



MAT POUR CANDELABRE SOLAIRE 7M

NOTE DE CALCUL ET DE RESISTANCE

NOTICE TECHNIQUE DE CALCUL ET DE RESISTANCE DU MAT 7M80

EN40 design of steel poles for street lighting compliant to EN 40-3-1 and EN 40-3-3 rules
Norme EN40 (En 40-3-1 et En 40-3-3) du mât 7M80 pour candélabre solaire 7M :

1) Pole data

Total height $H_{tot} = 7800$ mm

1.1) Pole

Pole height $H_{fusto} = 7000$ mm

pole construction **Stepped**

	Section	Lenght
Section 4	102x 4	1300
Section 3	114x 4	1500
Section 2	139x 4	2000
Section 1	168x 4	2200

1.2) Configuration

Type **Pole Tip**

1.3) Fixture

Weight $Q_t = 1196$ N
 orizontal displacement $dg_x = 10$ mm
 vertical displacement $dg_z = 200$ mm
 Wind area X $A_X = 0,2$ m²
 Wind Area y $A_Y = 0,35$ m²
 Pressure ratio $C_p = 1$

1.4) Cable slot

Dimension axb $h_a = NA$
 Height from gound $h_a = ---$ mm

1.5) Material

Yeld strenght $f_y = 235$ N/mm²
 E Modulus $E = 206000$ N/mm²
 T Modulus $G = 80000$ N/mm²





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2) Design parameters

2.1) Safety ratios

Material	gamma_M =	1,05
Vertical loads	gamma_L,G =	1,2
Wind load	gamma_L,W =	1,4
Resistance class		A

2.2) Wind Action

EN40-3-1 Parameters

Vref	v_ref,10 =	34	m/sec
Terrain		I	
Topography ratio	C_t =	1	
T		25	years

Wind velocity at 10 m above ground= 50.04 m/sec, referred to a pression $q(10)*Ce$, 10 mt above ground

3) Design Results

3.1) Dynamic behaviour

To	T_0 =	0,7959	sec
Dynamic amplification ratio		1,3148	

3.2) Deflection test

Max vertical deflection	f_v =	0,03	mm
Max horizontal deflection	f_x =	80,31	mm
	f_y =	114,02	mm
Elasticity ratio	f_v/w =	0	
	f_x/(H+w) =	0,0115	
	f_y/(H+w) =	0,0163	
Bending test		TEST OK	
Bending class		CLASSE 1	

3.3) Stress test

usage ratio	Check 3 =	0,4659	< 1
CC	CV =	3	
	Sezione =	1,0000	
		TEST OK	

3.4) Cable slot test

usage ratio Upper section	Check 4 =	0,2804	< 1
usage ratio Lower section	Check 5 =	0,3856	< 1
		TEST OK	

3.5) Wind action on ground

Case 5 (2) Wind X

N = 2528 N





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Case 6 (3) Wind Y

V = 1770 N
M = 8312 Nm

N = 2528 N
V = 2165 N
M = 11207 Nm

3.6) Buried lenght

Buried lenght of pole

L_{inf} = 800 mm

3.6.1) Minimum buried lenght in a concrete basement

Rif. Quattordio - Sostegni Tubolari di acciaio - Pitagora ed. 1997 - Cap. 14.2.1

Concrete resistnace class

R_{ck} = 20 N/mm²

Minimum length

e < 800. mm

TEST OK

