

1. Project details			
Prepared by:	Windows User		
Company name:			
Date:	24 October 2018, 17:47		
2. General arrangement			
• Spans			
Span 1:	12 m		
Span 2:	7.2 m		
• Unprotected beams			
Number of internal unprotected beams:	1		
3. Deck details			
• Deck properties			
Deck:	Comflor 46	Type:	Trapezoidal
Depth:	46 mm	Top flange:	67 mm
Pitch:	225 mm	Bottom flange:	105 mm
Stiffener height:	0 mm		
4. Slab details			
• Concrete			
Concrete type:	Normal	Slab depth:	140 mm
		Cylinder compressive strength of concrete ( $f_{ck}$ ):	30 N/mm <sup>2</sup>
• Mesh			
Mesh type:	User defined		
Longitudinal mesh area:	524 mm <sup>2</sup> /m	Bar size:	10 mm
Transverse mesh area:	524 mm <sup>2</sup> /m	Bar size:	10 mm
Average mesh axis distance:	35 mm	Mesh yield stress:	500 N/mm <sup>2</sup>

### 5. Beams details

- Unprotected beams

Beam type:	Solid beam		
Section family:	European sections	Steel grade:	S355
		Degree of shear connection:	80 %
Section size:	IPE 550		
Details:	h = 550 mm, b = 210 mm, $t_w = 11.1$ mm, $t_f = 17.2$ mm		

- Side A perimeter beam

Beam type:	Solid beam		
Section family:	European sections	Steel grade:	S355
Section size:	IPE 550		
Details:	h = 550 mm, b = 210 mm, $t_w = 11.1$ mm, $t_f = 17.2$ mm		
Beam location:	Edge beam	Construction type:	Composite
		Degree of shear connection:	80 %

- Side B perimeter beam

Beam type:	Solid beam		
Section family:	European sections	Steel grade:	S355
Section size:	HE 320 B		
Details:	h = 320 mm, b = 300 mm, $t_w = 11.5$ mm, $t_f = 20.5$ mm		
Beam location:	Edge beam	Construction type:	Non composite

- Side C perimeter beam

Beam type:	Solid beam		
Section family:	European sections	Steel grade:	S355
Section size:	IPE 550		
Details:	h = 550 mm, b = 210 mm, $t_w = 11.1$ mm, $t_f = 17.2$ mm		
Beam location:	Internal beam	Construction type:	Composite
		Degree of shear connection:	80 %

- Side D perimeter beam

Beam type:	Solid beam		
Section family:	European sections	Steel grade:	S355
Section size:	HE 320 B		
Details:	h = 320 mm, b = 300 mm, $t_w = 11.5$ mm, $t_f = 20.5$ mm		
Beam location:	Edge beam	Construction type:	Non composite

### 6. Loading details

- Normal (Cold)

Leading variable action:	5 kN/m <sup>2</sup>
Accompanying variable action:	0 kN/m <sup>2</sup>
Dead load including beam, excluding slab:	1.85 kN/m <sup>2</sup>
Calculated slab weight including mesh:	2.9 kN/m <sup>2</sup>

- Fire (Hot)

Combination factor for permanent action:	1.0
Combination factor for leading variable action:	0.4
Combination factor for other variable action:	0.3

### 7. Fire & Analysis

- Standard temperature-time curve

Fire resistance period:	120 min
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### 8. Summary output

- Default mesh direction

Maximum unity factor:	0.93	<b>Floor slab adequate</b>
Factored load in fire:	6.75 kN/m <sup>2</sup>	
Fire curve:	Standard temperature-time curve	

### 9. Default mesh direction

Longitudinal mesh area: 524 mm<sup>2</sup>/m Bar size: 10 mm

Transverse mesh area: 524 mm<sup>2</sup>/m Bar size: 10 mm

Factored load in fire: 6.75 kN/m<sup>2</sup>

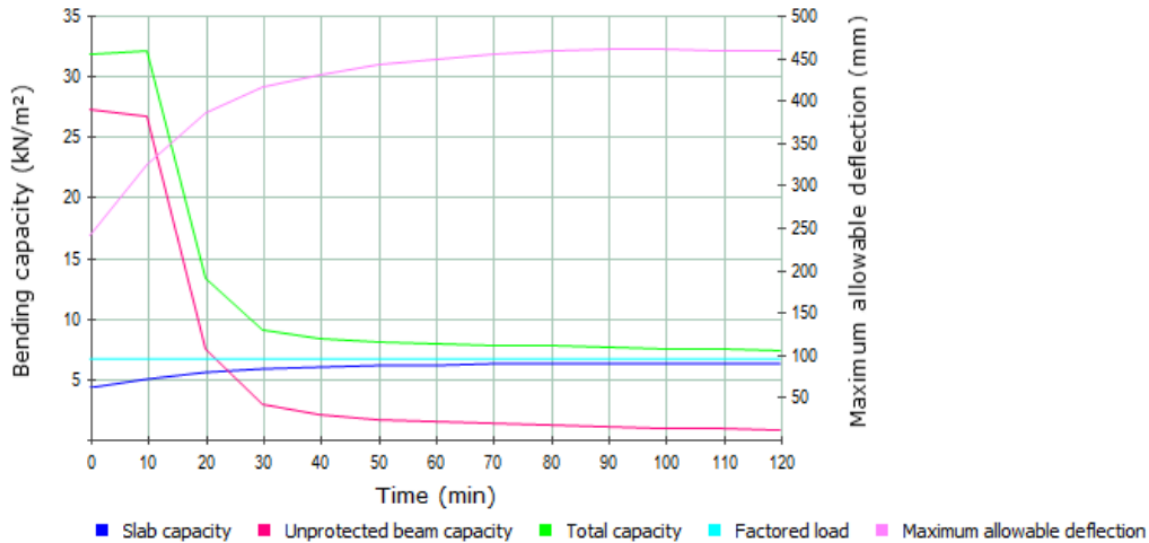
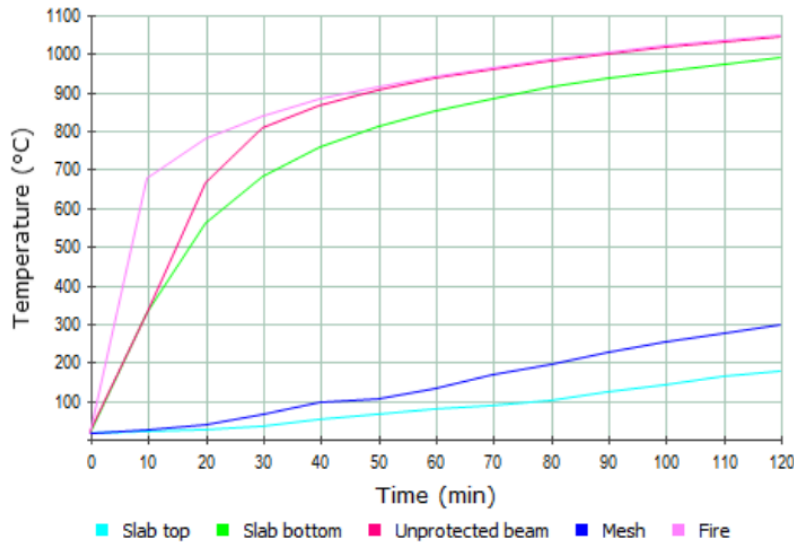
- Tabular results

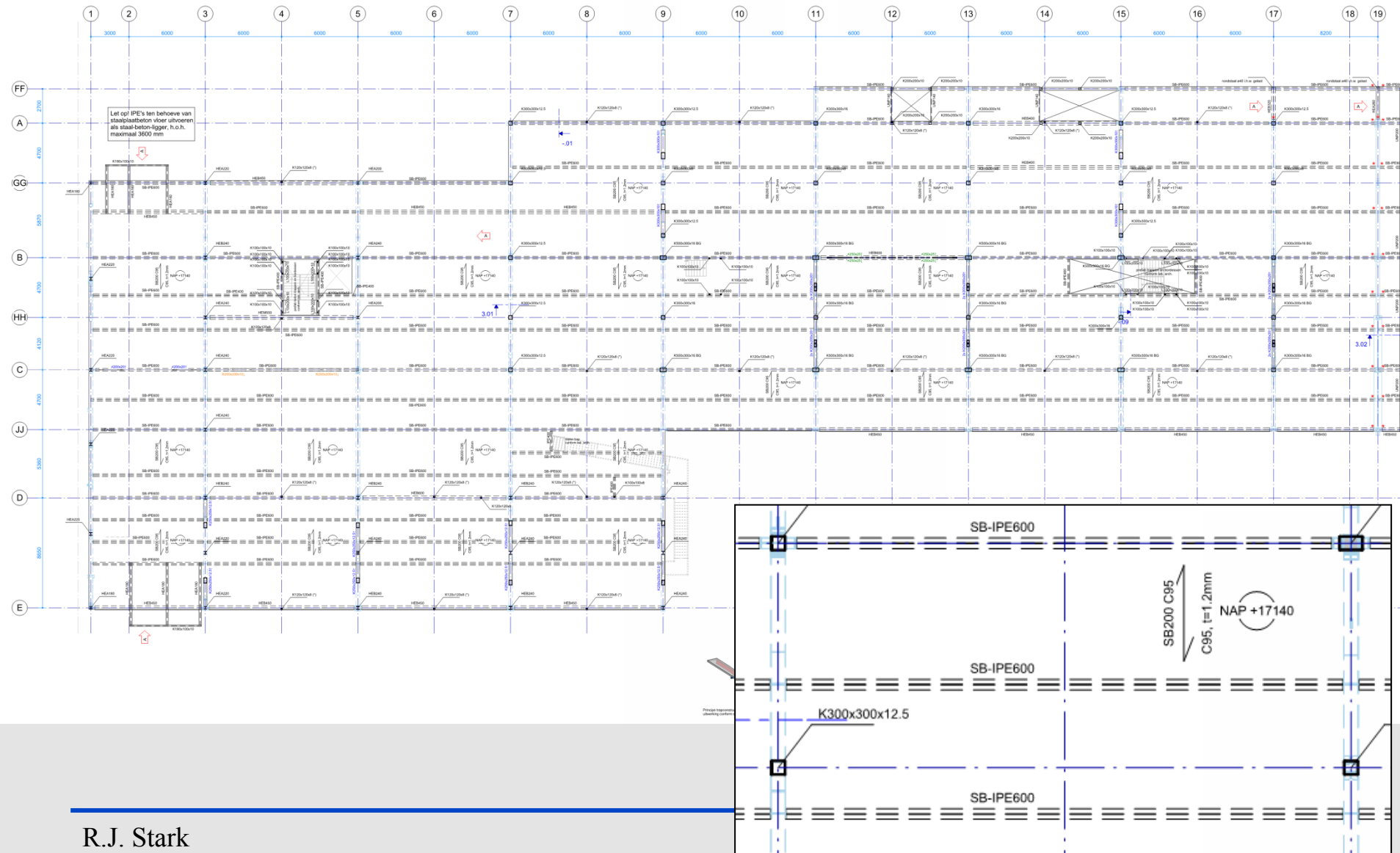
Time	Beam	Mesh	Slab top	Slab bottom	Beam capacity	Maximum allowable deflection	Slab yield	Enhancement	Slab capacity	Total capacity	Unity factor
mins	°C	°C	°C	°C	kN/m <sup>2</sup>	mm	kN/m <sup>2</sup>		kN/m <sup>2</sup>	kN/m <sup>2</sup>	
0	20	20	20	20	27.31	240	2.38	1.87	4.45	31.75	0.21
10	325	25	21	329	26.77	323	2.38	2.17	5.18	31.95	0.21
20	665	41	26	563	7.53	384	2.38	2.40	5.72	13.25	0.51
30	810	66	36	685	2.97	414	2.38	2.51	5.98	8.95	0.75
40	870	99	52	761	2.17	430	2.38	2.57	6.12	8.29	0.81
50	908	106	67	814	1.70	440	2.38	2.61	6.21	7.92	0.85
60	938	136	81	854	1.53	447	2.38	2.63	6.27	7.81	0.86
70	962	170	89	887	1.39	454	2.38	2.66	6.33	7.72	0.87
80	983	198	105	915	1.27	457	2.38	2.67	6.36	7.63	0.88
90	1002	226	123	938	1.16	458	2.38	2.68	6.38	7.54	0.90
100	1018	253	142	959	1.07	459	2.38	2.68	6.38	7.45	0.91
110	1033	277	164	977	0.98	458	2.38	2.67	6.37	7.35	0.92
120	1046	299	180	993	0.90	458	2.38	2.67	6.37	7.27	0.93

Maximum unity factor: 0.93 **Floor slab adequate**



10. Graphical output





### 1. Project details

Prepared by: Windows User  
 Company name:  
 Date: 24 October 2018, 17:52

### 2. General arrangement

- Spans

Span 1: 12 m  
 Span 2: 7.2 m

- Unprotected beams

Number of internal unprotected beams: 1

### 3. Deck details

- Deck properties

Deck:	ComFlor 80	Type:	Trapezoidal
Depth:	80 mm	Top flange:	147 mm
Pitch:	300 mm	Bottom flange:	120 mm
Stiffener height:	15 mm		

### 4. Slab details

- Concrete

Concrete type:	Normal	Slab depth:	200 mm
		Cylinder compressive strength of concrete ( $f_{ck}$ ):	30 N/mm <sup>2</sup>

- Mesh

Mesh type:	User defined		
Longitudinal mesh area:	524 mm <sup>2</sup> /m	Bar size:	10 mm
Transverse mesh area:	524 mm <sup>2</sup> /m	Bar size:	10 mm
Average mesh axis distance:	40 mm	Mesh yield stress:	500 N/mm <sup>2</sup>

### 5. Beams details

- **Unprotected beams**

Beam type:	Solid beam		
Section family:	European sections	Steel grade:	S355
		Degree of shear connection:	80 %
Section size:	IPE 600		
Details:	h = 600 mm, b = 220 mm, $t_w = 12$ mm, $t_f = 19$ mm		

- **Side A perimeter beam**

Beam type:	Solid beam		
Section family:	European sections	Steel grade:	S355
Section size:	IPE 600		
Details:	h = 600 mm, b = 220 mm, $t_w = 12$ mm, $t_f = 19$ mm		
Beam location:	Edge beam	Construction type:	Composite
		Degree of shear connection:	80 %

- **Side B perimeter beam**

Beam type:	Solid beam		
Section family:	European sections	Steel grade:	S355
Section size:	HE 320 B		
Details:	h = 320 mm, b = 300 mm, $t_w = 11.5$ mm, $t_f = 20.5$ mm		
Beam location:	Edge beam	Construction type:	Non composite

- **Side C perimeter beam**

Beam type:	Solid beam		
Section family:	European sections	Steel grade:	S355
Section size:	IPE 600		
Details:	h = 600 mm, b = 220 mm, $t_w = 12$ mm, $t_f = 19$ mm		
Beam location:	Internal beam	Construction type:	Composite
		Degree of shear connection:	80 %

- **Side D perimeter beam**

Beam type:	Solid beam		
Section family:	European sections	Steel grade:	S355
Section size:	HE 320 B		
Details:	h = 320 mm, b = 300 mm, $t_w = 11.5$ mm, $t_f = 20.5$ mm		
Beam location:	Edge beam	Construction type:	Non composite

### 6. Loading details

- Normal (Cold)

Leading variable action:	2.5 kN/m <sup>2</sup>
Accompanying variable action:	0 kN/m <sup>2</sup>
Dead load including beam, excluding slab:	3.5 kN/m <sup>2</sup>
Calculated slab weight including mesh:	3.75 kN/m <sup>2</sup>

- Fire (Hot)

Combination factor for permanent action:	1.0
Combination factor for leading variable action:	0.4
Combination factor for other variable action:	0.3

### 7. Fire & Analysis

- Standard temperature-time curve

Fire resistance period:	120 min
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### 8. Summary output

- Default mesh direction

Maximum unity factor:	0.89	<b>Floor slab adequate</b>
Factored load in fire:	8.25 kN/m <sup>2</sup>	
Fire curve:	Standard temperature-time curve	

### 9. Default mesh direction

Longitudinal mesh area: 524 mm<sup>2</sup>/m      Bar size: 10 mm

Transverse mesh area: 524 mm<sup>2</sup>/m      Bar size: 10 mm

Factored load in fire: 8.25 kN/m<sup>2</sup>

- Tabular results

Time	Beam	Mesh	Slab top	Slab bottom	Beam capacity	Maximum allowable deflection	Slab yield	Enhancement	Slab capacity	Total capacity	Unity factor
mins	°C	°C	°C	°C	kN/m <sup>2</sup>	mm	kN/m <sup>2</sup>		kN/m <sup>2</sup>	kN/m <sup>2</sup>	
0	20	20	20	20	38.47	240	2.78	2.04	5.67	44.14	0.19
10	304	22	20	335	38.40	305	2.78	2.33	6.48	44.88	0.18
20	641	31	23	570	11.99	353	2.78	2.55	7.08	19.07	0.43
30	802	46	28	692	4.27	378	2.78	2.65	7.38	11.65	0.71
40	867	67	37	768	3.08	391	2.78	2.72	7.55	10.63	0.78
50	907	92	49	821	2.40	400	2.78	2.75	7.66	10.06	0.82
60	937	98	59	862	2.16	406	2.78	2.78	7.74	9.90	0.83
70	962	100	66	895	1.96	412	2.78	2.81	7.81	9.77	0.84
80	983	130	76	923	1.79	415	2.78	2.82	7.85	9.64	0.86
90	1001	154	84	946	1.63	419	2.78	2.84	7.89	9.53	0.87
100	1018	174	90	967	1.50	422	2.78	2.85	7.93	9.43	0.87
110	1032	195	105	985	1.38	422	2.78	2.85	7.94	9.32	0.89
120	1046	215	115	1002	1.27	424	2.78	2.86	7.96	9.23	0.89

Maximum unity factor: 0.89      **Floor slab adequate**

10. Graphical output

