

CHAPTER V

CONCLUSIONS AND SUGGESTIONS

5.1. Conclusions

In the case study presented here, the selected building was analyzed for its response to the external blast loading. After non-linear dynamic analysis of building subjected to blast load, following conclusions can be drawn:

1. The blast pressure is depending on the stand-off distance. Peak refracted overpressure P_r was increasing when the stand-off distance decreasing. Resulted in the reflected overpressure is more at the bottom floors and low at the top floors.
2. Blast waves takes millisecond to reach the building from the explosion site and affect the building.
3. Blast has a characteristic of high amplitude, the explosion near the structure can cause catastrophic damage to the structure, from the story drift ratio result it was observed that the story drift exceeds the story drift limitation as per SNI 1726: 2012 Section 7.12.1 the story drift ratio shall not exceed 0.015. Therefore, the Universitas Atma Jaya Yogyakarta's Library current design cannot resist blast loading come from vehicle with 227 kg charge weight.
4. For the important structures, blast analysis needs to carry out by keeping in view the terrorist's activities in today's scenario.

5.2. Suggestions

Several suggestions for the next research:

1. Designing the structure that can resist the blast loading, pay special attention to the weak parts of the structure, but also keep in mind that designing the structures to be fully blast resistant is not a realistic and economical option.
2. Since the actual charge weight of explosive used by the terrorists, the chemical reaction is not reliably predictable, it is suggested to try more varied different charge weight from different stand-off distance in the analysis.
3. Blast pressure calculation can be done by use another software like *CONWEP*.
4. The analysis can be carried out by the finite element analysis program like LS-DYNA, ANSYS, ABAQUS, etc.

REFERENCES

AT Blast Version 1.0. Applied Research Associates, Inc., Vicksburg, MS 39180.

Cheng, X., Jing, W., Ma, J. 2014. Dynamic Response of Concrete Frame Structure under a Blasting Demolition Environment. EJGE 19 [2014], Bund. Z7, pp. 17823-17837.

Department of the Treasury Bureau of Alcohol, Tobacco and Firearms: ATF Vehicle Bomb Explosion Hazard and Evacuation Distance Table.

Draganić, H., Sigmund, V. 2012. Blast Loading on Structures, Tehnički vjesnik 19, 3(2012), pp.643-652.

FEMA 426. 2003. Risk Management Series: References Manual to Mitigate Potential Terrorist Attacks Against Building.

FEMA 428. 2003. Risk Management Series: Primer to Design Safe School Projects in Case of Terrorist Attacks.

Jamakhandi, U., Vanakudre, S.B. 2015. Design and Analysis of Blast Load on Structures. International Journal of Research in Engineering and Technology, 2(7), pp.745-747.

Joni, M., Suryanita, R., Kamaldi, A. 2016. Analisis Beban Ledakan dan Pengaruhnya Terhadap Struktur Portal Baja, Jom FTEKNIK, 3(2).

Karlos, V., Solomos, G. 2013. JRC Technical Reports: Calculation of Blast Loads for Application to Structural Component.

Kashif, Q., and Varma, M. B. 2014. Effect of Blast on G+4 RCC Frame Structure, *International Journal of Emerging Technology and Advanced Engineering*, 4(11).

Koccaz, Z., Sutcu, F., Torunbalci, N. 2008. Architectural and Structural Design for Blast Resistance Building. *The 14th World Conference On Earthquake Engineering*, Beijing, China.

Kulkarni, A.V., Sambireddy, G. 2014. Analysis of Blast Loading Effect on High Rise Buildings. *International Institute for Science, Technology and Education*, 6(10).

Ngo, T., Mendis, P., Gupta, A., Ramsay, J. 2007. Blast Loading and Blast Effects on Structures – An Overview. *EJSE Special Issue: Loading on Structures* (2007), pp. 76-91.

Nourszadeh, D., Humar, J., Braimah, A. 2015. Global Response of Building Structures to Blast Loading: Case Study of a 10 Storey Building, *11th International Conference on Shock & Impact Loads on Structures*, Ottawa, Canada.

Singla, S., Singla, P., Singla, A. 2015. Computation of Blast Loading for a Multi Storeyed Framed Building, *International Journal of Research in Engineering and Technology*, 4(2), pp. 759-766.

SNI 1726:2012. Tata Cara Perencanaan Ketahanan Gempa untuk Struktur Bangunan dan Non-Bangunan, Badan Standarisasi Nasional.

Unified Facilities Criteria (UFC). 2008. Structures to Resist the Effects of Accidental Explosions, U. S. Army Corps of Engineers, Naval Facilities Engineering Command, Air Force Civil Engineer Support Agency, UFC 3-340-02, 5 December 2008.



APPENDIX

Appendix A: Building ETABs Model

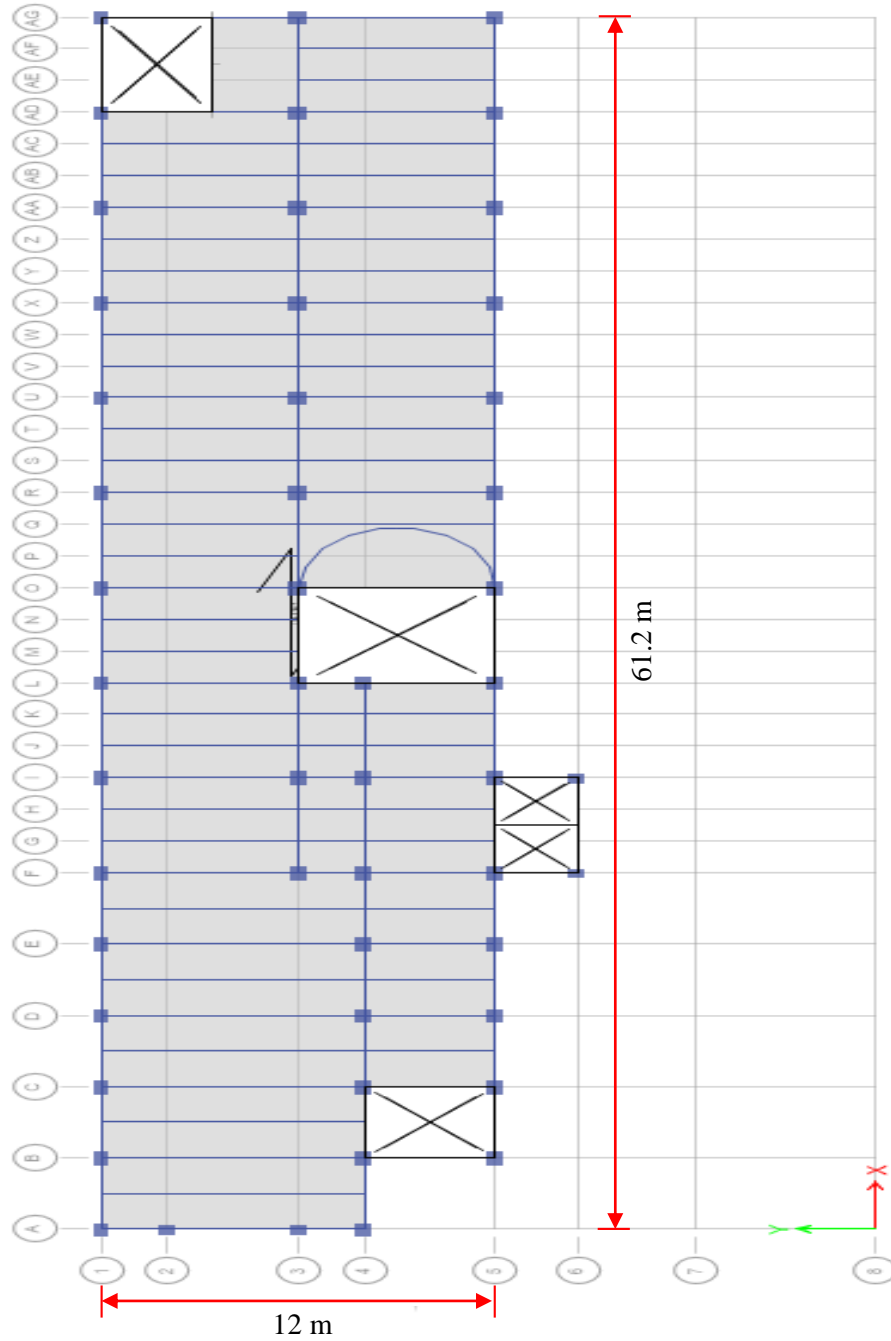


Figure A.1. Typical Building Plan

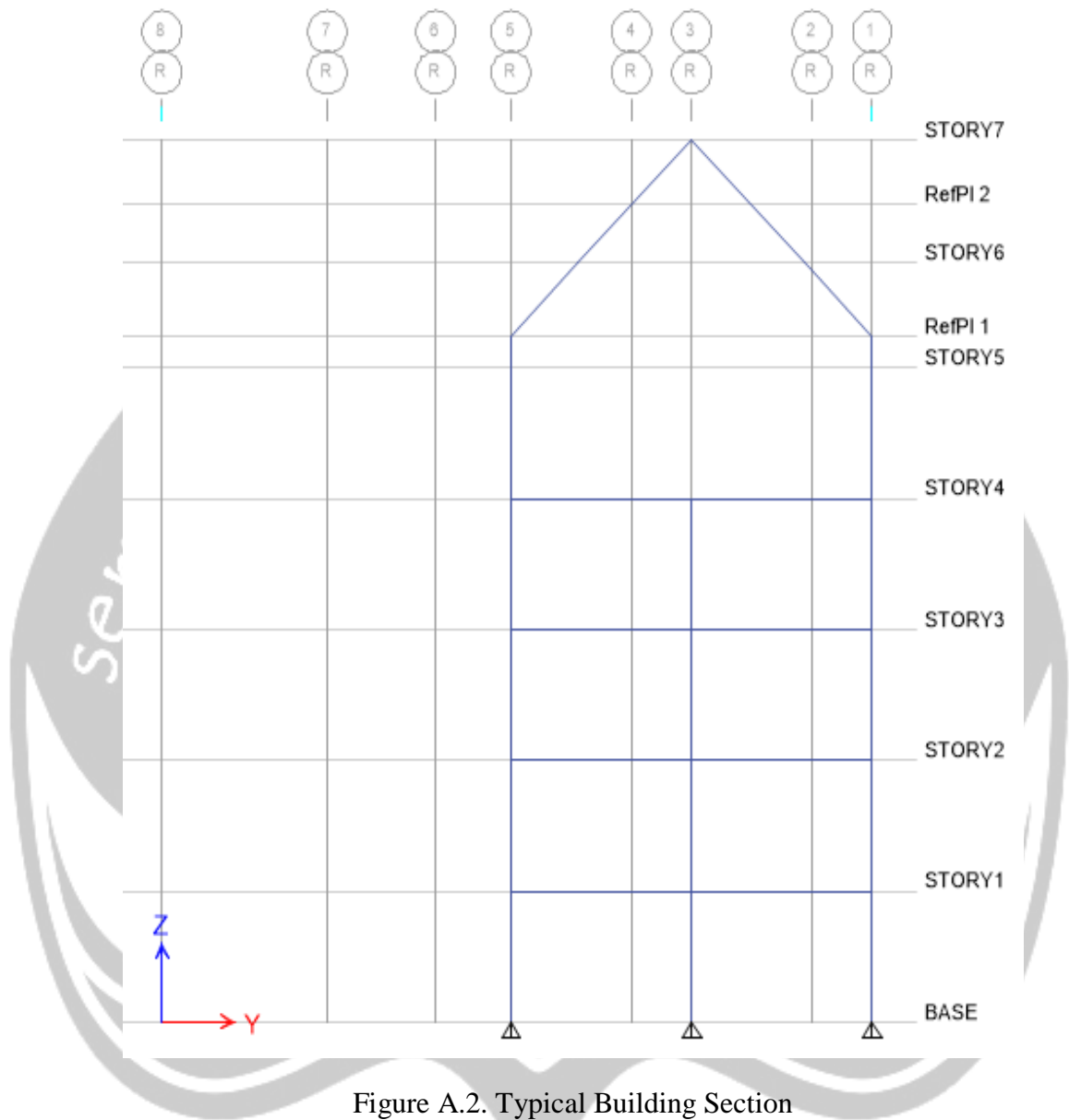


Figure A.2. Typical Building Section

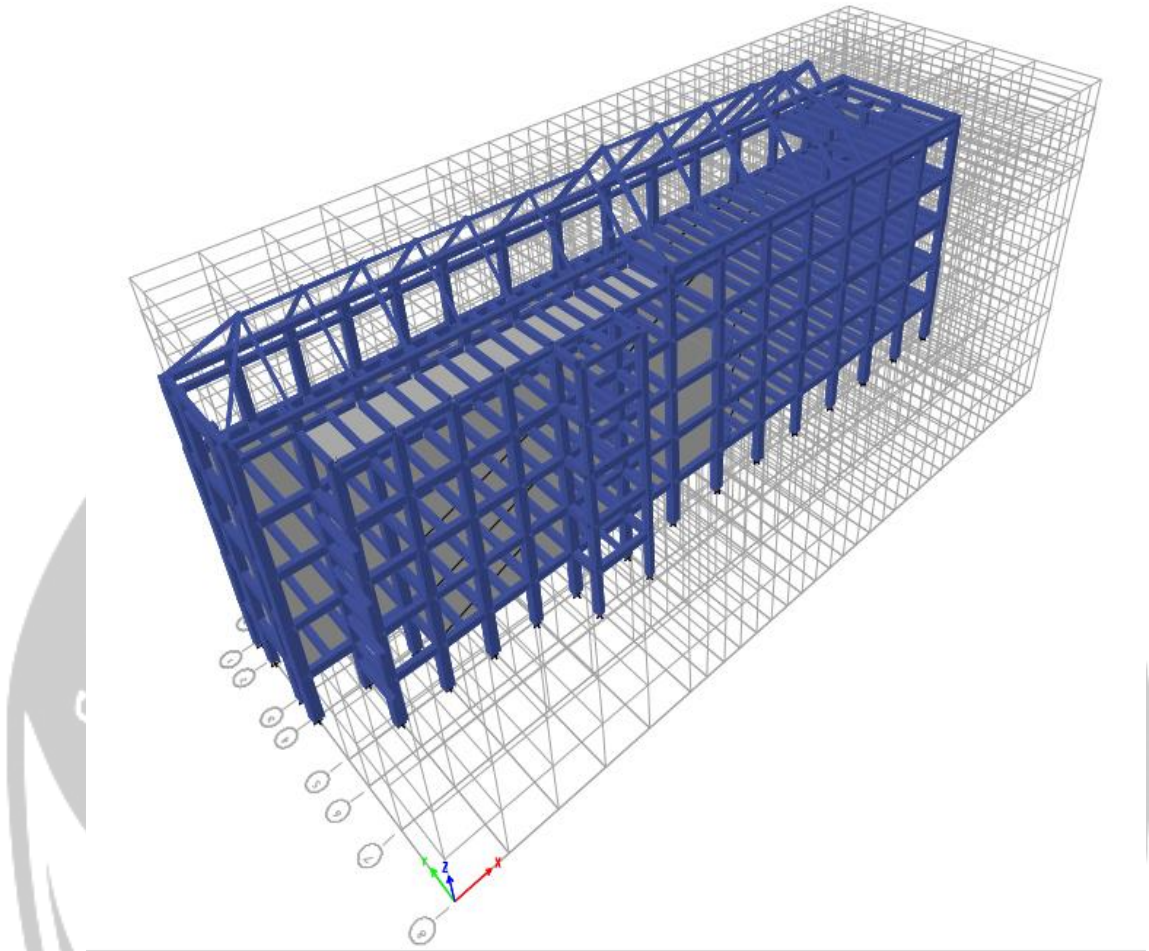


Figure A.3. 3D Model of the Building

Appendix B: Fixed Building Output

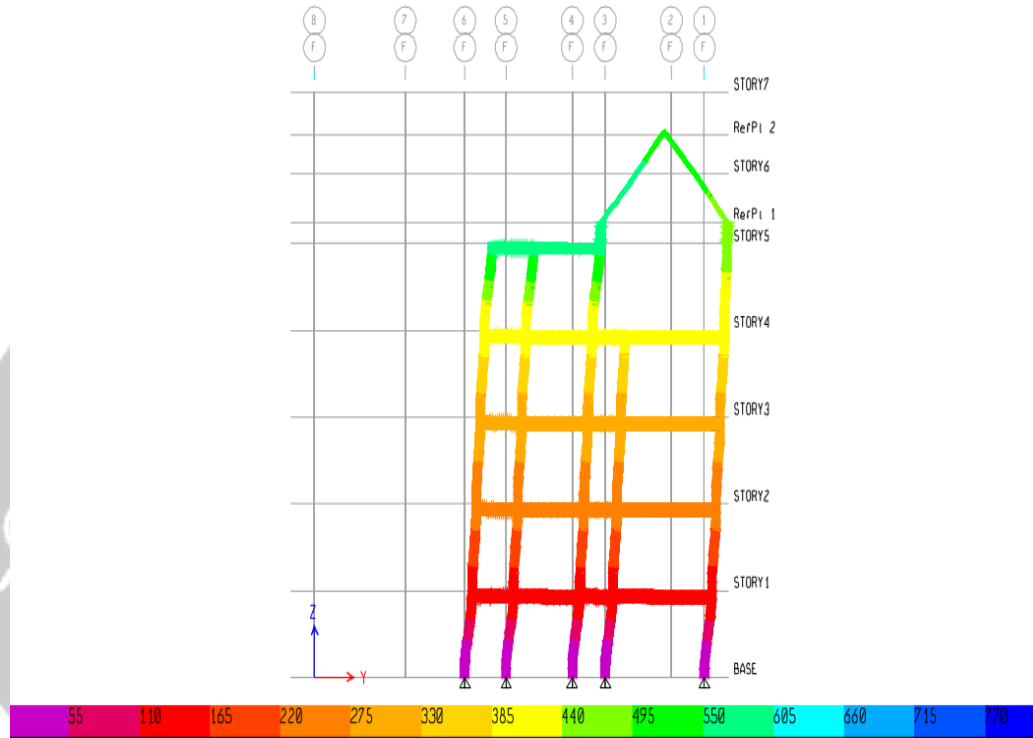


Figure B.1. Max Displacement on Section F

	Story	Elevation m	Location	X-Dir mm	Y-Dir mm
▶	STORY7	20.125	Top	92.602	762.619
	STORY6	16.1	Top	64.419	586.39
	STORY5	12.075	Top	50.055	462.612
	STORY4	8.05	Top	36.952	344.388
	STORY3	4.025	Top	23.435	220.685
	STORY2	0	Top	0	0

Figure B.2. Max Story Displacement

	Story	Elevation m	Location	X-Dir	Y-Dir
▶	STORY7	20.125	Top	0.007118	0.0531
	STORY6	16.1	Top	0.00359	0.030752
	STORY5	12.075	Top	0.003269	0.029372
	STORY4	8.05	Top	0.00339	0.030734
	STORY3	4.025	Top	0.005822	0.054829
	STORY2	0	Top	0	0

Figure B.3. Max Story Drift Ratio

TABLE: Time History Plot

Time	Joint_F0	Joint_F1	Joint_F2	Joint_F3	Joint_F4
sec	mm	mm	mm	mm	mm
0	0	0	0	0	0
0.001	0	0	0	0	0
0.002	0	0	0	0	0
0.003	0	0	0	0	0
0.004	0	0	0	0	0
0.005	0	0	0	0	0
0.006	0	0	0	0	0
0.007	2.066E-08	3.22E-08	4.318E-08	5.472E-08	7.583E-08
0.008	5.362	8.358	11.206	14.203	19.682
0.009	17.677	27.554	36.944	46.823	64.885
0.01	30.811	48.027	64.395	81.614	113.097
0.011	48.599	75.753	101.57	128.73	178.388
0.012	74.691	116.424	156.101	197.842	274.161
0.013	103.025	160.591	215.319	272.896	378.167
0.014	128.908	200.934	269.411	341.453	473.17
0.015	146.397	228.195	305.963	387.778	537.365
0.016	150.803	235.064	315.172	399.45	553.538
0.017	140.953	219.711	294.588	373.36	517.382
0.018	118.302	184.404	247.248	313.362	434.235
0.019	86.531	134.881	180.848	229.206	317.613
0.02	50.15	78.172	104.813	132.839	184.068
0.021	14.279	22.259	29.845	37.824	52.397
0.022	-16.382	-25.534	-34.235	-43.391	-60.151
0.023	-38.671	-60.276	-80.817	-102.43	-141.968
0.024	-50.471	-78.669	-105.478	-133.686	-185.284
0.025	-50.911	-79.354	-106.397	-134.851	-186.899
0.026	-40.757	-63.527	-85.176	-107.955	-149.63
0.027	-22.337	-34.815	-46.679	-59.164	-82.02
0.028	1.197	1.869	2.508	3.175	4.367
0.029	25.91	40.39	54.156	68.634	95.076
0.03	47.753	74.438	99.808	126.493	175.254
0.031	63.4	98.827	132.508	167.938	232.684
0.032	70.504	109.901	147.357	186.756	258.761
0.033	68.106	106.163	142.345	180.404	249.956
0.034	56.721	88.418	118.551	150.248	208.165
0.035	38.24	59.61	79.927	101.295	140.325
0.036	15.55	24.243	32.507	41.195	57.038
0.037	-8.023	-12.5	-16.758	-21.244	-29.491
0.038	-29.11	-45.37	-60.829	-77.1	-106.895

Time	Joint_F0	Joint_F1	Joint_F2	Joint_F3	Joint_F4
sec	mm	mm	mm	mm	mm
0.039	-44.787	-69.806	-93.593	-118.625	-164.442
0.04	-52.991	-82.594	-110.739	-140.357	-194.558
0.041	-52.835	-82.351	-110.413	-139.943	-193.986
0.042	-44.711	-69.687	-93.434	-118.424	-164.166
0.043	-30.154	-46.996	-63.009	-79.864	-110.733
0.044	-11.582	-18.047	-24.195	-30.67	-42.562
0.045	8.096	12.627	16.933	21.455	29.67
0.046	25.93	40.425	54.204	68.693	95.13
0.047	39.355	61.352	82.263	104.255	144.41
0.048	46.564	72.588	97.329	123.349	170.87
0.049	46.73	72.848	97.678	123.791	171.481
0.05	40.095	62.506	83.811	106.216	147.125
0.051	27.887	43.477	58.298	73.88	102.315
0.052	12.108	18.881	25.319	32.084	44.394
0.053	-4.794	-7.465	-10.005	-12.687	-17.649
0.054	-20.296	-31.628	-42.403	-53.748	-74.55
0.055	-32.174	-50.143	-67.227	-85.211	-118.15
0.056	-38.823	-60.506	-81.122	-102.821	-142.555
0.057	-39.465	-61.507	-82.464	-104.521	-144.911
0.058	-34.235	-53.355	-71.533	-90.668	-125.713
0.059	-24.125	-37.595	-50.403	-63.887	-88.602
0.06	-10.804	-16.832	-22.564	-28.604	-39.706
0.061	3.649	5.696	7.642	9.68	13.346
0.062	17.069	26.616	35.691	45.229	62.609
0.063	27.527	42.917	57.548	72.93	100.998
0.064	33.6	52.384	70.241	89.018	123.291
0.065	34.565	53.888	72.257	91.573	126.833
0.066	30.475	47.512	63.709	80.738	111.819
0.067	22.123	34.494	46.254	58.616	81.164
0.068	10.899	16.998	22.796	28.886	39.964
0.069	-1.441	-2.236	-2.993	-3.799	-5.328
0.07	-13.041	-20.318	-27.237	-34.525	-47.908
0.071	-22.228	-34.637	-46.436	-58.859	-81.628
0.072	-27.744	-43.236	-57.965	-73.471	-101.876
0.073	-28.921	-45.07	-60.425	-76.588	-106.195
0.074	-25.752	-40.13	-53.8	-68.192	-94.559
0.075	-18.867	-29.399	-39.412	-49.956	-69.287
0.076	-9.42	-14.674	-19.669	-24.934	-34.611
0.077	1.103	1.73	2.325	2.942	4.019
0.078	11.118	17.339	23.254	29.468	40.779

Time	Joint_F0	Joint_F1	Joint_F2	Joint_F3	Joint_F4
sec	mm	mm	mm	mm	mm
0.079	19.171	29.893	40.086	50.801	70.343
0.08	24.157	37.664	50.505	64.006	88.643
0.081	25.458	39.693	53.226	67.454	93.422
0.082	23.025	35.9	48.141	61.009	84.493
0.083	17.357	27.065	36.294	45.995	63.687
0.084	9.408	14.675	19.681	24.94	34.511
0.085	0.432	0.684	0.922	1.165	1.565
0.086	-8.214	-12.794	-17.149	-21.739	-30.172
0.087	-15.276	-23.801	-31.907	-40.443	-56.091
0.088	-19.776	-30.817	-41.313	-52.365	-72.611
0.089	-21.154	-32.965	-44.194	-56.015	-77.668
0.09	-19.327	-30.117	-40.375	-51.176	-70.961
0.091	-14.687	-22.884	-30.677	-38.884	-53.926
0.092	-8.023	-12.496	-16.75	-21.232	-29.463
0.093	-0.391	-0.601	-0.8	-1.017	-1.449
0.094	7.05	10.997	14.75	18.691	25.864
0.095	13.213	20.604	27.631	35.017	48.489
0.096	17.243	26.885	36.052	45.69	63.281
0.097	18.627	29.042	38.945	49.356	68.362
0.098	17.263	26.916	36.093	45.742	63.355
0.099	13.454	20.978	28.132	35.653	49.374
0.1	7.852	12.246	16.424	20.814	28.813
0.101	1.347	2.106	2.828	3.582	4.935
0.102	-5.074	-7.902	-10.59	-13.424	-18.631
0.103	-10.471	-16.315	-21.871	-27.721	-38.442
0.104	-14.093	-21.961	-29.441	-37.316	-51.738
0.105	-15.477	-24.119	-32.335	-40.984	-56.819
0.106	-14.508	-22.608	-30.309	-38.415	-53.258
0.107	-11.417	-17.79	-23.85	-30.229	-41.913
0.108	-6.742	-10.503	-14.079	-17.846	-24.751
0.109	-1.23	-1.912	-2.56	-3.246	-4.519
0.11	4.276	6.67	8.946	11.337	15.692
0.111	8.967	13.981	18.748	23.761	32.909
0.112	12.183	18.994	25.47	32.279	44.715
0.113	13.508	21.059	28.238	35.788	49.578
0.114	12.817	19.982	26.794	33.958	47.044
0.115	10.289	16.041	21.509	27.26	37.763
0.116	6.362	9.919	13.302	16.858	23.349
0.117	1.665	2.598	3.486	4.417	6.11
0.118	-3.084	-4.804	-6.44	-8.163	-11.322

Time	Joint_F0	Joint_F1	Joint_F2	Joint_F3	Joint_F4
sec	mm	mm	mm	mm	mm
0.119	-7.187	-11.201	-15.017	-19.033	-26.384
0.12	-10.069	-15.693	-21.04	-26.667	-36.962
0.121	-11.354	-17.697	-23.727	-30.072	-41.679
0.122	-10.916	-17.014	-22.812	-28.913	-40.072
0.123	-8.887	-13.852	-18.572	-23.538	-32.623
0.124	-5.626	-8.769	-11.758	-14.902	-20.654
0.125	-1.662	-2.59	-3.472	-4.401	-6.1
0.126	2.397	3.736	5.009	6.349	8.797
0.127	5.948	9.272	12.431	15.755	21.834
0.128	8.489	13.232	17.741	22.485	31.161
0.129	9.684	15.094	20.237	25.649	35.546
0.13	9.407	14.661	19.657	24.914	34.528
0.131	7.753	12.084	16.201	20.533	28.459
0.132	5.017	7.819	10.482	13.285	18.417
0.133	1.641	2.555	3.424	4.341	6.022
0.134	-1.858	-2.899	-3.888	-4.928	-6.821
0.135	-4.962	-7.737	-10.376	-13.15	-18.213
0.136	-7.232	-11.276	-15.12	-19.162	-26.544
0.137	-8.367	-13.046	-17.494	-22.171	-30.713
0.138	-8.247	-12.858	-17.242	-21.852	-30.27
0.139	-6.937	-10.817	-14.506	-18.383	-25.462
0.14	-4.677	-7.294	-9.783	-12.398	-17.166
0.141	-1.836	-2.867	-3.846	-4.874	-6.738
0.142	1.145	1.78	2.384	3.022	4.206
0.143	3.822	5.953	7.979	10.113	14.033
0.144	5.813	9.056	12.138	15.386	21.341
0.145	6.85	10.671	14.305	18.132	25.147
0.146	6.816	10.618	14.233	18.041	25.023
0.147	5.756	8.966	12.018	15.233	21.132
0.148	3.863	6.016	8.062	10.22	14.186
0.149	1.447	2.249	3.011	3.819	5.317
0.15	-1.12	-1.752	-2.353	-2.98	-4.104
0.151	-3.456	-5.393	-7.235	-9.167	-12.676
0.152	-5.227	-8.154	-10.937	-13.859	-19.177
0.153	-6.196	-9.666	-12.964	-16.428	-22.735
0.154	-6.254	-9.755	-13.083	-16.58	-22.944
0.155	-5.426	-8.465	-11.354	-14.387	-19.905
0.156	-3.869	-6.038	-8.101	-10.264	-14.19
0.157	-1.841	-2.877	-3.862	-4.892	-6.745
0.158	0.342	0.525	0.7	0.89	1.269

Time	Joint_F0	Joint_F1	Joint_F2	Joint_F3	Joint_F4
sec	mm	mm	mm	mm	mm
0.159	2.353	3.659	4.902	6.216	8.651
0.16	3.902	6.074	8.139	10.319	14.337
0.161	4.778	7.44	9.971	12.641	17.556
0.162	4.879	7.597	10.181	12.907	17.927
0.163	4.218	6.566	8.799	11.156	15.501
0.164	2.92	4.544	6.087	7.719	10.739
0.165	1.2	1.863	2.493	3.163	4.427
0.166	-0.674	-1.058	-1.424	-1.801	-2.451
0.167	-2.421	-3.783	-5.077	-6.43	-8.866
0.168	-3.792	-5.919	-7.941	-10.06	-13.895
0.169	-4.598	-7.176	-9.626	-12.196	-16.855
0.17	-4.745	-7.404	-9.932	-12.584	-17.391
0.171	-4.235	-6.61	-8.867	-11.234	-15.519
0.172	-3.17	-4.949	-6.641	-8.412	-11.608
0.173	-1.726	-2.699	-3.624	-4.589	-6.309
0.174	-0.132	-0.214	-0.292	-0.365	-0.455
0.175	1.374	2.133	2.855	3.623	5.072
0.176	2.573	4.002	5.36	6.798	9.473
0.177	3.3	5.136	6.881	8.726	12.145
0.178	3.468	5.397	7.231	9.17	12.76
0.179	3.072	4.779	6.403	8.121	11.307
0.18	2.192	3.408	4.564	5.79	8.078
0.181	0.975	1.512	2.023	2.569	3.615
0.182	-0.386	-0.609	-0.822	-1.036	-1.381
0.183	-1.686	-2.637	-3.54	-4.481	-6.154
0.184	-2.738	-4.275	-5.737	-7.266	-10.012
0.185	-3.395	-5.3	-7.11	-9.006	-12.424
0.186	-3.576	-5.582	-7.489	-9.486	-13.089
0.187	-3.273	-5.11	-6.855	-8.683	-11.976
0.188	-2.548	-3.98	-5.34	-6.763	-9.316
0.189	-1.524	-2.383	-3.2	-4.05	-5.556
0.19	-0.362	-0.572	-0.771	-0.971	-1.289
0.191	0.763	1.181	1.58	2.008	2.839
0.192	1.687	2.621	3.511	4.455	6.23
0.193	2.282	3.55	4.756	6.032	8.416
0.194	2.475	3.85	5.158	6.543	9.123
0.195	2.252	3.503	4.694	5.954	8.306
0.196	1.664	2.586	3.464	4.395	6.146
0.197	0.81	1.255	1.68	2.134	3.012
0.198	-0.173	-0.277	-0.374	-0.469	-0.596

Time	Joint_F0	Joint_F1	Joint_F2	Joint_F3	Joint_F4
sec	mm	mm	mm	mm	mm
0.199	-1.135	-1.776	-2.385	-3.018	-4.128
0.2	-1.935	-3.023	-4.057	-5.137	-7.066
0.201	-2.462	-3.844	-5.157	-6.531	-8.998
0.202	-2.647	-4.132	-5.543	-7.02	-9.677
0.203	-2.475	-3.865	-5.185	-6.566	-9.048
0.204	-1.986	-3.101	-4.161	-5.269	-7.251
0.205	-1.261	-1.971	-2.646	-3.349	-4.591
0.206	-0.415	-0.653	-0.879	-1.109	-1.489
0.207	0.423	0.653	0.873	1.111	1.587
0.208	1.132	1.759	2.355	2.99	4.189
0.209	1.613	2.51	3.362	4.266	5.956
0.21	1.807	2.811	3.767	4.778	6.665
0.211	1.695	2.637	3.534	4.483	6.255
0.212	1.308	2.034	2.725	3.457	4.832
0.213	0.713	1.107	1.482	1.882	2.648
0.214	0.007	0.007	0.008	0.013	0.057
0.215	-0.701	-1.096	-1.472	-1.861	-2.542
0.216	-1.305	-2.039	-2.735	-3.464	-4.764
0.217	-1.721	-2.687	-3.605	-4.565	-6.292
0.218	-1.894	-2.955	-3.964	-5.021	-6.925
0.219	-1.805	-2.816	-3.778	-4.785	-6.6
0.22	-1.476	-2.305	-3.092	-3.916	-5.397
0.221	-0.965	-1.508	-2.023	-2.561	-3.522
0.222	-0.352	-0.552	-0.741	-0.936	-1.272
0.223	0.271	0.419	0.561	0.714	1.013
0.224	0.813	1.264	1.694	2.149	3
0.225	1.198	1.865	2.5	3.17	4.414
0.226	1.378	2.145	2.876	3.646	5.072
0.227	1.335	2.078	2.786	3.532	4.912
0.228	1.085	1.689	2.263	2.87	3.993
0.229	0.673	1.048	1.405	1.782	2.483
0.23	0.169	0.262	0.351	0.446	0.63
0.231	-0.349	-0.546	-0.732	-0.927	-1.275
0.232	-0.804	-1.255	-1.683	-2.132	-2.946
0.233	-1.13	-1.762	-2.363	-2.994	-4.143
0.234	-1.282	-1.999	-2.681	-3.398	-4.704
0.235	-1.244	-1.94	-2.601	-3.296	-4.565
0.236	-1.027	-1.601	-2.147	-2.721	-3.77
0.237	-0.669	-1.042	-1.398	-1.772	-2.456
0.238	-0.225	-0.351	-0.471	-0.597	-0.831

Time	Joint_F0	Joint_F1	Joint_F2	Joint_F3	Joint_F4
sec	mm	mm	mm	mm	mm
0.239	0.235	0.367	0.492	0.623	0.859
0.24	0.647	1.009	1.353	1.714	2.368
0.241	0.952	1.484	1.99	2.521	3.486
0.242	1.11	1.732	2.322	2.942	4.067
0.243	1.107	1.726	2.315	2.932	4.052
0.244	0.948	1.479	1.984	2.513	3.47
0.245	0.666	1.039	1.394	1.765	2.432
0.246	0.307	0.48	0.644	0.814	1.112
0.247	-0.072	-0.111	-0.148	-0.19	-0.281
0.248	-0.414	-0.643	-0.861	-1.093	-1.535
0.249	-0.667	-1.038	-1.391	-1.765	-2.468
0.25	-0.799	-1.243	-1.665	-2.112	-2.95
0.251	-0.791	-1.231	-1.65	-2.093	-2.925
0.252	-0.651	-1.012	-1.356	-1.721	-2.41
0.253	-0.402	-0.624	-0.835	-1.061	-1.498
0.254	-0.084	-0.128	-0.17	-0.219	-0.332
0.255	0.255	0.4	0.538	0.679	0.911
0.256	0.565	0.883	1.186	1.5	2.047
0.257	0.802	1.254	1.683	2.13	2.919
0.258	0.937	1.464	1.965	2.487	3.413
0.259	0.953	1.49	2	2.531	3.473
0.26	0.855	1.337	1.794	2.27	3.11
0.261	0.661	1.035	1.389	1.758	2.399
0.262	0.405	0.636	0.855	1.08	1.458
0.263	0.128	0.204	0.275	0.345	0.44
0.264	-0.128	-0.196	-0.26	-0.333	-0.502
0.265	-0.326	-0.504	-0.673	-0.857	-1.228
0.266	-0.438	-0.677	-0.905	-1.151	-1.637
0.267	-0.449	-0.695	-0.929	-1.181	-1.679
0.268	-0.361	-0.558	-0.746	-0.949	-1.358
0.269	-0.191	-0.293	-0.39	-0.498	-0.734
0.27	0.034	0.059	0.082	0.1	0.094
0.271	0.281	0.443	0.597	0.753	0.998
0.272	0.512	0.803	1.08	1.365	1.846
0.273	0.694	1.088	1.462	1.849	2.516
0.274	0.804	1.26	1.692	2.14	2.92
0.275	0.829	1.298	1.744	2.206	3.01
0.276	0.768	1.204	1.617	2.045	2.787
0.277	0.635	0.996	1.338	1.692	2.298
0.278	0.452	0.71	0.956	1.207	1.625

Time	Joint_F0	Joint_F1	Joint_F2	Joint_F3	Joint_F4
sec	mm	mm	mm	mm	mm
0.279	0.248	0.393	0.53	0.667	0.877
0.28	0.054	0.091	0.126	0.155	0.168
0.281	-0.1	-0.149	-0.197	-0.254	-0.399
0.282	-0.194	-0.296	-0.394	-0.503	-0.745
0.283	-0.216	-0.331	-0.44	-0.561	-0.826
0.284	-0.166	-0.251	-0.333	-0.427	-0.639
0.285	-0.052	-0.074	-0.096	-0.125	-0.221
0.286	0.106	0.172	0.234	0.292	0.358
0.287	0.282	0.447	0.604	0.761	1.008
0.288	0.452	0.712	0.958	1.21	1.631
0.289	0.59	0.927	1.246	1.575	2.137
0.29	0.677	1.062	1.428	1.806	2.456
0.291	0.702	1.102	1.481	1.873	2.55
0.292	0.665	1.043	1.403	1.774	2.413
0.293	0.572	0.899	1.209	1.528	2.073
0.294	0.44	0.693	0.933	1.178	1.588
0.295	0.289	0.457	0.617	0.779	1.035
0.296	0.142	0.229	0.311	0.39	0.496
0.297	0.02	0.039	0.057	0.068	0.051
0.298	-0.059	-0.085	-0.11	-0.143	-0.241
0.299	-0.087	-0.128	-0.168	-0.217	-0.342
0.3	-0.061	-0.088	-0.114	-0.148	-0.247