

APPENDIX K

GEOMETRIC ADAPTATIONS

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GEOMETRIC ADAPTATIONS

INTERNATIONAL TENDER No 01/2019

CONCESSION TO PROVIDE PUBLIC SERVICES FOR OPERATION, MAINTENANCE AND MAKING OF INVESTMENTS REQUIRED FOR EXPLOITATION OF THE HIGHWAY SYSTEM CALLED THE PIRACICABA-PANORAMA LOT

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1. INTRODUCTION

1.1. Based on the studies carried out for the CONCESSION, places were identified where there will be a need to adapt existing track geometric elements, either through physical alteration in the road (correction of vertical and horizontal alignment), or through the implementation of road lighting in some segments.

1.2. The locations of the existing runway with adaptation prediction as indicated in item 2 of this Appendix shall be subject to interventions within the deadlines set in the EVTE. These adjustments are classified in other extensions and Improvements works, falling upon them all the relevant obligations provided that are described in ANNEX 7.

1.3. The speeds to which each section must be adapted (new regulated speed), after the adjustments indicated in item 2 of APPENDIX, must be those indicated in item 3 of this APPENDIX.

2. EXISTING TRACK LOCATIONS WITH FORECAST OF GEOMETRIC ADAPTATION

2.1. The places indicated in the table below must be the object of interventions, with the need to elaborate projects, in order to determine the necessary adaptations for the restoration of safety conditions, especially visibility, for the existing runway.

2.2. For all segments in which physical adaptation is expected, regardless of the speeds indicated in item 3 of this APPENDIX, a 'k' pattern of vertical curve suitable for a minimum design speed of 100 shall be designed when preparing such projects. km / h (MI class / flat relief).

2.3. The locations indicated in the 'km' column refer to the midpoint of the geometric element identified in need of suitability. It is up to the CONCESSIONAIRE to determine the extent (full extent) of the proposed interventions / improvements to be carried out to comply with the CONTRACT standards and current regulations, both for the preparation of its PRICE PROPOSAL, as well as for the presentation of the FUNCTIONAL AND EXECUTIVE PROJECTS of the mentioned improvements.

Highway	Point	km	Expected Solution
SP 191	1	74,747	physical adaptation
SP 191	2	74,771	Lighting
SP 191	3	74,851	physical adaptation
SP 191	4	74,922	Lighting
SP 191	5	74,977	physical adaptation
SP 191	6	75,046	Lighting
SP 191	7	76,044	Lighting
SP 191	8	77,189	lighting
SP 191	9	77,826	physical adaptation
SP 191	10	78,199	lighting
SP 191	11	78,439	physical adaptation
SP 191	12	78,802	Lighting
SP 191	13	79,179	physical adaptation
SP 191	14	81,986	Lighting
SP 191	15	83,432	physical adaptation
SP 191	16	83,499	physical adaptation
SP 191	17	83,635	physical adaptation
SP 191	18	85,367	Lighting
SP 191	19	85,554	physical adaptation
SP 191	20	85,949	lighting
SP 191	21	87,550	lighting
SP 191	22	88,219	lighting
SP 191	23	90,914	physical adaptation
SP 191	24	91,226	Lighting
SP 191	25	93,124	Lighting
SP 191	26	93,614	physical adaptation
SP 191	27	93,801	physical adaptation
SP 191	28	94,037	Lighting
SP 191	29	95,006	physical adaptation
SP 191	30	95,373	physical adaptation
SP 191	31	96,083	physical adaptation

Highway	Point	km	Expected Solution
SP 191	32	96,323	physical adaptation
SP 191	33	96,475	physical adaptation
SP 191	34	98,013	physical adaptation
SP 191	35	98,366	Lighting
SP 294	1	349,292	Lighting
SP 294	2	350,679	Lighting
SP 294	3	351,135	Lighting
SP 294	4	359,152	Lighting
SP 294	5	359,374	physical adaptation
SP 294	6	359,663	Lighting
SP 294	7	364,057	physical adaptation
SP 294	8	364,847	physical adaptation
SP 294	9	366,168	physical adaptation
SP 294	10	367,761	physical adaptation
SP 294	11	368,036	Lighting
SP 294	12	368,363	physical adaptation
SP 294	13	368,549	Lighting
SP 294	14	368,829	physical adaptation
SP 294	15	370,505	Lighting
SP 294	16	371,684	physical adaptation
SP 294	17	371,926	Lighting
SP 294	18	372,167	physical adaptation
SP 294	19	376,002	Lighting
SP 294	20	376,188	physical adaptation
SP 294	21	376,761	Lighting
SP 294	22	376,986	physical adaptation
SP 294	23	379,777	Lighting
SP 294	24	380,063	physical adaptation
SP 294	25	380,611	physical adaptation
SP 294	26	381,676	Lighting
SP 294	27	381,960	physical adaptation
SP 294	28	382,440	Lighting
SP 294	29	382,712	physical adaptation
SP 294	30	382,931	Lighting
SP 294	31	383,205	Lighting
SP 294	32	383,515	physical adaptation
SP 294	33	384,386	physical adaptation
SP 294	34	384,783	Lighting
SP 294	35	385,493	physical adaptation
SP 294	36	385,922	Lighting
SP 294	37	386,381	physical adaptation
SP 294	38	387,275	Lighting
SP 294	39	387,584	physical adaptation
SP 294	40	387,822	Lighting
SP 294	41	388,038	physical adaptation
SP 294	42	388,342	Lighting
SP 294	43	389,129	Lighting
SP 294	44	390,915	Lighting

Highway	Point	km	Expected Solution
SP 294	45	391,311	physical adaptation
SP 294	46	392,426	physical adaptation
SP 294	47	392,746	physical adaptation
SP 294	48	393,254	Lighting
SP 294	49	394,833	Lighting
SP 294	50	395,919	Lighting
SP 294	51	396,228	physical adaptation
SP 294	52	396,349	Lighting
SP 294	53	397,484	physical adaptation
SP 294	54	398,161	Lighting
SP 294	55	399,872	physical adaptation
SP 294	56	400,929	physical adaptation
SP 294	57	401,577	Lighting
SP 294	58	403,080	Lighting
SP 294	59	403,307	physical adaptation
SP 294	60	403,617	Lighting
SP 294	61	407,811	Lighting
SP 294	62	410,215	Lighting
SP 294	63	412,994	Lighting
SP 294	64	414,246	Lighting
SP 294	65	414,902	physical adaptation
SP 294	66	415,840	Lighting
SP 294	67	416,618	Lighting
SP 294	68	417,803	Lighting
SP 294	69	418,226	Lighting
SP 294	70	419,197	Lighting
SP 294	71	421,090	physical adaptation
SP 294	72	421,429	Lighting
SP 294	73	424,014	physical adaptation
SP 294	74	424,273	physical adaptation
SP 294	75	425,185	Lighting
SP 294	76	425,599	physical adaptation
SP 294	77	426,996	physical adaptation
SP 294	78	428,237	Lighting
SP 294	79	428,403	physical adaptation
SP 294	80	428,582	Lighting
SP 294	81	428,736	physical adaptation
SP 294	82	428,903	Lighting
SP 294	83	432,952	Lighting
SP 294	84	434,708	Lighting
SP 294	85	435,687	physical adaptation
SP 294	86	436,480	Lighting
SP 294	87	437,177	physical adaptation
SP 294	88	437,691	Lighting
SP 294	89	438,298	Lighting
SP 294	90	438,886	physical adaptation
SP 294	91	439,383	Lighting
SP 294	92	439,863	physical adaptation

Highway	Point	km	Expected Solution
SP 294	93	441,633	Lighting
SP 294	94	442,247	physical adaptation
SP 294	95	442,682	Lighting
SP 294	96	443,109	lighting (urban stretch)
SP 294	97	443,138	physical adaptation
SP 294	98	443,480	Lighting
SP 294	99	443,487	lighting (urban stretch)
SP 294	100	443,963	Lighting
SP 294	101	444,862	lighting (urban stretch)
SP 294	102	445,063	physical adaptation
SP 294	103	447,893	lighting (urban stretch))
SP 294	104	448,124	physical adaptation
SP 294	105	448,486	lighting (urban stretch)
SP 294	106	448,991	physical adaptation
SP 294	107	449,394	Lighting
SP 294	108	458,150	physical adaptation
SP 294	109	459,043	physical adaptation
SP 294	110	459,580	Lighting
SP 294	111	461,593	physical adaptation
SP 294	112	462,410	physical adaptation
SP 294	113	462,674	lighting (urban stretch)
SP 294	114	462,930	physical adaptation
SP 294	115	464,033	Lighting
SP 294	116	467,650	Lighting
SP 294	117	471,420	lighting (urban stretch)
SP 294	118	472,885	Lighting
SP 294	119	474,771	physical adaptation
SP 294	120	481,814	physical adaptation
SP 294	121	482,137	physical adaptation
SP 294	122	482,219	lighting (urban stretch)
SP 294	123	482,367	physical adaptation
SP 294	124	485,421	physical adaptation
SP 294	125	491,246	physical adaptation
SP 294	126	491,323	physical adaptation
SP 294	127	491,415	physical adaptation
SP 294	128	491,781	lighting (urban stretch)
SP 294	129	492,197	physical adaptation
SP 294	130	492,579	Lighting
SP 294	131	494,038	Lighting
SP 294	132	495,943	physical adaptation
SP 294	133	497,778	lighting (urban stretch)
SP 294	134	498,331	lighting (urban stretch))
SP 294	135	500,057	physical adaptation
SP 294	136	500,473	Lighting
SP 294	137	502,125	Lighting
SP 294	138	502,263	physical adaptation
SP 294	139	503,895	Lighting
SP 294	140	504,481	Lighting

Highway	Point	km	Expected Solution
SP 294	141	505,837	Lighting
SP 294	142	506,185	physical adaptation
SP 294	143	506,436	Lighting
SP 294	144	506,670	physical adaptation
SP 294	145	507,307	Lighting
SP 294	146	507,958	Lighting
SP 294	147	508,283	physical adaptation
SP 294	148	510,827	physical adaptation
SP 294	149	510,903	Lighting
SP 294	150	510,924	physical adaptation
SP 294	151	510,950	Lighting
SP 294	152	510,993	physical adaptation
SP 294	153	511,791	lighting (urban stretch)
SP 294	154	511,876	Lighting
SP 294	155	515,141	Lighting
SP 294	156	519,429	Lighting
SP 294	157	521,019	Lighting
SP 294	158	521,418	physical adaptation
SP 294	159	521,942	Lighting
SP 294	160	522,412	physical adaptation
SP 294	161	524,551	Lighting
SP 294	162	525,503	lighting (urban stretch)
SP 294	163	525,605	physical adaptation
SP 294	164	527,300	physical adaptation
SP 294	165	527,573	lighting (urban stretch))
SP 294	166	528,298	physical adaptation
SP 294	167	530,914	Lighting
SP 294	168	531,555	physical adaptation
SP 294	169	531,958	physical adaptation
SP 294	170	532,199	Lighting
SP 294	171	532,752	physical adaptation
SP 294	172	533,146	Lighting
SP 294	173	533,714	Lighting
SP 294	174	535,548	Lighting
SP 294	175	535,809	physical adaptation
SP 294	176	536,443	Lighting
SP 294	177	537,111	physical adaptation
SP 294	178	537,808	Lighting
SP 294	179	538,535	physical adaptation
SP 294	180	540,165	Lighting
SP 294	181	540,811	physical adaptation
SP 294	182	545,149	Lighting
SP 294	183	546,279	Lighting
SP 294	184	546,562	physical adaptation
SP 294	185	550,872	physical adaptation
SP 294	186	551,087	physical adaptation
SP 294	187	551,173	physical adaptation
SP 197	1	0,037	physical adaptation

Highway	Point	km	Expected Solution
SP 197	2	0,145	Lighting
SP 197	3	4,110	physical adaptation
SP 197	4	7,215	physical adaptation
SP 261	1	150,880	physical adaptation
SP 261	2	150,978	physical adaptation
SP 261	3	155,134	Lighting
SP 261	4	159,408	Lighting
SP 261	5	162,124	Lighting
SP 261	6	163,944	Lighting
SP 261	7	164,848	Lighting
SP 261	8	166,620	Lighting
SP 261	9	167,634	physical adaptation
SP 261	10	173,201	physical adaptation
SP 261	11	173,273	Lighting
SP 261	12	174,093	physical adaptation
SP 261	13	174,164	physical adaptation
SP 261	14	174,615	physical adaptation
SP 261	15	178,449	Lighting
SP 261	16	180,126	Lighting
SP 261	17	183,525	physical adaptation
SP 284	1	448,533	Lighting
SP 284	2	449,509	physical adaptation
SP 284	3	449,795	physical adaptation
SP 284	4	450,613	physical adaptation
SP 284	5	451,499	Lighting
SP 284	6	451,920	physical adaptation
SP 284	7	452,495	physical adaptation
SP 284	8	452,672	Lighting
SP 284	9	452,853	Lighting
SP 284	10	466,881	Lighting
SP 284	11	470,173	Lighting
SP 284	12	478,444	physical adaptation
SP 284	13	478,945	Lighting
SP 284	14	486,107	Lighting
SP 284	15	486,391	Lighting
SP 284	16	487,757	physical adaptation
SP 284	17	488,481	Lighting
SP 284	18	497,093	Lighting
SP 284	19	497,942	physical adaptation
SP 284	20	498,047	physical adaptation
SP 284	21	498,157	physical adaptation
SP 284	22	500,986	Lighting
SP 284	23	502,695	Lighting
SP 284	24	502,943	Lighting
SP 284	25	504,059	physical adaptation
SP 284	26	507,870	Lighting
SP 284	27	508,960	physical adaptation
SP 284	28	510,690	Lighting

Highway	Point	km	Expected Solution
SP 284	29	516,056	Lighting
SP 284	30	516,255	physical adaptation
SP 284	31	516,696	Lighting
SP 284	32	518,761	physical adaptation
SP 284	33	520,300	Lighting
SP 284	34	523,635	physical adaptation
SP 284	35	528,004	Lighting
SP 284	36	536,088	Lighting
SP 284	37	543,414	Lighting
SP 284	38	544,974	Lighting
SP 293	1	7,095	physical adaptation
SP 293	2	7,908	Lighting
SP 293	3	11,500	Lighting
SP 293	4	12,339	Lighting
SP 293	5	13,485	physical adaptation
SP 293	6	14,561	Lighting
SP 293	7	19,442	Lighting
SP 293	8	21,620	Lighting
SP 293	9	23,515	Lighting
SP 293	10	24,406	physical adaptation
SP 293	11	24,539	physical adaptation
SP 304	1	168,576	physical adaptation
SP 304	2	168,738	Lighting
SP 304	3	171,593	physical adaptation
SP 304	4	171,734	physical adaptation
SP 304	5	178,689	Lighting
SP 304	6	181,303	Lighting
SP 304	7	186,516	physical adaptation
SP 304	8	186,755	physical adaptation
SP 304	9	189,093	physical adaptation
SP 304	10	189,148	physical adaptation
SP 304	11	191,431	physical adaptation
SP 304	12	192,086	physical adaptation
SP 304	13	192,496	physical adaptation
SP 304	14	192,658	physical adaptation
SP 304	15	192,707	physical adaptation
SP 304	16	193,242	physical adaptation
SP 304	17	200,420	physical adaptation
SP 304	18	200,500	physical adaptation
SP 304	19	200,775	physical adaptation
SP 304	20	200,857	physical adaptation
SP 304	21	200,936	physical adaptation
SP 304	22	225,548	physical adaptation
SP 304	23	227,031	physical adaptation
SP 304	24	227,515	Lighting
SP 304	25	228,488	physical adaptation
SP 304	26	233,436	physical adaptation
SP 304	27	234,840	physical adaptation

Highway	Point	km	Expected Solution
SP 304	28	234,938	Lighting
SP 304	29	236,217	physical adaptation
SP 304	30	238,408	physical adaptation
SP 304	31	238,695	physical adaptation
SP 304	32	238,837	physical adaptation
SP 304	33	239,100	Lighting
SP 304	34	243,834	Lighting
SP 304	35	244,716	physical adaptation
SP 304	36	248,170	Lighting
SP 304	37	248,356	physical adaptation
SP 304	38	266,145	Lighting
SP 304	39	266,299	physical adaptation
SP 304	40	266,369	physical adaptation
SP 304	41	266,461	physical adaptation
SP 304	42	266,534	physical adaptation
SP 304	43	269,132	physical adaptation
SP 304	44	269,213	physical adaptation
SP 304	45	269,284	physical adaptation
SP 304	46	270,000	physical adaptation
SP 304	47	270,075	physical adaptation
SP 304	48	270,178	physical adaptation
SP 304	49	270,255	physical adaptation
SP 304	50	273,478	physical adaptation
SP 304	51	276,535	Lighting
SP 304	52	289,273	physical adaptation
SP 304	53	289,514	physical adaptation
SP 308	1	174,300	Lighting
SP 308	2	180,885	Lighting
SP 308	3	182,177	physical adaptation
SP 308	4	182,272	physical adaptation
SP 308	5	194,207	physical adaptation
SP 425	1	374,400	Lighting
SP 425	2	374,653	physical adaptation
SP 425	3	374,958	Lighting
SP 425	4	375,478	physical adaptation
SP 425	5	376,149	Lighting
SP 425	6	376,601	physical adaptation
SP 425	7	377,009	Lighting
SP 425	8	377,348	physical adaptation
SP 425	9	378,394	Lighting
SP 425	10	378,707	physical adaptation
SP 425	11	378,880	Lighting
SP 425	12	379,087	physical adaptation
SP 425	13	379,300	Lighting
SP 425	14	379,807	physical adaptation
SP 425	15	380,474	Lighting
SP 425	16	381,176	physical adaptation
SP 425	17	381,617	Lighting
SP 425	18	382,166	physical adaptation

Highway	Point	km	Expected Solution
SP 425	19	383,389	Lighting
SP 425	20	384,127	physical adaptation
SP 425	21	384,838	Lighting
SP 425	22	385,143	physical adaptation
SP 425	23	385,427	Lighting
SP 425	24	386,785	Lighting
SP 425	25	388,968	Lighting
SP 425	26	389,898	Lighting
SP 425	27	390,565	physical adaptation
SP 425	28	392,730	Lighting
SP 425	29	393,635	Lighting
SP 425	30	395,888	lighting
SP 425	31	397,356	Lighting
SP 425	32	397,525	Lighting
SP 425	33	399,590	Lighting
SP 425	34	401,382	Lighting
SP 425	35	401,604	physical adaptation
SP 425	36	401,810	Lighting
SP 425	37	402,162	physical adaptation
SP 425	38	402,454	Lighting
SP 425	39	402,705	physical adaptation
SP 425	40	403,007	Lighting
SP 425	41	403,541	Lighting
SP 425	42	404,418	Lighting
SP 425	43	405,364	Lighting
SP 425	44	406,533	Lighting
SP 425	45	407,660	Lighting
SP 425	46	407,994	physical adaptation
SP 425	47	408,247	Lighting
SP 425	48	409,123	physical adaptation
SP 425	49	409,690	Lighting
SP 425	50	409,869	physical adaptation
SP 425	51	410,209	Lighting
SP 425	52	410,842	physical adaptation
SP 425	53	411,075	Lighting
SP 425	54	411,707	physical adaptation
SP 425	55	411,945	lighting
SP 425	56	412,635	Lighting
SP 425	57	414,256	Lighting
SP 425	58	414,440	physical adaptation
SP 425	59	415,114	physical adaptation
SP 425	60	415,402	Lighting
SP 425	61	415,774	physical adaptation
SP 425	62	416,231	Lighting
SP 425	63	416,520	physical adaptation
SP 425	64	416,917	Lighting
SP 425	65	417,129	physical adaptation
SP 425	66	417,987	physical adaptation

Highway	Point	km	Expected Solution
SP 425	67	418,164	Lighting
SP 425	68	418,320	physical adaptation
SP 425	69	418,833	Lighting
SP 425	70	419,149	physical adaptation
SP 425	71	420,932	Lighting
SP 425	72	421,699	Lighting
SP 425	73	422,012	physical adaptation
SP 425	74	425,957	Lighting
SP 425	75	426,813	Lighting
SP 425	76	427,515	Lighting
SP 425	77	428,322	Lighting
SP 425	78	429,425	Lighting
SP 425	79	434,530	Lighting
SP 425	80	435,723	Lighting
SP 425	81	436,376	physical adaptation
SP 425	82	437,040	Lighting
SP 425	83	438,703	Lighting
SP 425	84	440,943	Lighting
SP 425	85	442,440	Lighting
SP 425	86	444,306	Lighting
SP 425	87	446,596	Lighting
SP 425	88	448,358	Lighting

3. SPEEDS TO BE REGULATED AFTER ADAPTATION

3.1. O This item presents the table with the speeds to be regulated after the implementation of the EVTE adjustments for the locations provided for in item 2 of this APPENDIX.

Highway	S.H.	Start	End	Extension (km)	New Regulated Speed (km/h)
SP 191	1	74,7	85,6	10,9	100
	2	85,6	90,7	5,0	80
	3	90,7	98,5	7,8	100
	4	98,5	115,6	17,1	ND
SP 294	1	347,0	347,6	0,6	ND
	2	347,6	353,1	5,5	80
	3	353,1	359,8	6,7	100
	4	359,8	363,8	4,0	80
	5	363,8	391,4	27,6	100
	6	391,4	393,6	2,3	80
	7	393,6	403,8	10,1	100
	8	403,8	407,9	4,1	80

Highway	S.H.	Start	End	Extension (km)	New Regulated Speed (km/h)
	9	407,9	429,4	21,5	100
	10	429,4	432,4	3,0	80
	11	432,4	450,7	18,3	100
	12	450,7	450,8	0,1	ND
	13	450,8	458,3	7,5	ND
	14	458,3	458,3	0,0	ND
	15	458,3	458,6	0,3	ND
	16	458,6	459,0	0,4	ND
	17	459,0	481,2	22,2	100
	18	481,2	491,2	10,0	80
	19	491,2	552,2	61,1	100
SP 197	1	0,0	19,2	19,2	80
SP 261	1	150,6	150,8	0,2	ND
	2	150,8	183,5	32,7	80
SP 284	1	447,2	507,8	60,6	100
	2	507,8	510,7	2,9	80
	3	510,7	515,7	5,0	100
	4	515,7	520,3	4,6	80
	5	520,3	544,7	24,4	100
	6	544,7	549,8	5,1	80
SP 293	1	0,0	1,0	1,0	80
	2	1,0	14,1	13,1	100
	3	14,1	16,2	2,1	80
	4	16,2	23,6	7,3	100
	5	23,6	24,5	1,0	80
SP 304	1	168,5	191,6	23,1	100
	2	191,6	195,4	3,8	80
	3	195,4	225,5	30,1	100
	4	225,5	232,4	7,0	80
	5	232,4	237,5	5,1	60
	6	237,5	246,4	8,8	80
	7	246,4	290,3	44,0	100
	8	290,3	293,0	2,6	80
	9	293,0	293,4	0,4	ND
SP 308	1	173,6	173,8	0,2	ND

Highway	S.H.	Start	End	Extension (km)	New Regulated Speed (km/h)
	2	173,8	194,2	20,4	100
SP 425	1	374,4	375,0	0,7	80
	2	375,0	449,8	74,7	100