

Estudio histórico, tipológico y estructural del River Forest Tennis Club de Frank Lloyd Wright

ANEXO

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Curso 2020-2021

Trabajo Final de Grado

Grado en Fundamentos de la Arquitectura



UNIVERSITAT
POLITÀCNICA
DE VALÈNCIA



ESCOLA TÈCNICA
SUPERIOR
D'ARQUITECTURA

A.1. Reacciones en los nudos
(ELU 02 - 05)

HIPOTESIS	NUDO	F(x) (Kn)	F(y) (Kn)	F(z)(Kn)	M(x)(Kn*m)	M(y)(Kn*m)	
ELU 02	1	0,014580	0,452456	7,342336	-1,619791	0,036276	0,045181
ELU 02	2	-0,288248	0,402058	12,451020	-1,439369	-0,415028	0,053894
ELU 02	3	-0,670146	0,371722	23,211300	-1,330763	-0,947809	-0,039499
ELU 02	4	-3,153843	30,014220	95,199580	-107,450900	-3,015173	1,057140
ELU 02	5	-1,786524	0,505827	116,327700	-1,810860	-2,472986	-0,229095
ELU 02	6	-0,722254	8,441515	35,678730	3,247366	0,601011	-0,143081
ELU 02	7	1,245914	0,232775	47,063380	-1,489132	1,830120	-0,002048
ELU 02	8	1,671290	-1,219015	21,375710	-1,059632	2,124884	-0,041481
ELU 02	9	0,525290	-0,143542	0,535031	-0,084645	1,072510	0,171085
ELU 02	10	0,487926	0,643286	73,128780	-2,302963	0,598109	-0,058455
ELU 02	11	-24,711790	0,651618	239,152700	-2,332791	-29,829890	-3,470133
ELU 02	12	-6,395432	31,598240	110,982300	-113,121700	-6,882438	1,516301
ELU 02	13	11,275260	9,547207	52,065090	5,566059	5,840012	-0,523053
ELU 02	14	7,454272	-11,825700	94,863690	2,257920	6,939550	0,404792
ELU 02	15	2,428885	-19,188850	77,279620	3,808858	3,262197	0,187787
ELU 02	16	-0,518969	-18,751260	61,697030	4,142593	0,320508	0,183029
ELU 02	17	-5,340465	-13,206980	32,280320	-1,709529	-1,385503	-0,026998
ELU 02	18	0,014324	8,634624	35,502110	3,168677	-1,129306	0,206083
ELU 02	19	-1,866777	1,054706	46,110790	-1,717706	-2,574619	-0,031285
ELU 02	20	-1,777485	-0,345093	20,236710	-1,303565	-2,513315	0,022334
ELU 02	21	0,275680	0,348818	-0,407158	-0,059560	-1,031201	-0,200336
ELU 02	22	0,160866	0,672890	45,274420	-2,408948	0,207838	-0,010194
ELU 02	23	-0,161753	0,014437	57,354000	-0,051685	-0,200212	-0,023371
ELU 02	24	0,118170	0,681159	55,737140	-2,438548	0,156898	-0,003887
ELU 02	25	-0,259399	0,009723	45,025750	-0,034808	-0,316726	-0,037784
ELU 02	26	16,073740	1,323159	336,895800	-4,736907	20,803390	0,562744
ELU 02	27	-6,771972	1,846421	-65,499900	-6,610186	-15,290150	1,180867
ELU 02	28	-0,114761	0,694830	45,623250	-2,487492	-0,121055	0,030479

HIPOTESIS	NUDO	F(x) (Kn)	F(y) (Kn)	F(z)(Kn)	M(x)(Kn*m)	M(y)(Kn*m)	
ELU 02	29	0,210563	0,705489	47,032540	-2,525650	0,267176	-0,017494
ELU 02	30	-17,667210	1,571155	396,499400	-5,624734	-23,515130	-0,164009
ELU 02	31	5,367557	2,192486	-64,840550	-7,849099	10,534580	-0,715798
ELU 02	32	-0,112825	0,713682	57,881710	-2,554981	-0,118723	0,030215
ELU 02	33	0,195629	0,006278	49,017890	-0,022476	0,226295	0,029307
ELU 02	34	0,040616	0,725382	55,391700	-2,596867	0,064395	0,007595
ELU 02	35	0,115169	0,007736	60,350940	-0,027696	0,130291	0,017428
ELU 02	36	7,279568	35,201940	129,701400	-126,022900	9,440020	-0,413295
ELU 02	37	-11,689930	3,742621	33,737630	4,306794	-6,592226	0,641734
ELU 02	38	-8,438322	-16,329810	81,041570	4,623465	-8,365393	-0,441440
ELU 02	39	-3,078632	-25,305880	84,306240	6,367064	-4,514179	-0,198404
ELU 02	40	-0,013084	-23,920810	89,783680	6,688664	-1,371549	-0,179646
ELU 02	41	5,867423	-21,195310	58,336670	-3,637417	1,042516	-0,060568
ELU 02	42	0,301893	4,589157	19,848380	1,850175	1,281337	-0,218451
ELU 02	43	2,072334	0,288654	35,536100	-0,249405	2,741492	0,041786
ELU 02	44	1,810411	-1,159218	32,770220	0,178824	2,560884	-0,015274
ELU 02	45	-0,465428	-3,976436	16,294520	-1,475394	0,992381	0,201412
ELU 02	46	0,103097	0,736197	99,694020	-2,635586	0,138978	-0,001599
ELU 02	47	24,940680	0,048952	255,345500	-0,175249	29,425990	3,544391
ELU 02	48	-0,123777	3,585045	16,858770	1,659668	-1,375371	0,244744
ELU 02	49	-2,223672	-0,661257	34,261340	0,264103	-3,042867	-0,041880
ELU 02	50	-2,006454	-2,164215	36,265400	0,708599	-2,893068	0,019892
ELU 02	51	0,512763	-5,298171	20,471900	-1,776086	-1,135659	-0,230616
ELU 02	52	4,949327	36,831980	131,410000	-131,858500	6,660329	-0,082918
ELU 02	53	3,454317	-0,423650	119,793600	1,516666	3,786197	0,506724
ELU 02	54	0,738230	0,403112	24,399090	-1,443139	1,049733	-0,056642
ELU 02	55	0,715586	0,368199	24,313920	-1,318153	1,007348	0,065016
ELU 02	56	-0,062205	0,387755	8,976759	-1,388164	-0,066684	0,001457

HIPOTESIS	NUDO	F(x) (Kn)	F(y) (Kn)	F(z)(Kn)	M(x)(Kn*m)	M(y)(Kn*m)	
ELU 03	1	0,016045	0,501629	7,190192	-1,795831	0,038478	0,061985
ELU 03	2	-0,191679	0,422317	9,795656	-1,511893	-0,279942	0,054246
ELU 03	3	-0,731484	0,392943	24,901760	-1,406734	-1,030287	-0,036271
ELU 03	4	-3,121407	29,206390	87,398550	-104,558900	-2,836494	1,113273
ELU 03	5	-1,550337	0,631018	119,591200	-2,259045	-2,184682	-0,178636
ELU 03	6	-0,618965	9,391703	39,347700	3,542981	0,093541	-0,045560
ELU 03	7	0,425724	0,458028	48,093920	-1,940357	0,630644	-0,015182
ELU 03	8	0,866278	-0,867136	15,229730	-1,547819	0,935783	-0,029852
ELU 03	9	0,672995	1,537629	-5,870388	0,465051	0,581658	0,074529
ELU 03	10	0,647841	0,628848	67,070010	-2,251275	0,791902	-0,080702
ELU 03	11	-25,966750	0,795718	230,665100	-2,848672	-31,321090	-3,630384
ELU 03	12	-6,424593	30,884030	107,053000	-110,564800	-6,777378	1,581037
ELU 03	13	11,153210	11,485720	58,338510	6,004778	5,792415	-0,520302
ELU 03	14	7,418596	-10,438920	99,182520	1,455367	6,905634	0,400346
ELU 03	15	2,451717	-17,229300	73,849620	2,933576	3,271247	0,185737
ELU 03	16	-0,467576	-17,042260	50,412750	3,252607	0,358161	0,181170
ELU 03	17	-5,282865	-10,203080	22,232070	-0,943979	-1,355201	-0,023817
ELU 03	18	0,353962	9,865620	40,450070	3,586187	-0,770063	0,156835
ELU 03	19	-1,338469	1,166968	48,276640	-2,230717	-1,957162	-0,013984
ELU 03	20	-1,471819	-0,120986	13,550300	-1,849205	-2,049800	0,027705
ELU 03	21	-0,037386	2,225736	-7,773358	0,582500	-0,918240	-0,165666
ELU 03	22	0,158439	0,659312	41,312650	-2,360337	0,207901	-0,008499
ELU 03	23	-0,148511	0,019312	59,041860	-0,069136	-0,184278	-0,021038
ELU 03	24	0,130777	0,668276	51,766590	-2,392429	0,174900	-0,004410
ELU 03	25	-0,286198	0,015044	46,611350	-0,053859	-0,348574	-0,041355
ELU 03	26	15,401420	1,392305	326,011300	-4,984451	19,943330	0,774257
ELU 03	27	-6,666111	1,942909	-62,671670	-6,955616	-15,117840	1,129901
ELU 03	28	-0,114474	0,682681	41,498630	-2,443999	-0,117757	0,031772

HIPOTESIS	NUDO	F(x) (Kn)	F(y) (Kn)	F(z)(Kn)	M(x)(Kn*m)	M(y)(Kn*m)	
ELU 03	29	0,220941	0,694021	42,946850	-2,484597	0,282515	-0,017691
ELU 03	30	-17,013490	1,670687	386,664600	-5,981060	-22,679580	-0,352314
ELU 03	31	5,205258	2,331377	-61,984550	-8,346328	10,170970	-0,635237
ELU 03	32	-0,116590	0,702855	53,986680	-2,516222	-0,120261	0,032104
ELU 03	33	0,221579	0,013036	50,638520	-0,046671	0,257391	0,033519
ELU 03	34	0,047531	0,715346	51,113270	-2,560938	0,075600	0,007907
ELU 03	35	0,107388	0,015001	62,079390	-0,053702	0,121133	0,016666
ELU 03	36	7,553688	34,717100	125,545600	-124,287200	9,906614	-0,391782
ELU 03	37	-11,738100	7,695849	46,937780	5,274887	-6,625495	0,645647
ELU 03	38	-8,510297	-13,914200	91,850940	3,156643	-8,420990	-0,442719
ELU 03	39	-3,135242	-22,008040	80,341380	4,806696	-4,555234	-0,199441
ELU 03	40	-0,041855	-21,131070	70,924420	5,120476	-1,390252	-0,181711
ELU 03	41	5,911359	-16,010420	40,775280	-2,291886	1,049700	-0,061378
ELU 03	42	-0,090121	7,259003	30,373330	2,740193	0,804170	-0,150048
ELU 03	43	1,388209	0,659067	41,714020	-1,265823	1,897413	0,019197
ELU 03	44	1,409077	-0,679176	22,155450	-0,869617	1,912368	-0,021491
ELU 03	45	-0,028367	-0,672642	3,396084	-0,364980	0,828082	0,151531
ELU 03	46	-0,070176	0,728167	93,090000	-2,606838	-0,064843	0,025288
ELU 03	47	26,384340	0,396116	246,627000	-1,418094	31,154670	3,766028
ELU 03	48	0,037592	6,222424	27,077510	2,511144	-0,812442	0,149573
ELU 03	49	-1,377187	-0,142673	40,038390	-0,773778	-1,877865	-0,021094
ELU 03	50	-1,340055	-1,524203	25,576390	-0,364775	-1,852568	0,017438
ELU 03	51	0,146162	-1,958894	7,625510	-0,680633	-0,771926	-0,147231
ELU 03	52	5,226976	36,457590	123,428800	-130,518200	7,131022	-0,062012
ELU 03	53	3,145260	0,000206	123,401900	-0,000738	3,423234	0,480682
ELU 03	54	0,641814	0,435065	21,324020	-1,557534	0,917300	-0,055941
ELU 03	55	0,784570	0,400748	26,473030	-1,434677	1,103179	0,062792
ELU 03	56	-0,059618	0,445407	8,848050	-1,594558	-0,062616	-0,010108

HIPOTESIS		NUDO	F(x) (Kn)	F(y) (Kn)	F(z)(Kn)	M(x)(Kn*m)	M(y)(Kn*m)	HIPOTESIS		NUDO	F(x) (Kn)	F(y) (Kn)	F(z)(Kn)	M(x)(Kn*m)	M(y)(Kn*m)
ELU 04	1	0,015623	0,499313	7,031919	-1,787540	0,036400	0,062066	ELU 04	29	0,211127	0,672967	41,567030	-2,409221	0,268128	-0,017483
ELU 04	2	-0,175141	0,418120	9,143942	-1,496871	-0,258012	0,052194	ELU 04	30	-16,483520	1,644725	375,461000	-5,888115	-21,978550	-0,353457
ELU 04	3	-0,719483	0,389735	24,517090	-1,395251	-1,013250	-0,035105	ELU 04	31	5,034851	2,295147	-59,079590	-8,216625	9,849039	-0,619656
ELU 04	4	-3,166199	28,425830	83,709320	-101,764500	-3,016278	1,063556	ELU 04	32	-0,116292	0,681221	52,291200	-2,438770	-0,122582	0,030819
ELU 04	5	-1,401698	0,851613	117,457800	-3,048773	-2,003068	-0,177654	ELU 04	33	0,215223	0,013541	49,226030	-0,048476	0,249892	0,032142
ELU 04	6	-0,797661	10,712040	44,452690	3,972925	-0,022534	-0,032803	ELU 04	34	0,042557	0,693026	49,499920	-2,481035	0,066987	0,007400
ELU 04	7	0,284598	0,710783	51,564620	-2,418387	0,477616	-0,022742	ELU 04	35	0,103535	0,014934	60,314370	-0,053463	0,116622	0,015658
ELU 04	8	0,847816	-0,600509	11,193790	-2,029928	0,867621	-0,034800	ELU 04	36	7,265140	33,618420	122,474500	-120,354000	9,435794	-0,407192
ELU 04	9	0,853958	2,938723	-11,277770	0,923075	0,601351	0,069815	ELU 04	37	-11,406430	7,460968	45,540080	5,117197	-6,429842	0,625917
ELU 04	10	0,667539	0,611676	63,574010	-2,189799	0,812735	-0,084846	ELU 04	38	-8,255522	-13,476750	89,365940	3,073225	-8,163063	-0,429999
ELU 04	11	-25,368390	0,957678	223,869100	-3,428486	-30,602840	-3,565814	ELU 04	39	-3,032874	-21,348020	78,500600	4,678102	-4,404058	-0,194002
ELU 04	12	-6,360322	30,005060	103,736200	-107,418100	-6,827047	1,515871	ELU 04	40	-0,018827	-20,516670	69,674500	4,988902	-1,324015	-0,177451
ELU 04	13	10,984980	13,275800	63,886320	6,376491	5,691729	-0,510181	ELU 04	41	5,761361	-15,672350	40,149140	-2,274776	1,036187	-0,057549
ELU 04	14	7,291659	-8,951917	103,174200	0,699914	6,771852	0,393779	ELU 04	42	-0,160697	7,041208	29,531520	2,667248	0,798460	-0,152435
ELU 04	15	2,401882	-15,201660	71,421020	2,110732	3,187957	0,183382	ELU 04	43	1,380938	0,623331	40,910800	-1,203769	1,921549	0,017874
ELU 04	16	-0,492982	-15,321270	41,494270	2,433674	0,307714	0,180392	ELU 04	44	1,433831	-0,698787	22,308420	-0,812254	1,958643	-0,023428
ELU 04	17	-5,240943	-7,657280	14,015810	-0,341835	-1,364944	-0,027061	ELU 04	45	-0,005067	-0,797527	3,890054	-0,405624	0,857790	0,156014
ELU 04	18	0,470794	11,095800	45,216460	3,988150	-0,631030	0,136949	ELU 04	46	-0,075637	0,704846	90,166810	-2,523347	-0,074037	0,024852
ELU 04	19	-1,152665	1,394424	51,508820	-2,675651	-1,717538	-0,006955	ELU 04	47	25,624870	0,353382	240,006800	-1,265106	30,252430	3,638820
ELU 04	20	-1,378861	0,120232	9,757410	-2,298180	-1,874400	0,030139	ELU 04	48	-0,056887	5,842865	25,581460	2,380750	-0,736716	0,131289
ELU 04	21	-0,192771	3,536017	-12,839730	1,012320	-0,881955	-0,151865	ELU 04	49	-1,239426	-0,183834	38,724410	-0,661020	-1,652393	-0,020835
ELU 04	22	0,160044	0,640341	39,562870	-2,292421	0,207142	-0,009974	ELU 04	50	-1,159189	-1,546203	26,117950	-0,257591	-1,597238	0,012772
ELU 04	23	-0,149311	0,021705	57,516910	-0,077702	-0,185144	-0,021597	ELU 04	51	0,178102	-2,228085	8,708374	-0,772659	-0,648435	-0,126112
ELU 04	24	0,121978	0,648611	50,141570	-2,322026	0,161725	-0,004351	ELU 04	52	5,013700	35,260930	120,359200	-126,234100	6,749994	-0,088091
ELU 04	25	-0,278270	0,016994	45,226440	-0,060839	-0,339026	-0,040627	ELU 04	53	3,037221	-0,080482	120,744800	0,288125	3,298345	0,445570
ELU 04	26	14,894930	1,396056	315,699100	-4,997880	19,281290	0,752225	ELU 04	54	0,618366	0,420608	20,679360	-1,505776	0,882556	-0,054690
ELU 04	27	-6,432640	1,948143	-59,738470	-6,974351	-14,581670	1,083778	ELU 04	55	0,763003	0,387403	25,826230	-1,386904	1,072358	0,060550
ELU 04	28	-0,114118	0,662281	40,149160	-2,370966	-0,120007	0,030480	ELU 04	56	-0,058765	0,431198	8,662622	-1,543688	-0,062875	-0,010487

HIPOTESIS	NUDO	F(x) (Kn)	F(y) (Kn)	F(z)(Kn)	M(x)(Kn*m)	M(y)(Kn*m)	
ELU 05	1	0,014917	0,484367	6,730854	-1,734034	0,034617	0,063097
ELU 05	2	-0,135325	0,398244	7,939019	-1,425715	-0,201795	0,047966
ELU 05	3	-0,695105	0,372240	23,726090	-1,332618	-0,976322	-0,032014
ELU 05	4	-3,000863	26,344670	78,275570	-94,313900	-2,923645	0,926671
ELU 05	5	-1,261304	0,829447	112,991600	-2,969419	-1,751972	-0,153963
ELU 05	6	-0,631493	10,494640	43,548450	3,878803	-0,382011	0,040559
ELU 05	7	-0,335079	0,764046	49,375320	-2,461193	-0,434217	-0,029430
ELU 05	8	0,172044	-0,425119	8,453939	-2,108356	-0,083155	-0,022348
ELU 05	9	0,855552	3,425701	-13,010310	1,073776	0,179589	-0,007257
ELU 05	10	0,653084	0,564191	57,716290	-2,019803	0,793268	-0,085222
ELU 05	11	-24,240110	0,955959	202,952600	-3,422333	-29,172940	-3,402408
ELU 05	12	-5,935570	27,594750	97,376400	-98,789220	-6,424983	1,342188
ELU 05	13	10,026950	13,580720	63,506460	6,219626	5,258995	-0,477406
ELU 05	14	6,763708	-7,428324	99,446090	0,171684	6,327583	0,361295
ELU 05	15	2,291908	-12,933700	65,616890	1,449474	3,058412	0,167467
ELU 05	16	-0,345879	-13,242540	33,443720	1,754485	0,423837	0,163116
ELU 05	17	-4,792659	-5,546659	8,013156	0,052859	-1,186065	-0,013255
ELU 05	18	0,676718	11,097930	45,357920	3,996246	-0,275176	0,081953
ELU 05	19	-0,607524	1,320714	50,268510	-2,759695	-1,030648	0,007490
ELU 05	20	-0,983113	0,155489	6,597832	-2,413979	-1,290763	0,030892
ELU 05	21	-0,424775	4,166833	-15,334850	1,238973	-0,691291	-0,106641
ELU 05	22	0,120759	0,587990	34,889380	-2,105003	0,158042	-0,006691
ELU 05	23	-0,120659	0,023166	54,602230	-0,082934	-0,149187	-0,017282
ELU 05	24	0,119719	0,594465	43,736190	-2,128185	0,156809	-0,006530
ELU 05	25	-0,273604	0,019384	43,557480	-0,069396	-0,331695	-0,039848
ELU 05	26	13,386060	1,360146	289,923700	-4,869323	17,387360	0,849560
ELU 05	27	-5,769688	1,898030	-51,449300	-6,794949	-12,996590	0,918632
ELU 05	28	-0,111977	0,605732	34,333240	-2,168519	-0,119674	0,027651

HIPOTESIS	NUDO	F(x) (Kn)	F(y) (Kn)	F(z)(Kn)	M(x)(Kn*m)	M(y)(Kn*m)	
ELU 05	29	0,197087	0,614214	35,571280	-2,198887	0,249150	-0,017927
ELU 05	30	-14,626810	1,565976	336,229300	-5,606195	-19,478610	-0,547285
ELU 05	31	4,674689	2,185255	-50,910360	-7,823213	9,288695	-0,544885
ELU 05	32	-0,116655	0,620417	45,531900	-2,221092	-0,125240	0,028357
ELU 05	33	0,225383	0,017494	46,608870	-0,062628	0,263778	0,033734
ELU 05	34	0,038150	0,630025	42,531390	-2,255489	0,059503	0,005532
ELU 05	35	0,088331	0,019307	56,988550	-0,069118	0,100238	0,013510
ELU 05	36	6,749779	30,474380	111,620900	-109,098300	8,715542	-0,448405
ELU 05	37	-10,440870	10,196500	53,129310	5,535758	-5,861773	0,568539
ELU 05	38	-7,551227	-10,345710	92,310970	1,636367	-7,428097	-0,391885
ELU 05	39	-2,786305	-16,928050	70,752880	3,051614	-3,994193	-0,177229
ELU 05	40	-0,026756	-16,645680	51,005940	3,351030	-1,180005	-0,163106
ELU 05	41	5,243405	-10,527030	24,040600	-1,119876	0,959237	-0,049271
ELU 05	42	-0,468811	8,757347	36,308070	3,235601	0,347287	-0,084916
ELU 05	43	0,709477	0,868220	44,288530	-1,899715	1,081920	-0,001756
ELU 05	44	0,983857	-0,335330	14,135870	-1,542792	1,272118	-0,026340
ELU 05	45	0,336086	1,603694	-5,451471	0,400912	0,651557	0,102989
ELU 05	46	-0,205436	0,638684	77,813380	-2,286489	-0,231160	0,041477
ELU 05	47	24,523300	0,600621	215,078300	-2,150223	29,020850	3,487530
ELU 05	48	0,115165	7,661520	32,570740	2,954186	-0,167416	0,035521
ELU 05	49	-0,378517	0,237214	42,065530	-1,426780	-0,476875	0,000172
ELU 05	50	-0,480038	-0,994334	17,488150	-1,061551	-0,547352	0,010259
ELU 05	51	-0,182683	0,346284	-1,110062	0,063472	-0,280138	-0,042234
ELU 05	52	4,616327	31,791670	106,237500	-113,814200	6,170393	-0,146122
ELU 05	53	2,486836	0,273263	115,360900	-0,978282	2,724427	0,372275
ELU 05	54	0,485299	0,406077	16,693120	-1,453757	0,695454	-0,050128
ELU 05	55	0,744278	0,376799	25,323680	-1,348942	1,045875	0,052868
ELU 05	56	-0,054978	0,434883	8,005937	-1,556882	-0,058948	-0,018946

