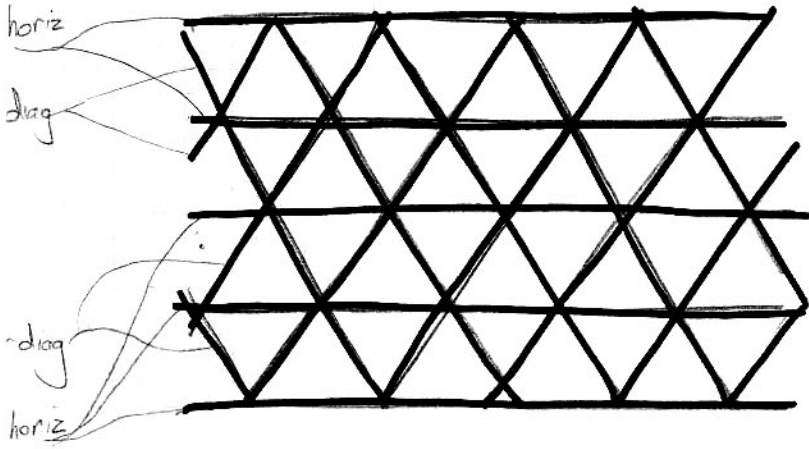


Appendix B

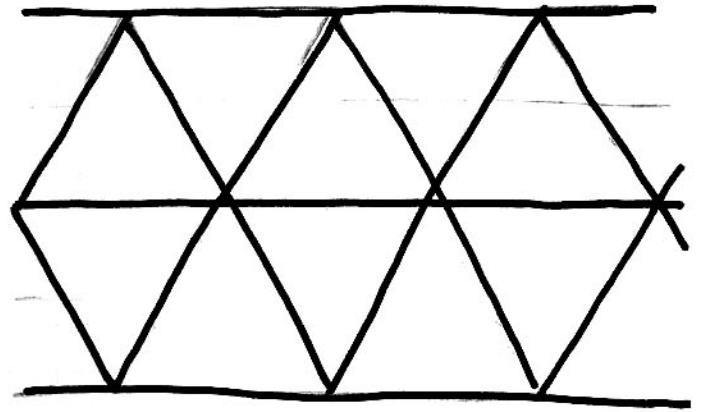
Solution Area II

- B.1 – Geometric configuration sketches
- B.2 – Diagrid efficiency tabulation example
- B.3 – Diagrid efficiency weight summary

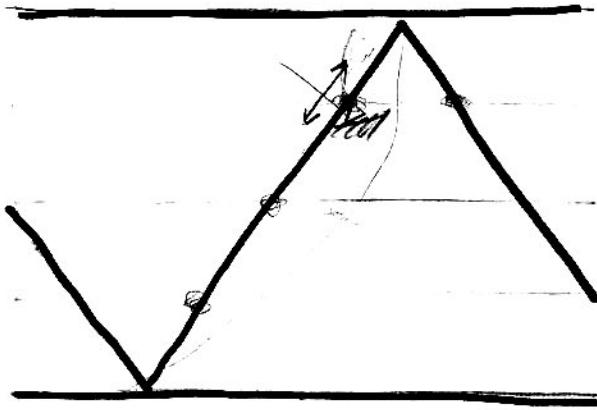
ORIGINAL ELEVATION



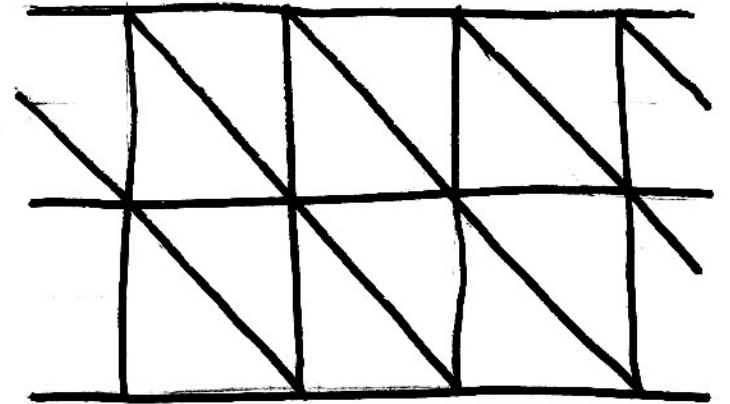
ALT #1



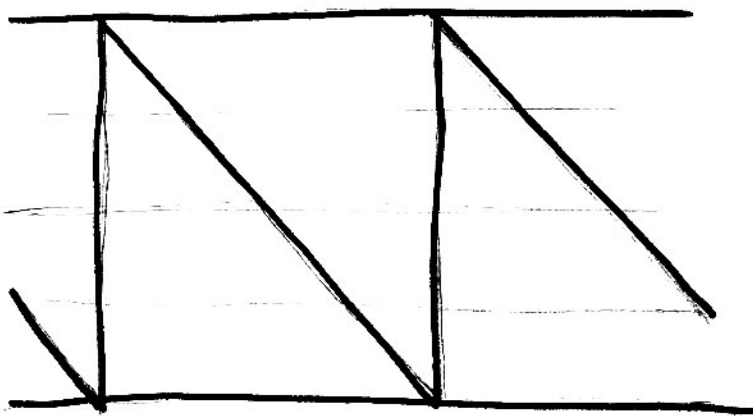
ALT #2



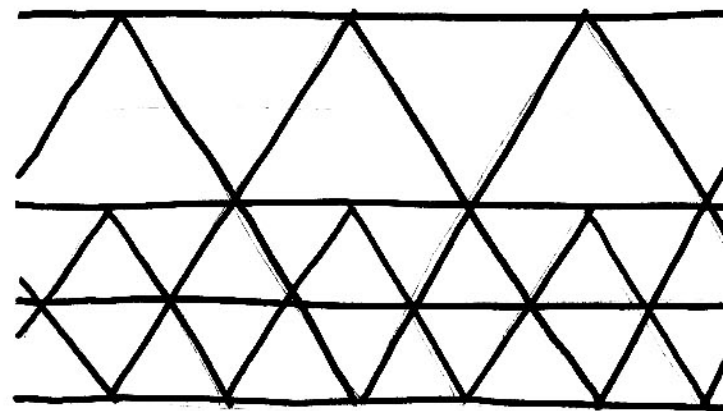
ALT #3



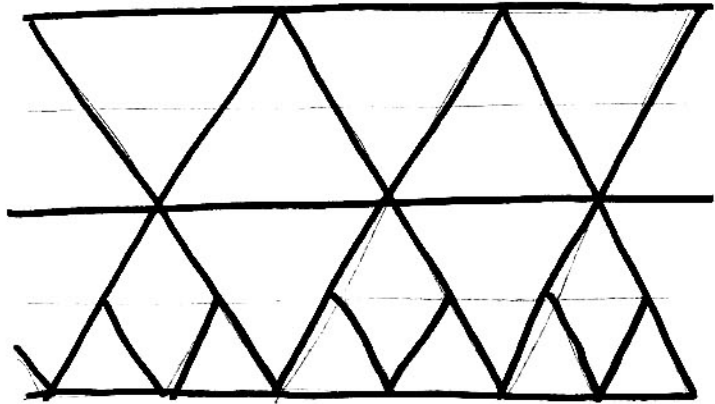
ALT #4



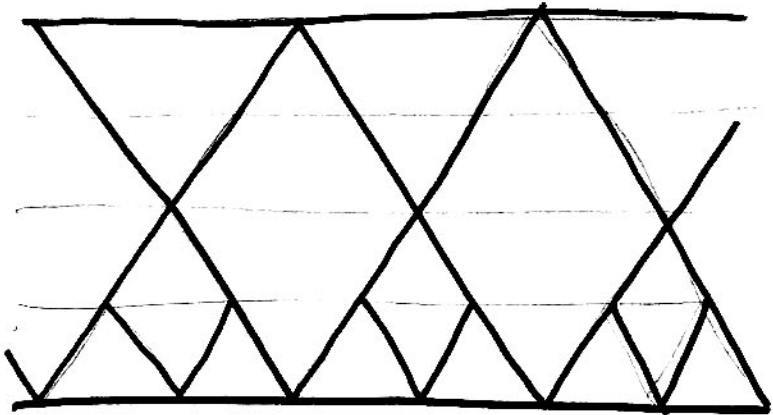
ALT #5a



ALT #5b

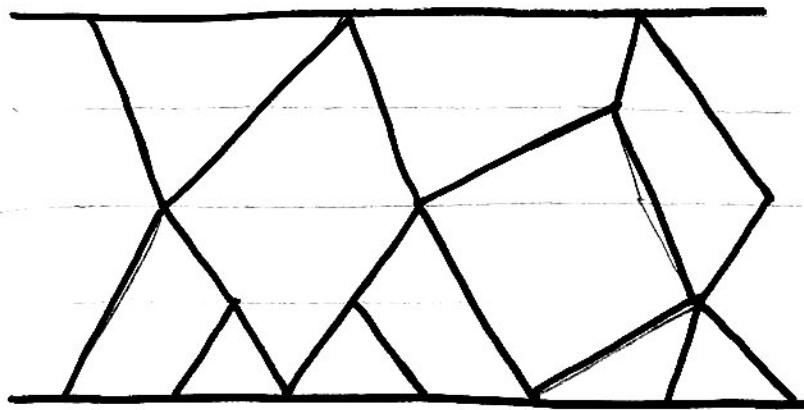


ALT #5c



ALT #6

-conforms to
force distribution
pattern



Diagrid Efficiency Tabulation

Beam	Load Case	Length (in)	Max Comp Stress (ksi)	Max Tens Stress (ksi)	Max Stress (ksi)
158	1:UNIT	170.763	0.56		0.56
156	1:UNIT	170.763	0.07	-0.321	0.321
154	1:UNIT	170.763		-0.365	0.365
153	1:UNIT	170.763	0.538		0.538
120	1:UNIT	170.763	0.462		0.462
119	1:UNIT	170.763	0.018	-0.317	0.317
117	1:UNIT	170.763	0.136	-0.314	0.314
115	1:UNIT	170.763	0.554		0.554
114	1:UNIT	170.763		-0.91	0.91
112	1:UNIT	170.763	1.071		1.071
110	1:UNIT	170.763	1.146		1.146
109	1:UNIT	170.763		-0.888	0.888
100	1:UNIT	170.763		-0.561	0.561
99	1:UNIT	170.763	0.752		0.752
97	1:UNIT	170.763	0.766		0.766
95	1:UNIT	170.763		-0.623	0.623
94	1:UNIT	170.763	0.23	-0.141	0.23
92	1:UNIT	170.763	0.399		0.399
90	1:UNIT	170.763	0.363	-0.052	0.363
89	1:UNIT	170.763	0.169	-0.201	0.201
80	1:UNIT	170.763	0.567		0.567
79	1:UNIT	170.763	0.004	-0.373	0.373
77	1:UNIT	170.763	0.065	-0.312	0.312
75	1:UNIT	170.763	0.563		0.563
74	1:UNIT	170.763		-0.51	0.51
72	1:UNIT	170.763	0.734		0.734
70	1:UNIT	170.763	0.773		0.773
69	1:UNIT	170.763		-0.549	0.549
64	1:UNIT	170.763	0.677		0.677
62	1:UNIT	170.763	0.011	-0.519	0.519
60	1:UNIT	170.763		-0.518	0.518
59	1:UNIT	170.763	0.805		0.805
50	1:UNIT	170.763	0.912		0.912
49	1:UNIT	170.763		-0.702	0.702
47	1:UNIT	170.763		-0.692	0.692
45	1:UNIT	170.763	0.889		0.889
44	1:UNIT	170.763	0.214	-0.141	0.214
42	1:UNIT	170.763	0.401		0.401
40	1:UNIT	170.763	0.346	-0.019	0.346
39	1:UNIT	170.763	0.153	-0.201	0.201
34	1:UNIT	170.763	0.203	-0.211	0.211
32	1:UNIT	170.763	0.438		0.438
30	1:UNIT	170.763	0.389		0.389
29	1:UNIT	170.763	0.109	-0.238	0.238
20	1:UNIT	170.763	0.249	-0.091	0.249
19	1:UNIT	170.763	0.234	-0.099	0.234
17	1:UNIT	170.763	0.341	-0.084	0.341
15	1:UNIT	170.763	0.331	-0.051	0.331
14	1:UNIT	170.763	0.306	-0.094	0.306
12	1:UNIT	170.763	0.321	-0.079	0.321
10	1:UNIT	170.763	0.4	-0.279	0.4
9	1:UNIT	170.763	0.246	-0.155	0.246

Sum	26.30
Count	52
Avg.	0.5058
Max.	1.146

Diagrid Efficiency Study Summary

Case 5a

	Count	Avg. Stress (ksi)	Max. Stress (ksi)	Efficiency (%)	Length (in)	Weight
Upper Diagonals	52	0.4081	0.838	48.7	170.8	7443
Lower Diagonals	104	0.3109	1.357	22.9	170.8	24105
Upper Horizontals	26	0.5543	0.941	58.9	108	2642
Lower Horizontals	79	0.2834	0.78	36.3	108	6655
	261			35.7		40845

Case 5b

	Count	Avg. Stress (ksi)	Max. Stress (ksi)	Efficiency (%)	Length (in)	Weight
Upper Diagonals	52	0.4585	1.063	43.1	170.8	9441
Lower Diagonals	52	0.6862	2.359	29.1	170.8	20952
Filler Diagonals	26	0.2841	1.24	22.9	170.8	5507
Upper Horizontals	26	0.6320	1.134	55.7	108	3184
Lower Horizontals	52	0.5705	1.073	53.2	108	6026
	208			41.2		45110

Case 5c

	Count	Avg. Stress (ksi)	Max. Stress (ksi)	Efficiency (%)	Length (in)	Weight
Upper Diagonals	52	0.6895	1.803	38.2	170.8	16014
Lower Diagonals	52	0.8421	3.616	23.3	170.8	32116
Filler Diagonals	26	0.3950	2.157	18.3	170.8	9579
Upper Horizontals	26	0.8380	1.753	47.8	108	4922
Lower Horizontals	26	0.8967	1.918	46.8	108	5386
	182			33.7		68016

Case 6

	Count	Avg. Stress (ksi)	Max. Stress (ksi)	Efficiency (%)	Length (in)	Weight
Upper Diagonals	72	0.1632	0.636	25.7	170.8	7821
Lower Diagonals	64	0.2741	1.193	23.0	170.8	13041
Left Sloped Braces	6	0.1545	0.258	59.9	229.1	355
Right Low Sloped Braces	8	0.1855	0.308	60.2	411.3	1013
Right Big Sloped Braces	16	0.2969	0.463	64.1	229.1	1697
Upper Horizontals	53	0.2053	0.626	32.8	108	3583
Lower Horizontals	79	0.1944	0.664	29.3	108	5665
	298			31.0		33176

Diagrid Efficiency Study Summary

Case 0	Count	Avg. Stress (ksi)	Max. Stress (ksi)	Efficiency (%)	Length (in)	Weight
Upper Diagonals	104	0.1653	0.589	28.1	170.8	10463
Lower Diagonals	104	0.2759	1.288	21.4	170.8	22879
Upper Horizontals	53	0.1957	0.572	34.2	108	3274
Lower Horizontals	79	0.2231	0.651	34.3	108	5554
	340			28.4		42170

Case 1	Count	Avg. Stress (ksi)	Max. Stress (ksi)	Efficiency (%)	Length (in)	Weight
Upper Diagonals	52	0.5058	1.146	44.1	170.8	10178
Lower Diagonals	52	0.6804	1.805	37.7	170.8	16031
Upper Horizontals	26	0.6638	1.173	56.6	108	3294
Lower Horizontals	52	0.5910	1.191	49.6	108	6689
	182			45.6		36192

Case 2	Count	Avg. Stress (ksi)	Max. Stress (ksi)	Efficiency (%)	Length (in)	Weight
Diagonals	52	2.1767	4.087	53.3	170.8	36299
Upper Horizontals	26	1.7067	2.656	64.3	108	7458
Lower Horizontals	26	1.6685	2.81	59.4	108	7890
	104			57.5		51648

Case 3	Count	Avg. Stress (ksi)	Max. Stress (ksi)	Efficiency (%)	Length (in)	Weight
Upper Diagonals	26	0.6047	1.093	55.3	194.7	5533
Lower Diagonals	26	0.7029	1.381	50.9	194.7	6991
Upper Verticals	26	0.3539	0.972	36.4	162	4094
Lower Verticals	26	0.5974	1.717	34.8	162	7232
Upper Horizontals	26	0.5526	0.989	55.9	108	2777
Lower Horizontals	52	0.5630	1.209	46.6	108	6790
	182			46.6		33417

Case 4	Count	Avg. Stress (ksi)	Max. Stress (ksi)	Efficiency (%)	Length (in)	Weight
Diagonals	28	3.5198	4.948	71.1	194.5	26947
Verticals	32	1.3162	2.512	52.4	162	13022
Upper Horizontals	28	1.9587	4.347	45.1	108	13145
Lower Horizontals	28	2.0084	4.206	47.8	108	12719
	116			54.0		65833