

### Chess the Musical Loading Calculations

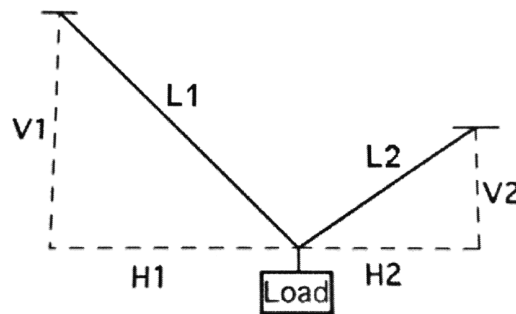
Motor Number/Point Position	<u>1</u> DSR	<u>D</u>	<u>2</u> DSL	<u>A</u>	<u>3</u> USR	<u>B</u>	<u>4</u> USL	<u>C</u>	<u>Total</u>
Gross Weight	299		299		379		379		<b><u>1,356 KG</u></b>
Weight Taken by Motors	260		260		340		340		<b>1,200 KG</b>
Cables and Rigging	16.75		16.75		16.75		16.75		<b>067 KG</b>
Mother Grid	100		100		100		100		<b>400 KG</b>
<u>Lighting Sub Total</u>	<b>149 KG</b>		<b>225 KG</b>		<b>149 KG</b>		<b>110 KG</b>		<b>633 KG</b>
Lighting Truss		51		51		51		51	<b>204 KG</b>
Lighting & Scaffolding		98		174		98		59	<b>429 KG</b>



Production	Chess
TSM	Stuart Leech
Calculations	Dimitri Grant

Point #	1
Reference	MG 1 DSR
Load (kg)	500
H1	2026
V1	1000
H2	1568
V2	1000
L1	2259
L2	1860
Angle	121
Tension L1	493
Tension L2	524

Point #	2
Reference	MG 2 DSL
Load (kg)	500
H1	1527
V1	1000
H2	2068
V2	1000
L1	1825
L2	2297
Angle	121
Tension L1	525
Tension L2	488



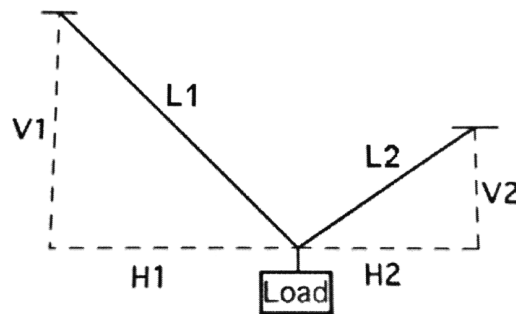
Point #	5
Reference	VID DSR
Load (kg)	500
H1	2297
V1	1000
H2	581
V2	1000
L1	2505
L2	1157
Angle	97
Tension L1	253
Tension L2	462

Point #	6
Reference	VID DSL
Load (kg)	500
H1	496
V1	1000
H2	2362
V2	1000
L1	1116
L2	2565
Angle	93
Tension L1	461
Tension L2	223

Production	Chess
TSM	Stuart Leech
Calculations	Dimitri Grant

Point #	7
Reference	VID USR
Load (kg)	500
H1	1159
V1	1000
H2	2434
V2	1000
L1	1531
L2	2631
Angle	117
Tension L1	518
Tension L2	424

Point #	8
Reference	VID USL
Load (kg)	500
H1	2350
V1	1000
H2	1244
V2	1000
L1	2554
L2	1596
Angle	118
Tension L1	442
Tension L2	522



Point #	9
Reference	MG USR
Load (kg)	500
H1	2026
V1	1000
H2	1568
V2	1000
L1	2259
L2	1860
Angle	121
Tension L1	493
Tension L2	524

Point #	10
Reference	MG USL
Load (kg)	500
H1	1527
V1	1000
H2	2068
V2	1000
L1	1825
L2	2297
Angle	121
Tension L1	525
Tension L2	488

1356 kg

299 kg

379 kg

379 kg

299 kg

1

3

4

2

260 kg

340 kg

340 kg

260 kg

398 kg

D - 154 kg

A - 225 kg

C - 110 kg

B - 154 kg

203 kg

428 kg

Lighting

A = Pointes x

B/D = 16

= 24.5

16

24.5

66

32.2

98 kg

4

4

24.2

24.2

Total = 428 kg

A 173.6 kg

motors

C = 4.2

D Unit = 18.5 kg

24.2

Chain = 20 kg

10.2

38.5 kg

20

58.6 kg

$$A = \begin{array}{l} 1 \text{ Corner} \times 13 \text{ kg} = 13 \\ 2 \text{ 1m} \times 7 \text{ kg} = 14 \text{ kg} \\ 1 \text{ 500} \times 4.2 = 4.2 \end{array}$$

Truss weight per point

A/B =	Q   item	kg	total
	2 x Corner	13	= 26
	1 x 3 corner	14	= 14
	5 x 1m	7	= 35 kg
	3 x 3m	6	= 18
	2 x 500	4.2	= 8.4

$$\frac{101.4 \text{ kg}}{2} = 50.7 \text{ kg}$$

bottom

2 x Corner	13	= 26
1 x 3 corner	14	= 14
2 x 500	4.2	= 8.4
3 x 3m	13	= 39
2 x 1m	7	= 14 kg

$$\frac{101.4 \text{ kg}}{2} = 50.7 \text{ kg}$$

## Truss V2

## Lighting grid

## Truss weight

3m	=	19 kg	=	3 m	=	57 kg
2m	=	13 kg	=	0	=	0 kg
1m	=	7 kg	=	6	=	42 kg
500	=	42 kg	=	6	=	25.2
2 way	=	13	=	4	=	52 kg
3 way	=	14	=	2	=	28 kg

205 kg

## Scaffolding

$$6.1m \text{ Ali} = (1.67 \text{ kg per m} \times 10.2) \times 7 = \underline{\underline{71.4 \text{ kg}}}$$

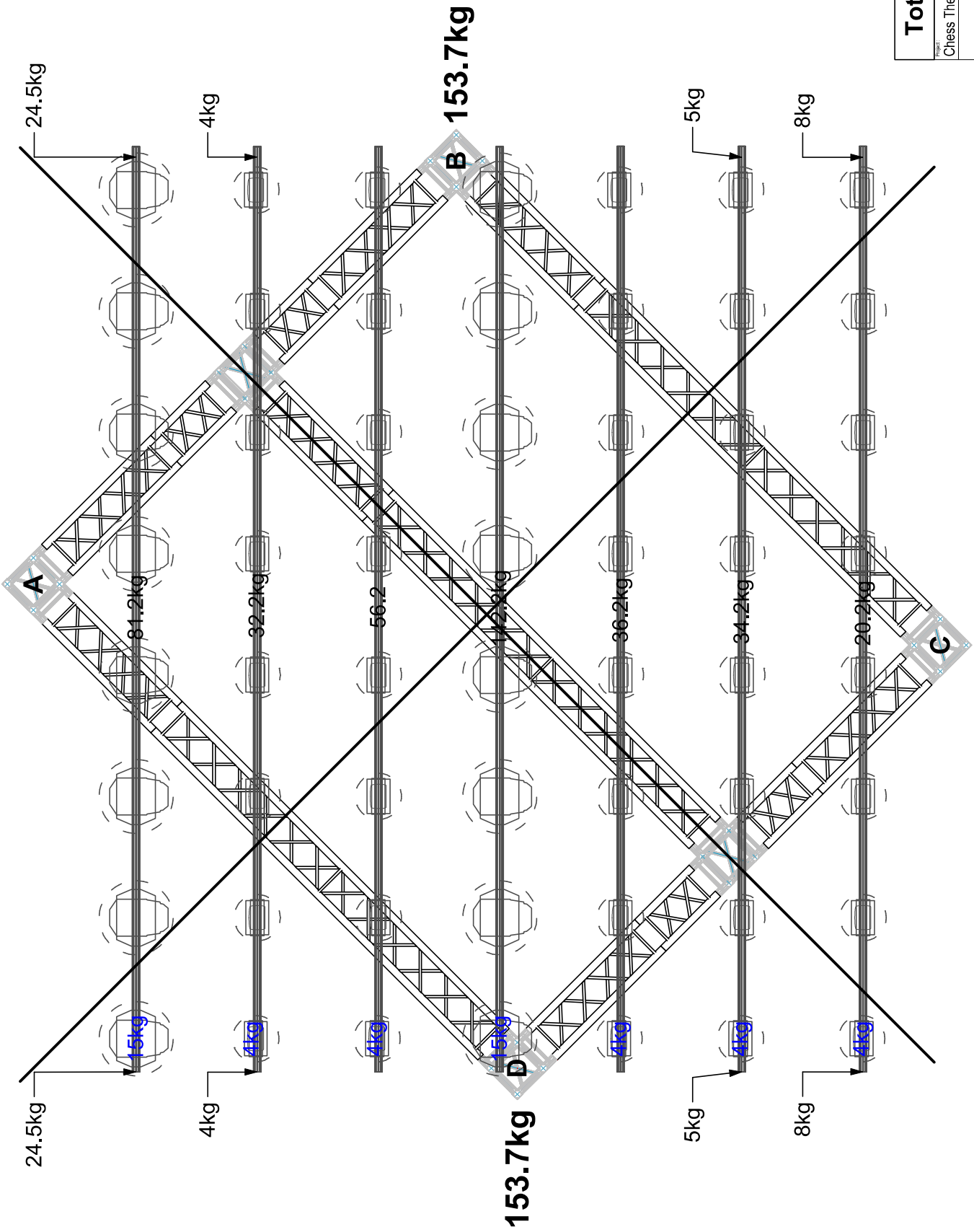
## Mother grid

2m	=	27.10	=	10	=	271 kg
1 m	=	15.50	=	2	=	31 kg
00x	=	24	=	4	=	96 kg

398 kg



224.3kg



24.5kg

81.2kg

4kg

32.2kg

56.2

B 153.7kg

5kg

8kg

24.5kg

15kg

4kg

4kg

4kg

D 153.7kg

112.6kg

36.2kg

5kg

94.2kg

4kg

20.2kg

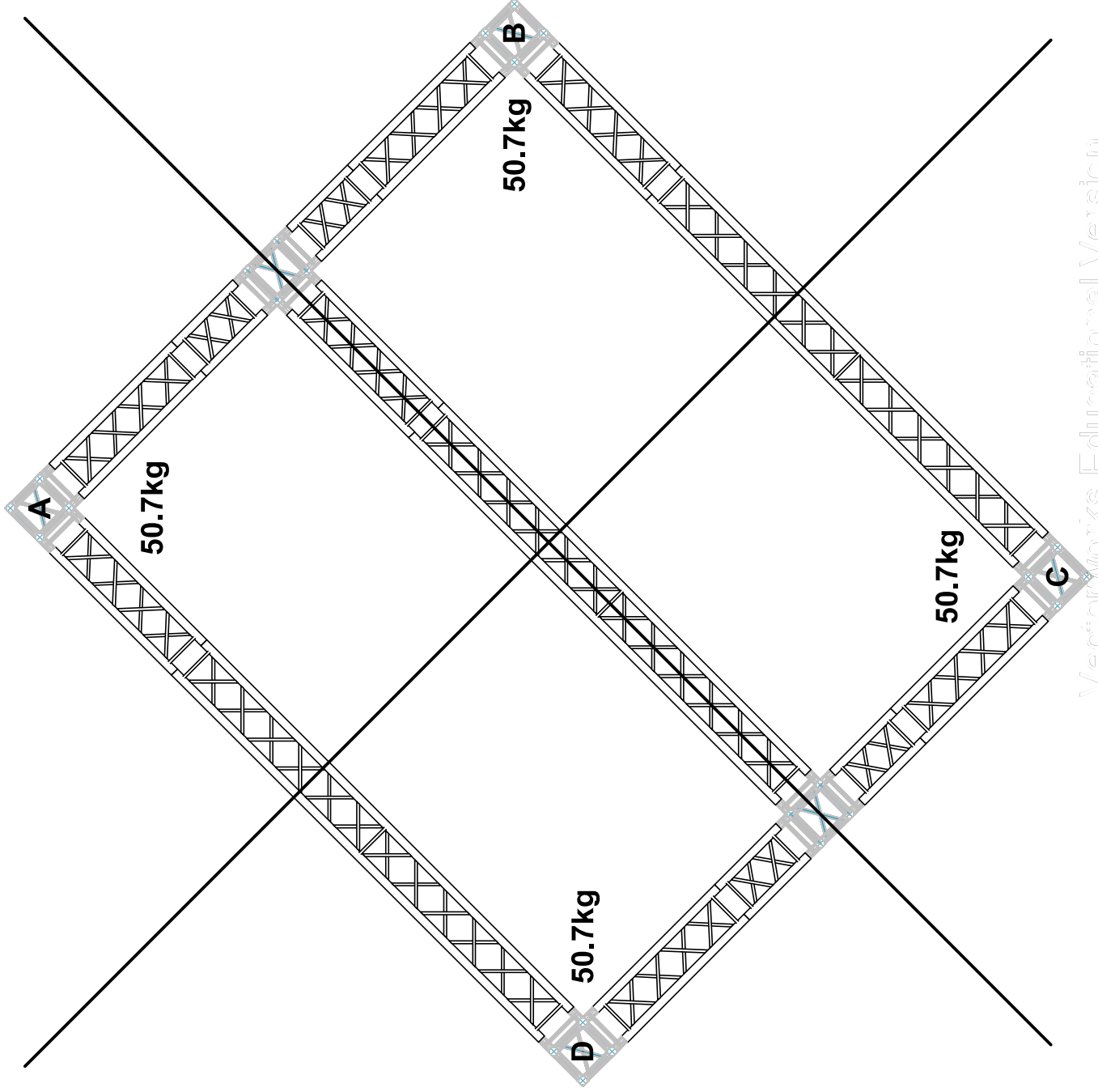
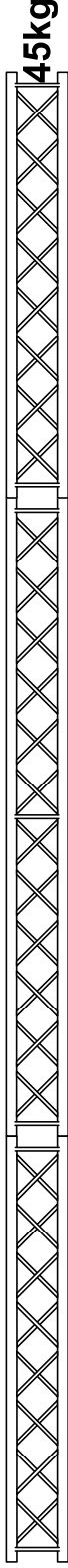
C

<b>Total Truss Weight 631kg</b>	
Project:	Chess The Musical
Client:	Chess Final Grid Design V3
Scale:	1:100
Date:	24/01/2017
Drawn by:	AWK
Checked by:	NIA
Issue:	1
Drawn by:	SHI
Checked by:	
Issue:	1

109.3kg

Lighting and Scaffolding Weight 428kg

Vectorworks Educational Version



**Total Truss Weight 203kg**

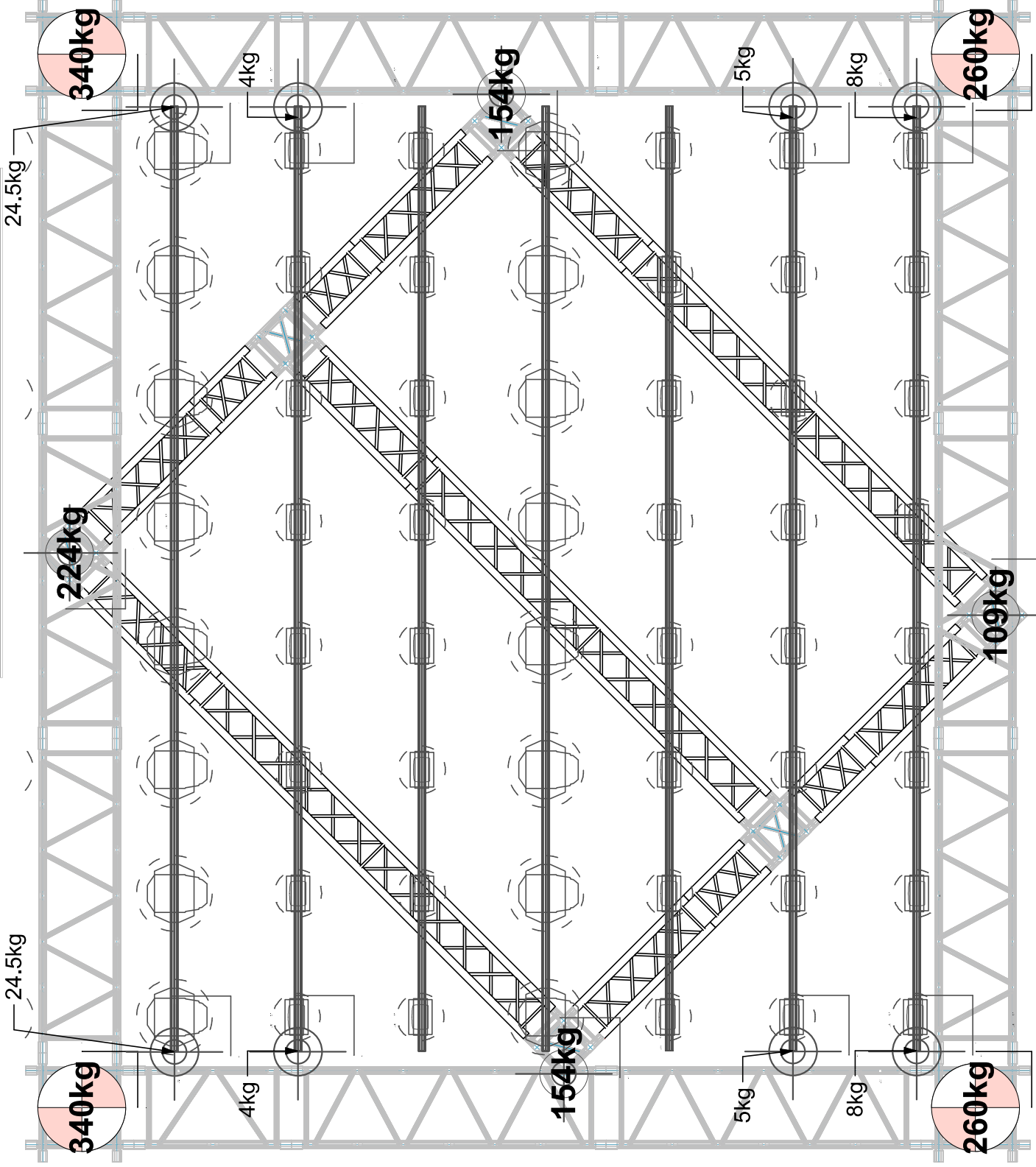
Project: Chess The Musical

Scale: Lighting Truss Weight

Scale:	08/02/2017
Drawn by:	NVA
Checked by:	MFR
Approved by:	Shantell
Page:	1



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<b>Total Grid Weight 1200kg</b>	
Project:	Chess The Musical
Schema:	Chess Final Grid Design V5
Scale:	1:1
Date:	24/11/2017
Created by:	MA
Revised by:	N/A
Checked by:	SH
Drawn by:	SH
Page:	1



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**Mother Grid Weight 398kg**