

## FISA TEHNICA nr. 1 - Stalp iluminat tip MAST cu coroana mobila

Conpet Stations, Valcea  
H=16m pole with mobile crown Malto  
max. 6pcs. OMNistar floods + gear box

Shaft list (The diameters written here under are external diameters)

Shaft	Material	Nr Side	Base Flat (mm)	Top Flat (mm)	Base Angl (mm)	Top Angl (mm)	Thk (mm)	Length (m)	Slip joint (m)	Cone (mm/m)	Nr shell	Base dev (mm)	Top dev (mm)	Black weight (kg)	Galvanized weight (kg)
Pole 16m MALTO	S355	16	520.00	364.47	530.19	371.62	4.0	8.30	0.60	19.105	2	820.10	572.61	363	378
Pole 16m MALTO	S355	16	385.53	230.00	393.08	234.51	4.0	8.30	-	19.105	1	1212.98	718.01	252	262
Right shaft0.2	S355	-	219.10	219.10	219.10	219.10	4.0	0.20	-	0.000	1	675.76	675.76	4	4
Total														620	644

### BASEPLATE

CIRCULAR BASEPLATE		
Material	S355	-
External diameter	770.000	mm
Drilling diameter	630.000	mm
Thickness	35.0000	mm
Anchor bolts	8 Anchor bolts Right TOR M30/32 x 1090 B500B	

- Black weight : 66 kg
- Galvanized weight : 66 kg

### FLANGE

Flange		
Flange level	16.000	m
External diameter	440.000	mm
Drilling diameter	360.000	mm
Thickness	16.0000	mm
Material	S235	-
3 bolt(s) M20 of class 8.8		-

- Black weight : 27 kg
- Galvanized weight : 27 kg

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## GENERAL INFORMATION

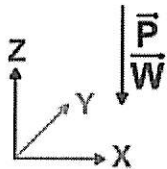
### STANDARD USED

EUROCODE 1 - PN EN 1991-1-4, European standard with Polish national application (C) Copyright 2010...2016  
[Version 3 Release Jan 22 2014]

### MATERIALS

Name	E (daN/mm <sup>2</sup> )	G (daN/mm <sup>2</sup> )	Rm (daN/mm <sup>2</sup> )	Rt (daN/mm <sup>2</sup> )	Rc (daN/mm <sup>2</sup> )	Rs (daN/mm <sup>2</sup> )	Density (daN/mm <sup>2</sup> )	Re (kg/dm <sup>3</sup> )	Poisson	Allon (%)
S355	21000	8070	35.5	49	0	0	0	7.85	0.3	18

### SYSTEM OF COORDINATES



## STRUCTURE DESCRIPTION

### SHAFTS LIST (Diameters are outside diameters)

Name	Material	Nb sides	Bot/Flat (mm)	Top/Flat (mm)	Bot/Pnt (mm)	Top/Pnt (mm)	Thick (mm)	Length (m)	Level (m)
Pole 16m MALTO	S355	16	520.0	364.5	530.2	371.6	4.00	8.300	8.300
	S355	16	385.5	230.0	393.1	234.5	4.00	8.300	16.000
Right shaft0.2	S355	0	219.1	219.1	219.1	219.1	4.00	0.200	16.200

- Pole elements weight : 619.695 kg

### HAND HOLES LIST

Description	Angle (deg)	GndLev (mm)	Length (mm)	Width (mm)
	0.0	600.0	1000.0	320.0
Reinforcements				

1000 x 320 with frame	Name	Parameters	Md	Angle (deg)	Tx (mm)	Ty (mm)	Sy
	PLATE reinforcement	Length = 100 mm Thickness = 12 mm	5	0	-25	0	1

## LOADING

### LOAD CASE COMBINATION LIST

Combination	Weight factor	Wind factor
Survival wind (ULS)	1.35	1.5
Deflection (SLS)	1	1

## CALCULATION RESULTS

### COMBINATION RESULTS Survival wind (ULS) :

Name	Pressure (daN/m <sup>2</sup> )	Speed (m/s)	Direction (X; Y; Z)	Additional parameters		
				Name	Value	Unit
Wind 25 m/s	39.1	25.012	(0; 1; 0)	Version	1	
				Terrain	3	
				Region	0	
				Site altitude	0	
				Base value of reference wind pressure	0.000391	
				Air density	0.00125	
				Rugosity length	0.05	kg/dm <sup>3</sup>
				Minimal height	2	m
				Base value of reference wind speed	25	m/s
				Direction coefficient	1	
				Season coefficient	1	
				Return period	50	
				Shape factor	0.15	
				Exposant for return period	0.5	
				Ground factor	0.19	m
				Bridge height	0	
				Orography coefficient	1	
				Input of orography coefficient	Yes	
				Site	0	m
				Length of the slope side	0	m
				Length of the slope side under wind	0	m
				Horiz. distance between the site and the top of the obstacle	0	
				Obstacle height	0	

Name	Weight (kg or kg/m)	Area (EPA) (m <sup>2</sup> or m <sup>2</sup> /m)	Load (daN or daN/m)	Moment (daN.m or daN)	Start point (mm)	End point (mm)
MALTO crown	220	1.5			(0; 0; 16200)	
6pcs. (OMNIstar + gear box)	130	2			(0; 0; 16200)	
Cables	3				(0; 0; 2000)	(0; 0; 16000)

### NATURAL FREQUENCY

	Order 1	Unit
Natural period	1.004767	s
Natural frequency	0.995256	s <sup>-1</sup>
Natural pulsation	6.253375	rd/s

Level	De/AgI	Inertia (cm <sup>4</sup> )	Moments (daN.m)	Loads (daN)	Coefficients

(m)	(mm)	Ix	Iy	X	Y	Z	X	Y	Z	Global	Cf	Cr	Co	Iv	Ce	CsCd
0.00	530.2	22151.3	22151.3	-17527.7	0.0	0.0	0.0	1386.3	-1351.3	0.85	0.64	0.53	1.00	0.27	0.95	1.40
0.50	520.6	20966.5	20966.5	-16836.6	0.0	0.0	0.0	1373.2	-1317.5	1.02	0.64	0.61	1.00	0.27	1.15	1.40
0.60	518.7	20063.4	25052.7	-16699.1	0.0	0.0	0.0	1370.1	-1310.8	1.14	0.64	0.66	1.00	0.27	1.27	1.40
1.10	509.2	18720.4	23903.4	-16015.6	0.0	0.0	0.0	1353.0	-1272.5	1.27	0.64	0.71	1.00	0.27	1.42	1.40
1.60	499.6	17435.3	22796.6	-15339.8	0.0	0.0	0.0	1334.2	-1234.9	1.36	0.64	0.75	1.00	0.27	1.52	1.40
2.00	492.0	17667.0	17667.0	-14805.4	0.0	0.0	0.0	1318.4	-1207.8	1.43	0.64	0.78	1.00	0.26	1.61	1.40
2.50	482.4	16649.5	16649.5	-14145.5	0.0	0.0	0.0	1297.9	-1174.5	1.51	0.64	0.80	1.00	0.25	1.69	1.40
3.00	472.9	15671.8	15671.8	-13494.9	0.0	0.0	0.0	1276.8	-1141.7	1.57	0.64	0.83	1.00	0.24	1.76	1.40
3.50	463.3	14733.2	14733.2	-12854.0	0.0	0.0	0.0	1255.3	-1109.7	1.62	0.64	0.85	1.00	0.23	1.82	1.40
4.00	453.8	13832.8	13832.8	-12223.1	0.0	0.0	0.0	1233.5	-1078.2	1.67	0.64	0.86	1.00	0.22	1.87	1.40
4.50	444.2	12969.9	12969.9	-11602.2	0.0	0.0	0.0	1211.5	-1047.3	1.72	0.64	0.88	1.00	0.22	1.92	1.40
5.00	434.7	12143.6	12143.6	-10991.6	0.0	0.0	0.0	1189.4	-1017.1	1.76	0.64	0.90	1.00	0.21	1.97	1.40
5.50	425.1	11353.2	11353.2	-10391.3	0.0	0.0	0.0	1167.2	-987.5	1.80	0.64	0.91	1.00	0.21	2.01	1.40
6.00	415.6	10597.9	10597.9	-9801.4	0.0	0.0	0.0	1145.1	-958.5	1.83	0.64	0.92	1.00	0.21	2.05	1.40
6.50	406.0	9876.8	9876.8	-9221.9	0.0	0.0	0.0	1123.0	-930.1	1.87	0.64	0.94	1.00	0.20	2.09	1.40
7.00	396.5	9189.2	9189.2	-8652.7	0.0	0.0	0.0	1101.0	-902.4	1.90	0.64	0.95	1.00	0.20	2.13	1.40
7.50	386.9	8534.3	8534.3	-8094.0	0.0	0.0	0.0	1079.2	-875.2	1.92	0.64	0.95	1.00	0.20	2.15	1.40
7.70	383.1	8281.3	8281.3	-7873.5	0.0	0.0	0.0	1070.5	-864.6	1.94	0.64	0.96	1.00	0.20	2.18	1.40
8.20	381.9	8201.6	8201.6	-7329.5	0.0	0.0	0.0	1048.8	-813.5	1.96	0.64	0.97	1.00	0.19	2.20	1.40
8.30	381.6	8185.7	8185.7	-7222.1	0.0	0.0	0.0	1044.4	-803.3	1.98	0.64	0.97	1.00	0.19	2.22	1.40
8.80	372.1	7580.0	7580.0	-6691.1	0.0	0.0	0.0	1022.5	-777.1	2.00	0.64	0.98	1.00	0.19	2.25	1.40
9.30	362.5	7004.9	7004.9	-6170.7	0.0	0.0	0.0	1000.9	-751.6	2.03	0.64	0.99	1.00	0.19	2.27	1.40
9.80	353.0	6459.6	6459.6	-5660.7	0.0	0.0	0.0	979.7	-726.6	2.06	0.64	1.00	1.00	0.19	2.30	1.40
10.30	343.4	5943.4	5943.4	-5161.1	0.0	0.0	0.0	958.7	-702.3	2.08	0.64	1.01	1.00	0.19	2.33	1.40
10.80	333.9	5455.5	5455.5	-4671.8	0.0	0.0	0.0	938.0	-678.6	2.10	0.64	1.02	1.00	0.18	2.36	1.40
11.30	324.3	4995.0	4995.0	-4192.6	0.0	0.0	0.0	917.8	-655.6	2.12	0.64	1.02	1.00	0.18	2.38	1.40
11.80	314.7	4561.2	4561.2	-3723.4	0.0	0.0	0.0	897.8	-633.1	2.15	0.64	1.03	1.00	0.18	2.41	1.40
12.30	305.2	4153.3	4153.3	-3264.0	0.0	0.0	0.0	878.3	-611.3	2.17	0.64	1.04	1.00	0.18	2.43	1.40
12.80	295.6	3770.4	3770.4	-2814.3	0.0	0.0	0.0	859.2	-590.1	2.19	0.64	1.05	1.00	0.18	2.45	1.40
13.30	286.1	3411.9	3411.9	-2374.1	0.0	0.0	0.0	840.6	-569.5	2.21	0.64	1.05	1.00	0.18	2.47	1.40
13.80	276.5	3076.8	3076.8	-1943.3	0.0	0.0	0.0	822.4	-549.5	2.23	0.64	1.06	1.00	0.18	2.50	1.40
14.30	267.0	2764.4	2764.4	-1521.6	0.0	0.0	0.0	804.6	-530.1	2.25	0.64	1.07	1.00	0.18	2.52	1.40
14.80	257.4	2473.9	2473.9	-1109.0	0.0	0.0	0.0	787.4	-511.4	2.26	0.64	1.07	1.00	0.17	2.54	1.40
15.30	247.9	2204.5	2204.5	-705.2	0.0	0.0	0.0	770.6	-493.3	2.28	0.64	1.08	1.00	0.17	2.56	1.40
15.80	238.3	1955.4	1955.4	-310.0	0.0	0.0	0.0	754.3	-475.8	2.29	0.64	1.08	1.00	0.17	2.57	1.40
16.00	234.5	1861.3	1861.3	-154.3	0.0	0.0	0.0	748.0	-469.0	2.29	0.64	1.08	1.00	0.17	2.57	1.40
16.00	219.1	1563.3	1563.3	-154.3	0.0	0.0	0.0	748.0	-469.0	2.47	0.68	1.08	1.00	0.17	2.58	1.40
16.20	219.1	1563.3	1563.3	-0.0	0.0	0.0	0.0	741.6	-463.4	2.47	0.68	1.08	1.00	0.17	2.58	1.40

Level (m)	Allowable stress	Effective stress							CSR	Deflec (mm)	Angle (deg)
	Tot (daN/mm2)	Bend/X (daN/mm2)	Bend/Y (daN/mm2)	Cmp (daN/mm2)	Tor (daN/mm2)	Shear/X (daN/mm2)	Shear/Y (daN/mm2)	Tot (daN/mm2)			
0.00	27.27	-20.57	0.00	-0.21	0.00	0.00	0.21	20.78	0.76	0.00	0.1087
0.50	32.27	-20.50	0.00	-0.20	0.00	0.00	0.21	20.71	0.64	0.95	0.1307
0.60	32.27	-22.08	0.00	-0.18	0.00	0.00	0.19	22.25	0.69	1.18	0.2458
0.60	28.82	-14.18	0.00	-0.18	0.00	0.00	0.19	14.36	0.50	HAND HOLE	
0.60	28.82	-14.18	0.00	-0.18	0.00	0.00	0.19	14.36	0.50	HAND HOLE	
1.10	32.27	-22.19	0.00	-0.17	0.00	0.00	0.19	22.36	0.69	3.32	0.3642
1.10	28.82	-14.01	0.00	-0.17	0.00	0.00	0.19	14.19	0.49	HAND HOLE	
1.10	28.82	-14.01	0.00	-0.17	0.00	0.00	0.19	14.19	0.49	HAND HOLE	

1.60	32.27	-22.30	0.00	-0.17	0.00	0.00	0.19	22.47	0.70	6.50	0.4551
1.60	28.82	-13.83	0.00	-0.17	0.00	0.00	0.19	14.00	0.49	HAND HOLE	
1.60	28.82	-13.83	0.00	-0.17	0.00	0.00	0.19	14.00	0.49	HAND HOLE	
2.00	32.27	-20.22	0.00	-0.20	0.00	0.00	0.22	20.42	0.63	9.68	0.5702
2.50	32.27	-20.10	0.00	-0.19	0.00	0.00	0.22	20.30	0.63	14.65	0.6869
3.00	32.27	-19.97	0.00	-0.19	0.00	0.00	0.22	20.16	0.62	20.65	0.8052
3.50	32.27	-19.82	0.00	-0.19	0.00	0.00	0.22	20.02	0.62	27.67	0.9250
4.00	32.27	-19.66	0.00	-0.19	0.00	0.00	0.22	19.85	0.62	35.75	1.0462
4.50	32.27	-19.49	0.00	-0.19	0.00	0.00	0.22	19.68	0.61	44.88	1.1690
5.00	32.27	-19.29	0.00	-0.18	0.00	0.00	0.23	19.48	0.60	55.08	1.2932
5.50	32.27	-19.08	0.00	-0.18	0.00	0.00	0.23	19.27	0.60	66.36	1.4187
6.00	32.27	-18.85	0.00	-0.18	0.00	0.00	0.23	19.03	0.59	78.74	1.5454
6.50	32.27	-18.59	0.00	-0.18	0.00	0.00	0.23	18.77	0.58	92.23	1.6734
7.00	32.27	-18.31	0.00	-0.18	0.00	0.00	0.23	18.49	0.57	106.83	1.8023
7.50	32.27	-17.99	0.00	-0.18	0.00	0.00	0.23	18.17	0.56	122.56	1.8541
7.70	32.27	-17.86	0.00	-0.17	0.00	0.00	0.23	18.04	0.56	129.03	1.9800
8.20	32.27	-16.73	0.00	-0.16	0.00	0.00	0.23	16.90	0.52	146.31	2.0042
8.30	32.27	-16.51	0.00	-0.16	0.00	0.00	0.23	16.68	0.52	149.80	2.1246
8.80	32.27	-16.11	0.00	-0.16	0.00	0.00	0.23	16.27	0.50	168.34	2.2449
9.30	32.27	-15.66	0.00	-0.16	0.00	0.00	0.23	15.82	0.49	187.93	2.3648
9.80	32.27	-15.17	0.00	-0.16	0.00	0.00	0.23	15.33	0.48	208.57	2.4838
10.30	32.27	-14.62	0.00	-0.16	0.00	0.00	0.23	14.78	0.46	230.24	2.6014
10.80	32.27	-14.02	0.00	-0.15	0.00	0.00	0.24	14.18	0.44	252.94	2.7171
11.30	32.27	-13.35	0.00	-0.15	0.00	0.00	0.24	13.51	0.42	276.65	2.8300
11.80	32.27	-12.60	0.00	-0.15	0.00	0.00	0.24	12.76	0.40	301.34	2.9393
12.30	32.27	-11.76	0.00	-0.15	0.00	0.00	0.24	11.92	0.37	326.99	3.0438
12.80	32.27	-10.82	0.00	-0.15	0.00	0.00	0.24	10.98	0.34	353.55	3.1422
13.30	32.27	-9.76	0.00	-0.15	0.00	0.00	0.25	9.92	0.31	380.96	3.2327
13.80	32.27	-8.57	0.00	-0.15	0.00	0.00	0.25	8.72	0.27	409.17	3.3134
14.30	32.27	-7.21	0.00	-0.15	0.00	0.00	0.25	7.37	0.23	438.08	3.3815
14.80	32.27	-5.66	0.00	-0.15	0.00	0.00	0.26	5.82	0.18	467.58	3.4339
15.30	32.27	-3.89	0.00	-0.15	0.00	0.00	0.26	4.06	0.13	497.54	3.4665
15.80	32.27	-1.85	0.00	-0.15	0.00	0.00	0.27	2.05	0.06	527.79	3.4731
16.00	32.27	-0.95	0.00	-0.15	0.00	0.00	0.27	1.20	0.04	539.91	3.4731
16.00	32.27	-1.08	0.00	-0.16	0.00	0.00	0.29	1.33	0.04	539.91	3.4758
16.20	32.27	-0.00	0.00	-0.15	0.00	0.00	0.28	0.52	0.02	552.04	3.4758



Conpet Stations, Valcea  
H=16m pole with mobile crown Malto  
max. 6pcs. OMNistar floods + gear box

#### STANDARD USED

EUROCODE 1 - PN EN 1991-1-4, European standard with Polish national application (C) Copyright  
2010...2016 Version3 Release Jan 22 2014

#### MATERIAL

Name	E (daN/mm <sup>2</sup> )	G (daN/mm <sup>2</sup> )	Density (kg/dm <sup>3</sup> )	Poisson	Re (daN/mm <sup>2</sup> )	Rm (daN/mm <sup>2</sup> )	Elong %
S355	21000.00	8070.00	7.85	0.30	35.50	49.00	18.00
B500B	21000.00	8070.00	7.85	0.30	50.00	54.00	5.00

#### MOMENTS AND LOADS AT THE BASE OF THE POLE

MOMENTS			FORCES		
Mx	-17527.7	daN.m	Fx	0.0	daN
My	0.0	daN.m	Fy	1386.3	daN
Mz	0.0	daN.m	Fz	-1351.3	daN

#### CALCULATION HYPOTHESIS

Outside diameter of the shaft	530.1	mm
Thickness of the shaft	4.0	mm

#### BASEPLATE

Material	S355	-
External diameter	770.0	mm
Internal diameter	535.1	mm
Thickness	35.0	mm

#### BOLTS

Number of bolts	8	-
Bolts	Right TOR M30/32 x 1090 B500B	-
Bolts circle	630.0	mm

#### CALCULATION RESULTS

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Anchor bolts analysis		
Axial load on the most stressed bolt	14079.8	daN
Allowable tensile load on the bolt (with a partial safety coefficient=1.25)	18539.9	daN
Allowable pulling load on the bolt (with a partial safety coefficient=1.50)	21466.0	daN
Characteristic strength of concrete in compression (Fck)	2.0	daN/mm <sup>2</sup>
Shear load on the most stressed bolt	173.3	daN
Allowable shear load in the bolt (with a partial safety coefficient=1.25)	12117.6	daN
Stress ratio (CSR)	0.759431	-
The anchor bolts are sufficient		
Bending analysis		
Bending moment due to the axial load	12.0	daN.m
Bending moment due to the bending moment MR	527.5	daN.m
Total bending moment	539.5	daN.m
Section modulus	25.4	cm <sup>3</sup>
Bending stress including $\Psi$ coefficient	17.9	daN/mm <sup>2</sup>
Allowable bending stress	31.4	daN/mm <sup>2</sup>
Twisting analysis		
Twisting moment	667.3	daN.m
Twisting modulus	43.5	cm <sup>3</sup>
Shear stress including $\Psi$ coefficient	13.0	daN/mm <sup>2</sup>
Factored shear stress including $\Psi$ coefficient	19.9	daN/mm <sup>2</sup>
Allowable shear stress	31.4	daN/mm <sup>2</sup>



## FISA TEHNICĂ NR. 2

### APARAT DE ILUMINAT – tip Schreder OMNISTAR LED

Nr. Crt.	Specificații tehnice solicitate prin caietul de sarcini	Specificații tehnice oferite
0	<b>Parametri tehnici și funcționali:</b>	
1	<b>Proiector cu LED</b>	
	<b>Producator</b>	
	<b>TIP/Cod comanda</b>	
1.1	Alimentare electrica: -tensiune nominala 230V -frecventa nominala 50Hz	
1.2	Grad de protectie compartiment optic minim IP 66	
1.3	Grad de protectie compartiment accesorii electrice minim IP 66	
1.4	Clasa de izolatie electrica: I sau II	
1.5	Rezistenta la impact (minim) IK08	
1.6	Dimensiuni aparat de iluminat LxIxH: maxim 532x530x80mm	
1.7	Aparat de iluminat cu urmatoarele componente: - carcasa realizată din aluminiu sau alt material, in conditiile in care acesta este reciclabil în proportie de minim 90%, confera o rezistenta mecanica buna in timp; - difuzor din sticlă tratată termic, plana sau curbata, atasat ermetic de capac; - distributia luminoasă va fi de tip stradal si nu va fi influentata de aparitia unor defecte asupra ledurilor; fiecare led va avea asociata acelasi tip de lentila specifica, care reproduce distributia luminoasa completa a aparatului de iluminat; - sistemul de montaj va permite montarea in varf de stalp sau pe brat; - posibilitatea de reglare a unghiului de inclinare minim 0-15 grade	<div style="border: 1px solid black; padding: 5px; text-align: center;"> <p>Autoritatea Națională de Reglementare În Domeniul Energiei</p> <p><b>COȘAREANU MARIANA</b> <b>CNP: 2661112182812</b></p> <p><i>Mariana Coșareanu</i></p> <p>Verificator de protecție de instalații electrice Autorizație nr. 526 / 2014</p> <p>Valabilă până la data de : 16.05.2019</p> </div>
1.8	Echipare cu sursa luminoasa tip LED de mare putere (se va preciza modelul si producatorul)	
1.9	Temperatura de culoare Tc cuprinsa intre 3000 K si 4250K	
1.10	Indicele de redare al culorilor Ra≥75	
1.11	Se va prezenta diagrama polara a intensitatii luminoase si curbele K pentru aparatul de iluminat propus si in format electronic din programul de calcul folosit *	
1.12	Durata de viata - minim 100.000 ore de functionare-flux luminos minim 80% din cel initial	
1.13	Prevazut in interior cu toate accesoriile electrice necesare bunei functionari a LED-urilor (ex: sursa stabilizată de curent )	
1.14	Distributia luminoasă va fi de tip stradal si nu va fi influentata de aparitia unor defecte asupra ledurilor; fiecare led va avea asociata o lentila specifica care reproduce distributia luminoasa completa a aparatului	

	- valoarea intensitatii luminoase va fi determinata de numarul de LED-uri și/sau valoarea curentului aplicat la bornele LED-urilor	
1.15	Balastul electronic, compatibil cu tipul de sursa luminoasa utilizata, va avea minim urmatoarele functii: - permite reducerea fluxului luminos cu minim 90% din valoarea fluxului nominal, in trepte de minim 1% - asigurarea funcționarii cu factorul de putere >0,92 - puterea electrica absorbita de aparatul de iluminat (inclusiv pierderile pe balastul electronic) va fi de maxim 470W - flux luminos emis de aparatul de iluminat este de 52.5 klm	
1.16	Prevăzut cu protectie la descărcări atmosferice minim 10 kV	
1.17	Posibilitate de vopsire a aparatului in orice culoare din paleta RAL(va fi stabilita de catre beneficiar)	
1.18	Se va prezenta declaratie de conformitate a produselor cu cerintele esentiale prevăzute de directivele Uniunii Europene (marca CE)	
1.19	Se vor prezenta certificate emise de organisme europene abilitate, din care sa rezulte respectarea integrala a cerintelor EN 60598-1:2008 + A11:2009, EN 60589-2-3:2003 pentru aparatele de iluminat oferate, pentru a garanta conformitatea a produselor cu standardele de siguranta	
1.20	Se vor prezenta certificate ENEC sau autoritate de certificare afiliata ENEC	
1.21	Se va prezenta Autorizatia de comercializare de la producator sau distribuitor in cadrul licitatiei de atribuire, pentru a garanta autenticitatea produselor	
1.22	Se va prezenta mostra corp iluminat in cadrul licitatiei de atribuire	
2	<b>Conditii de garantie si post garantie</b>	
2.1	Garantie aparat de iluminat – minim 60 luni	
2.2	Garantie sursa de alimentare – minim 60 luni	
2.3	Garantie sursa LED – minim 60 luni	


\*aparatele de iluminat mai sus descrise vor avea aceiasi fotometrie pentru obtinerea rezultatelor din proiectul luminotehnic, in acest sens se vor prezenta calculele luminotehnice pentru situatia data in caietul de sarcini, aferent proiectului avizat



FURNIZOR

### FISA TEHNICĂ NR. 3

#### APARAT DE ILUMINAT – tip Schreder AMPERA LED

Nr. Crt.	Specificații tehnice solicitate prin caietul de sarcini	Specificații tehnice oferite
0	<b>Parametri tehnici și funcționali:</b>	
1	<b>Aparat de iluminat cu LED</b>	
	<b>Producator</b>	
	<b>TIP/Cod comanda</b>	
1.1	Alimentare electrica: -tensiune nominala 230V -frecventa nominala 50Hz	
1.2	Grad de protectie compartiment optic minim IP 66	
1.3	Grad de protectie compartiment accesorii electrice minim IP 66	
1.4	Clasa de izolatie electrica: I sau II	
1.5	Rezistenta la impact (minim) IK08	
1.6	Dimensiuni aparat de iluminat LxIxH: maxim 900x438x135mm	
1.7	Aparat de iluminat cu urmatoarele componente: - carcasa realizată din aluminiu sau alt material, in conditiile in care acesta este reciclabil în proportie de minim 90%, confera o rezistenta mecanica buna in timp; - difuzor din sticlă tratată termic, plana sau curbata, atasat ermetic de capac; - distributia luminoasă va fi de tip stradal si nu va fi influentata de aparitia unor defecte asupra ledurilor; fiecare led va avea asociata acelasi tip de lentila specifica, care reproduce distributia luminoasa completa a aparatului de iluminat; - sistemul de montaj va permite montarea in varf de stalp sau pe brat; - posibilitatea de reglare a unghiului de inclinare minim 0-15 grade	<div style="border: 1px solid black; padding: 5px; text-align: center;"> <p>Autoritatea Națională de Reglementare In Domeniul Energiei</p> <p><b>COȘAREANU MARIANA</b> CNP: 2661112182812</p>   <p>Verificator de protecție de instalații electrice Autorizație nr. 526 / 2014 Valabila până la data de : 16.05.2019</p> </div>
1.8	Echipare cu sursa luminoasa tip LED de mare putere (se va preciza modelul si producatorul)	
1.9	Temperatura de culoare Tc cuprinsa între 3000 K si 4250K	
1.10	Indicele de redare al culorilor Ra≥75	
1.11	Se va prezenta diagrama polara a intensitatii luminoase si curbele K pentru aparatul de iluminat propus si in format electronic din programul de calcul folosit*	
1.12	Durata de viata - minim 100.000 ore de functionare-flux luminos minim 80% din cel initial	
1.13	Prevazut in interior cu toate accesoriile electrice necesare bunei functionari a LED-urilor (ex: sursa stabilizată de curent )	
1.14	Distributia luminoasă va fi de tip stradal si nu va fi influentata de aparitia unor defecte asupra ledurilor; fiecare led va avea asociata o lentila specifica care reproduce distributia luminoasa completa a aparatului	

	- valoarea intensitatii luminoase va fi determinata de numarul de LED-uri și/sau valoarea curentului aplicat la bornele LED-urilor	
1.15	Balastul electronic, compatibil cu tipul de sursa luminoasa utilizata, va avea minim urmatoarele functii: - permite reducerea fluxului luminos cu minim 90% din valoarea fluxului nominal, in trepte de minim 1% - asigurarea funcționarii cu factorul de putere >0,92 - puterea electrica absorbita de aparatul de iluminat (inclusiv pierderile pe balastul electronic) va fi de maxim 139W si 213W - flux luminos emis de aparatul de iluminat este de 17,8 klm si 26,7 klm	
1.16	Prevăzut cu protectie la descărcări atmosferice minim 10 kV	
1.17	Posibilitate de vopsire a aparatului in orice culoare din paleta RAL(va fi stabilita de catre beneficiar)	
1.18	Se va prezenta declaratie de conformitate a produselor cu cerintele esentiale prevăzute de directivele Uniunii Europene (marca CE)	
1.19	Se vor prezenta certificate emise de organisme europene abilitate, din care sa rezulte respectarea integrala a cerintelor EN 60598-1:2008 + A11:2009, EN 60589-2-3:2003 pentru aparatele de iluminat oferate, pentru a garanta conformitatea a produselor cu standardele de siguranta	
1.20	Se vor prezenta certificate ENEC sau autoritate de certificare afiliata ENEC	
1.21	Se va prezenta Autorizatia de comercializare de la producator sau distribuitor in cadrul licitatiei de atribuire, pentru a garanta autenticitatea produselor	
1.22	Se va prezenta mostra corp iluminat in cadrul licitatiei de atribuire	
<b>2</b>	<b>Conditii de garantie si post garantie</b>	
2.1	Garantie aparat de iluminat – minim 60 luni	
2.2	Garantie sursa de alimentare – minim 60 luni	
2.3	Garantie sursa LED – minim 60 luni	

\*aparatele de iluminat mai sus descrise vor avea aceiasi fotometrie pentru obtinerea rezultatelor din proiectul luminotehnic, in acest sens se vor prezenta calculele luminotehnice pentru situatia data in caietul de sarcini, aferent proiectului avizat



FURNIZOR