



REPUBLICA DE COLOMBIA
DEPARTAMENTO DE ARAUCA
MUNICIPIO DE SARAVENA



MEMORIAS DE CÁLCULO

OPTIMIZACIÓN Y MODERNIZACIÓN DE LAS REDES DE ALUMBRADO PÚBLICO EN EL MUNICIPIO DE SARAVENA, DEPARTAMENTO DE ARAUCA

OBJETO: ILUMINACIÓN CON LUMINARIA LED

CAPITULO ÍTEM

1.1

SUMINISTRO E INSTALACIÓN DE LUMINARIA LED DE 47W, PARA ALUMBRADO PÚBLICO DE VÍAS URBANAS Y RURALES

ESQUEMA GRÁFICO



NOTA: Los puntos a intervenir se encuentran anejos con sus respectivas coordenadas geográficas

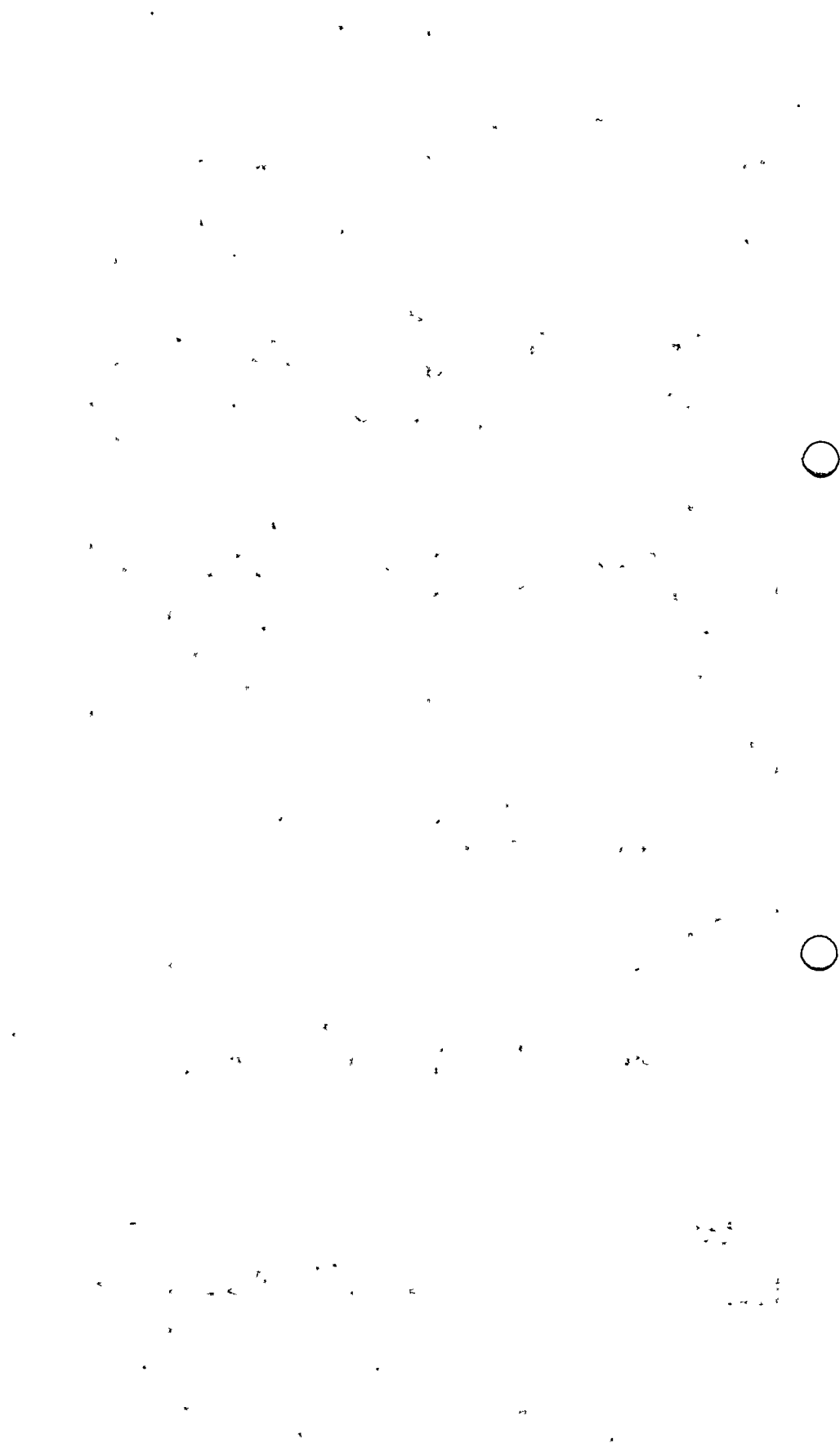


Vo Bo:
ING. ERIC RIVERA SALCEDO
SECRETARIO DE PLANEACION E INFRAESTRUCTURA

Realizó:
ING. CRISTIAN RICARDO SOMOSA FABÓN
PROFESIONAL DE APOYO SPIM



Calle 25 No. 14-40 Barrio Centro - Cúcuta, Pácora, 410010
alcaldia@saravena.gov.co - Teléfono: (+57) 8892055 - www.saravena-arauca.gov.co
planeacion@saravena-arauca.gov.co - alcaldia@saravena-arauca.gov.co





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BARRIO 20 DE JULIO							
ITEM	REFERENCIA GPS	No. PUNTO	LATITUD (DECIMALES)	LONGITUD (DECIMALES)	LATITUD (G.M.S)	LONGITUD (G.M.S)	CANT. LUM.
1	WAYPOINT	32	6,945423	-71,889686	6° 56' 43,52" N	71° 53' 22,87" W	1
2	WAYPOINT	33	6,945414	-71,889696	6° 56' 43,49" N	71° 53' 22,91" W	1
3	WAYPOINT	34	6,945285	-71,889409	6° 56' 43,03" N	71° 53' 21,87" W	1
4	WAYPOINT	35	6,945156	-71,889153	6° 56' 42,56" N	71° 53' 20,95" W	1
5	WAYPOINT	36	6,945014	-71,888892	6° 56' 42,05" N	71° 53' 20,01" W	1
6	WAYPOINT	37	6,944913	-71,888696	6° 56' 41,69" N	71° 53' 19,31" W	1
7	WAYPOINT	38	6,944796	-71,888425	6° 56' 41,27" N	71° 53' 18,33" W	1
8	WAYPOINT	39	6,944657	-71,888172	6° 56' 40,77" N	71° 53' 17,42" W	1
9	WAYPOINT	40	6,944475	-71,887827	6° 56' 40,11" N	71° 53' 16,18" W	1
10	WAYPOINT	41	6,944587	-71,887654	6° 56' 40,51" N	71° 53' 15,55" W	1
11	WAYPOINT	42	6,944572	-71,8876	6° 56' 40,46" N	71° 53' 15,38" W	1
12	WAYPOINT	43	6,94434	-71,887462	6° 56' 39,62" N	71° 53' 14,86" W	1
13	WAYPOINT	44	6,944035	-71,887272	6° 56' 38,53" N	71° 53' 14,18" W	1
14	WAYPOINT	45	6,944583	-71,886988	6° 56' 40,5" N	71° 53' 13,16" W	1
15	WAYPOINT	46	6,944688	-71,887166	6° 56' 40,88" N	71° 53' 13,8" W	1
16	WAYPOINT	47	6,944739	-71,887839	6° 56' 41,06" N	71° 53' 14,42" W	1
17	WAYPOINT	48	6,944577	-71,886977	6° 56' 40,48" N	71° 53' 13,12" W	2
18	WAYPOINT	49	6,944408	-71,886869	6° 56' 39,87" N	71° 53' 12,8" W	1
19	WAYPOINT	50	6,944278	-71,886816	6° 56' 39,4" N	71° 53' 12,54" W	1
20	WAYPOINT	51	6,943967	-71,886924	6° 56' 38,28" N	71° 53' 12,93" W	1
21	WAYPOINT	52	6,944117	-71,88665	6° 56' 38,82" N	71° 53' 11,94" W	1
22	WAYPOINT	53	6,944228	-71,886398	6° 56' 39,22" N	71° 53' 11,03" W	1
23	WAYPOINT	54	6,944363	-71,886209	6° 56' 39,71" N	71° 53' 10,35" W	1
24	WAYPOINT	55	6,944277	-71,886236	6° 56' 39,4" N	71° 53' 10,45" W	1
25	WAYPOINT	56	6,944062	-71,886124	6° 56' 38,62" N	71° 53' 10,05" W	1
26	WAYPOINT	57	6,943681	-71,886568	6° 56' 37,25" N	71° 53' 11,64" W	1
27	WAYPOINT	58	6,94381	-71,886379	6° 56' 37,72" N	71° 53' 10,96" W	1
28	WAYPOINT	59	6,943891	-71,886225	6° 56' 38,01" N	71° 53' 10,41" W	1
29	WAYPOINT	60	6,944011	-71,886032	6° 56' 38,44" N	71° 53' 9,72" W	1
30	WAYPOINT	61	6,944103	-71,88584	6° 56' 38,77" N	71° 53' 9,02" W	1
31	WAYPOINT	62	6,944202	-71,885661	6° 56' 39,13" N	71° 53' 8,38" W	1
32	WAYPOINT	63	6,943939	-71,886045	6° 56' 38,18" N	71° 53' 9,76" W	1
33	WAYPOINT	64	6,943694	-71,885893	6° 56' 37,3" N	71° 53' 9,21" W	1
34	WAYPOINT	65	6,943562	-71,886036	6° 56' 36,82" N	71° 53' 9,73" W	1
35	WAYPOINT	66	6,943487	-71,886218	6° 56' 36,55" N	71° 53' 10,38" W	1
36	WAYPOINT	67	6,94314	-71,88558	6° 56' 35,3" N	71° 53' 8,09" W	1
37	WAYPOINT	68	6,94333	-71,885699	6° 56' 35,99" N	71° 53' 8,52" W	1
38	WAYPOINT	69	6,943453	-71,88579	6° 56' 36,43" N	71° 53' 8,84" W	1
39	WAYPOINT	70	6,943665	-71,885867	6° 56' 37,19" N	71° 53' 9,12" W	1
40	WAYPOINT	71	6,943808	-71,885611	6° 56' 37,71" N	71° 53' 8,2" W	1
41	WAYPOINT	72	6,943935	-71,885351	6° 56' 38,17" N	71° 53' 7,26" W	1
42	WAYPOINT	73	6,943632	-71,885462	6° 56' 37,08" N	71° 53' 7,66" W	1
43	WAYPOINT	74	6,943378	-71,88529	6° 56' 36,16" N	71° 53' 7,04" W	1
44	WAYPOINT	75	6,943138	-71,885146	6° 56' 35,3" N	71° 53' 6,53" W	1



BARRIO 20 DE JULIO							
ITEM	REFERENCIA GPS	No. PUNTO	LATITUD (DECIMALES)	LONGITUD (DECIMALES)	LATITUD (G.M.S)	LONGITUD (G.M.S)	CANT LUM.
45	WAYPOINT	76	6,942919	-71,885053	6° 56' 34,51" N	71° 53' 6,19" W	1
46	WAYPOINT	77	6,943022	-71,884898	6° 56' 34,88" N	71° 53' 5,63" W	1
47	WAYPOINT	78	6,943099	-71,884747	6° 56' 35,16" N	71° 53' 5,09" W	1
48	WAYPOINT	79	6,943626	-71,88508	6° 56' 37,77" N	71° 53' 6,29" W	1
49	WAYPOINT	80	6,943578	-71,884936	6° 56' 36,88" N	71° 53' 5,77" W	1
50	WAYPOINT	81	6,943318	-71,884812	6° 56' 35,94" N	71° 53' 5,32" W	1
51	WAYPOINT	82	6,943086	-71,884667	6° 56' 35,11" N	71° 53' 4,8" W	1
52	WAYPOINT	83	6,942884	-71,88457	6° 56' 34,38" N	71° 53' 4,45" W	1
53	WAYPOINT	84	6,942638	-71,884708	6° 56' 33,5" N	71° 53' 4,95" W	1
54	WAYPOINT	85	6,942746	-71,88453	6° 56' 33,89" N	71° 53' 4,31" W	1
55	WAYPOINT	86	6,94274	-71,884489	6° 56' 33,86" N	71° 53' 4,16" W	1
56	WAYPOINT	87	6,942537	-71,884371	6° 56' 33,13" N	71° 53' 3,74" W	1
57	WAYPOINT	88	6,94257	-71,884103	6° 56' 33,25" N	71° 53' 2,77" W	1
58	WAYPOINT	89	6,942682	-71,883924	6° 56' 33,66" N	71° 53' 2,13" W	1
59	WAYPOINT	90	6,942757	-71,883801	6° 56' 33,93" N	71° 53' 1,68" W	1
60	WAYPOINT	91	6,942873	-71,883579	6° 56' 34,34" N	71° 53' 0,88" W	1
61	WAYPOINT	92	6,94299	-71,883393	6° 56' 34,76" N	71° 53' 0,21" W	1
62	WAYPOINT	93	6,943088	-71,883198	6° 56' 35,12" N	71° 52' 59,51" W	1
63	WAYPOINT	94	6,943181	-71,883019	6° 56' 35,45" N	71° 52' 58,87" W	1
64	WAYPOINT	95	6,943289	-71,882832	6° 56' 35,84" N	71° 52' 58,2" W	1
65	WAYPOINT	96	6,943492	-71,883204	6° 56' 36,57" N	71° 52' 59,53" W	1
66	WAYPOINT	97	6,943404	-71,883375	6° 56' 36,25" N	71° 53' 0,15" W	1
67	WAYPOINT	98	6,943301	-71,883566	6° 56' 35,88" N	71° 53' 0,84" W	1
68	WAYPOINT	99	6,942725	-71,883908	6° 56' 33,81" N	71° 53' 2,07" W	1
69	WAYPOINT	100	6,942957	-71,88405	6° 56' 34,65" N	71° 53' 2,58" W	1
70	WAYPOINT	101	6,943155	-71,884152	6° 56' 35,36" N	71° 53' 2,95" W	1
71	WAYPOINT	102	6,943348	-71,884277	6° 56' 36,05" N	71° 53' 3,4" W	1
72	WAYPOINT	103	6,943237	-71,884506	6° 56' 35,65" N	71° 53' 4,22" W	1
73	WAYPOINT	104	6,943357	-71,88428	6° 56' 36,09" N	71° 53' 3,41" W	1
74	WAYPOINT	105	6,943424	-71,884165	6° 56' 36,33" N	71° 53' 2,99" W	1
75	WAYPOINT	106	6,943551	-71,88394	6° 56' 36,78" N	71° 53' 2,18" W	1
76	WAYPOINT	107	6,943468	-71,883706	6° 56' 36,48" N	71° 53' 1,34" W	1
77	WAYPOINT	108	6,943221	-71,883574	6° 56' 35,6" N	71° 53' 0,87" W	1
78	WAYPOINT	109	6,943	-71,883426	6° 56' 34,8" N	71° 53' 0,33" W	1
79	WAYPOINT	110	6,9427	-71,883252	6° 56' 33,72" N	71° 52' 59,71" W	1
80	WAYPOINT	111	6,942502	-71,883148	6° 56' 33,01" N	71° 52' 59,33" W	1
81	WAYPOINT	112	6,942249	-71,883012	6° 56' 32,1" N	71° 52' 58,84" W	1
82	WAYPOINT	113	6,94219	-71,88369	6° 56' 31,88" N	71° 53' 1,28" W	1
83	WAYPOINT	114	6,942291	-71,883547	6° 56' 32,25" N	71° 53' 0,77" W	1
84	WAYPOINT	115	6,942438	-71,883296	6° 56' 32,78" N	71° 52' 59,87" W	1
85	WAYPOINT	116	6,941923	-71,883128	6° 56' 30,92" N	71° 52' 59,26" W	1
86	WAYPOINT	117	6,941973	-71,882874	6° 56' 31,1" N	71° 52' 58,35" W	1
87	WAYPOINT	118	6,94172	-71,882721	6° 56' 30,19" N	71° 52' 57,8" W	1
88	WAYPOINT	119	6,941574	-71,88263	6° 56' 29,67" N	71° 52' 57,47" W	1



BARRIO 20 DE JULIO						
ITEM	REFERENCIA GPS	Nº. PUNTO	LATITUD (DECIMALES)	LONGITUD (DECIMALES)	LATITUD (GMS)	LONGITUD (GMS)
89	WAYPOINT	120	6,941704	-71,882294	6° 56' 30,13" N	71° 52' 56,26" W
90	WAYPOINT	121	6,941943	-71,882433	6° 56' 30,99" N	71° 52' 56,76" W
91	WAYPOINT	122	6,942188	-71,882557	6° 56' 31,88" N	71° 52' 57,21" W
92	WAYPOINT	123	6,942082	-71,88287	6° 56' 31,42" N	71° 52' 58,33" W
93	WAYPOINT	124	6,942229	-71,882612	6° 56' 32,02" N	71° 52' 57,4" W
94	WAYPOINT	125	6,942449	-71,882695	6° 56' 32,82" N	71° 52' 57,7" W
95	WAYPOINT	126	6,942678	-71,882853	6° 56' 33,64" N	71° 52' 58,27" W
96	WAYPOINT	127	6,942943	-71,883001	6° 56' 34,59" N	71° 52' 58,8" W
97	WAYPOINT	128	6,943129	-71,882648	6° 56' 35,26" N	71° 52' 57,53" W
98	WAYPOINT	129	6,942878	-71,882498	6° 56' 34,36" N	71° 52' 56,99" W
99	WAYPOINT	130	6,942617	-71,882367	6° 56' 33,42" N	71° 52' 56,52" W
100	WAYPOINT	131	6,94235	-71,882395	6° 56' 32,46" N	71° 52' 56,62" W
101	WAYPOINT	132	6,942435	-71,882238	6° 56' 32,77" N	71° 52' 56,06" W
102	WAYPOINT	133	6,94244	-71,882213	6° 56' 32,78" N	71° 52' 55,97" W
103	WAYPOINT	134	6,942156	-71,882095	6° 56' 31,76" N	71° 52' 55,54" W
104	WAYPOINT	135	6,941903	-71,881921	6° 56' 30,85" N	71° 52' 54,92" W
105	WAYPOINT	136	6,942583	-71,881956	6° 56' 33,3" N	71° 52' 55,04" W
106	WAYPOINT	137	6,942656	-71,881826	6° 56' 33,56" N	71° 52' 54,57" W
107	WAYPOINT	138	6,942847	-71,881881	6° 56' 34,25" N	71° 52' 54,77" W
108	WAYPOINT	139	6,943121	-71,882086	6° 56' 35,24" N	71° 52' 55,44" W
109	WAYPOINT	140	6,94213	-71,881495	6° 56' 31,67" N	71° 52' 53,38" W
110	WAYPOINT	141	6,942386	-71,881654	6° 56' 32,59" N	71° 52' 53,95" W
111	WAYPOINT	142	6,94263	-71,881787	6° 56' 33,47" N	71° 52' 54,43" W
112	WAYPOINT	143	6,942782	-71,881623	6° 56' 34,02" N	71° 52' 53,84" W
113	WAYPOINT	144	6,942861	-71,881474	6° 56' 34,3" N	71° 52' 53,31" W
114	WAYPOINT	145	6,942857	-71,88143	6° 56' 34,29" N	71° 52' 53,15" W
115	WAYPOINT	146	6,942575	-71,881299	6° 56' 33,27" N	71° 52' 52,68" W
116	WAYPOINT	147	6,942391	-71,881193	6° 56' 32,61" N	71° 52' 52,29" W
117	WAYPOINT	148	6,942231	-71,881113	6° 56' 32,03" N	71° 52' 52,01" W
118	WAYPOINT	149	6,94301	-71,881226	6° 56' 34,84" N	71° 52' 52,41" W
119	WAYPOINT	150	6,942827	-71,880862	6° 56' 34,18" N	71° 52' 51,1" W
TOTAL						120

