
Bolts, nuts and washers for fastening to roof is not included in RAMBOLL delivery.



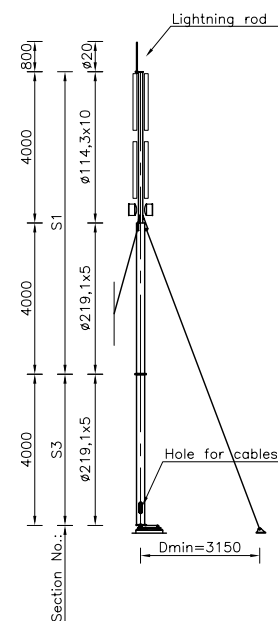
Drawing: GRP-X-011

18 m Guyed Rooftop Pole, 1:100



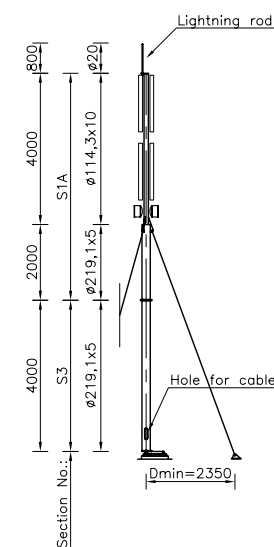
Drawing: GRP-X-012

16 m Guyed Rooftop Pole, 1:100



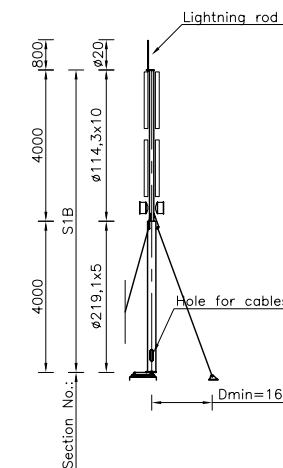
Drawing: GRP-X-013

12 m Guyed Rooftop Pole, 1:100



Drawing: GRP-X-014

10 m Guyed Rooftop Pole, 1:100



Drawing: GRP-X-015

8 m Guyed Rooftop Pole, 1:100

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Original paper size A1

Rev.	Date	Prepared	Checked	Approved	Rev. Date
	2007.04.23	PG/PHC	KRN	JDP	
Note regarding Söll Safety changed					
RAMBOLL					
Project Products Scale 1:100					
Ramboll Guyed Rooftop Pole					
Guyed Rooftop Pole Series					
Brededevej 2 DK-2830 Virum Tlf 45 98 60 00 Fax 45 98 67 00					
File GRP-X-001 Drawing no. GRP-X-001					

GRP-X-001