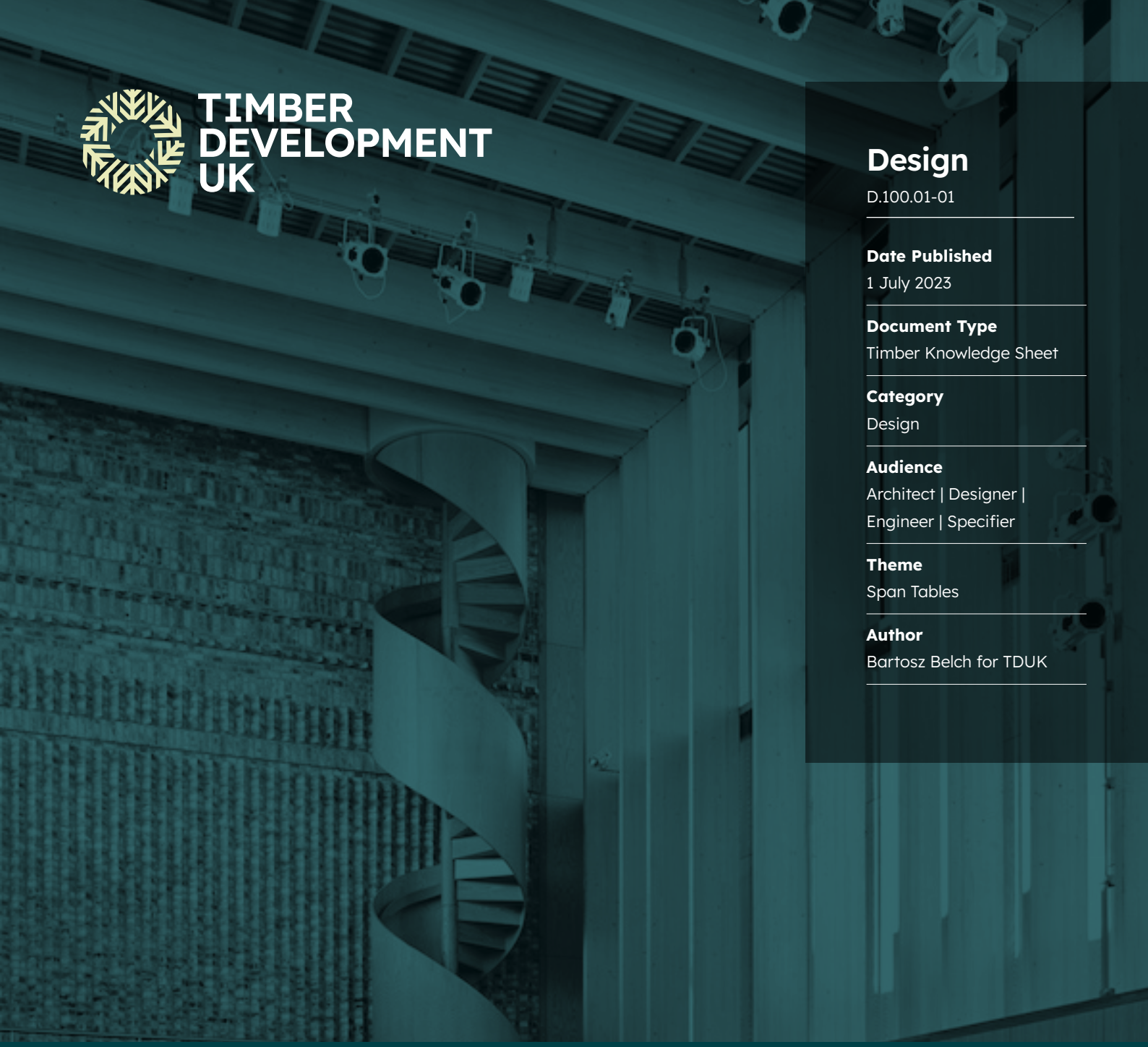

TIMBER DEVELOPMENT UK

Design

D.100.01-01

Date Published
1 July 2023

Document Type
Timber Knowledge Sheet

Category
Design

Audience
Architect | Designer | Engineer | Specifier

Theme
Span Tables

Author
Bartosz Belch for TDUK

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C16 Span Tables

Span tables determine the size of a timber member of a particular strength class needed for a given span, plus the maximum spacing between each timber member or section.

Date Published	Document Type	Category	Audience	Theme	Author
1 July 2023	Timber Knowledge Sheet	Design	Architect | Designer | Engineer | Specifier	Span Tables	Bartosz Belch for TDUK

C16 Span Tables

The following span tables indicate the required size of C16 strength class timber members for common uses.

The following tables are solely for guidance on the loadbearing capacity of solid softwood timber members to give adequate support to floors, ceilings, and roofs in domestic dwellings.

Use kiln-dried softwood in the appropriate strength class, grade stamped to comply with **Eurocode 5**. Naturally durable or pressure treated timber should be specified where necessary to meet the requirements of the application service class and desired service life.

The calculations cannot be adapted for hardwoods or engineered timber products.

Always consult **Eurocode 5** Span Tables when calculating spans.

In preparing these tables, Timber Development UK has assumed the complete design and build will be delivered by competent people and that thorough engineering calculations will be undertaken to verify the guidance provided in the span tables for each specific circumstance.

C16 Span Table - Domestic Ceiling Joists

Imposed load not exceeding q_k = 0.25 kN/m² and Q_k = 0.9 kN.

C16	Dead load G_k per square metre excluding weight of joist					
	G_k not more than 0.25 kN/m²			G_k not more than 0.5 kN/m²		
	Centre-to-centre spacing of joists					
Joist size (breadth x depth)	400 mm	450 mm	600 mm	400 mm	450 mm	600 mm
	Maximum clear span in metres					
38 x 89 mm	1.50	1.49	1.44	1.43	1.41	1.35
38 x 140 mm	2.74	2.70	2.58	2.55	2.50	2.37
38 x 184 mm	3.86	3.78	3.59	3.55	3.47	3.27
38 x 235 mm	5.16	5.06	4.78	4.72	4.60	4.31
45 x 95 mm	1.78	1.76	1.69	1.68	1.65	1.58
45 x 120 mm	2.42	2.38	2.29	2.26	2.22	2.11
45 x 145 mm	3.08	3.03	2.89	2.86	2.80	2.65
45 x 170 mm	3.75	3.68	3.50	3.46	3.38	3.19
45 x 195 mm	4.42	4.33	4.11	4.06	3.97	3.73
45 x 220 mm	5.09	4.99	4.72	4.67	4.55	4.27
72 x 120 mm	2.95	2.90	2.77	2.75	2.69	2.55
72 x 145 mm	3.72	3.65	3.48	3.44	3.37	3.18
72 x 170 mm	4.49	4.40	4.18	4.14	4.04	3.80
72 x 195 mm	5.26	5.15	4.88	4.83	4.71	4.43
72 x 220 mm	6.02	5.90	5.58	5.51	5.38	5.05
89 x 184 mm	5.30	5.20	4.93	4.87	4.76	4.48
89 x 235 mm	6.93	6.79	6.43	6.35	6.20	5.82

The above table provides a general summary of common permissible clear spans of simply supported domestic ceiling joists of solid timber for specified loadings, sizes and spacings. The table is solely for guidance on the loadbearing capacity of solid timber members, and cannot be adapted for hardwoods or engineered timber products. In preparing this table, Timber Development UK has assumed the complete design and build will be delivered by competent people and that thorough engineering calculations will be undertaken to verify the guidance provided above for each specific circumstance.

C16 Span Table - Domestic Flat Roof Joists

Access for maintenance and repair only.

Imposed load not exceeding q_k = 0.6 kN/m² or Q_k = 0.9 kN or "slab loading".

C16	Dead load G_k per square metre excluding weight of joist								
	G_k not more than 0.5 kN/m²			G_k not more than 0.75 kN/m²			G_k not more than 1.0 kN/m²		
	Centre-to-centre spacing of joists								
Joist size (breadth x depth)	400mm	450mm	600mm	400mm	450mm	600mm	400mm	450mm	600mm
	Maximum clear span in metres								
38 x 89 mm	1.48	1.46	1.41	1.41	1.39	1.33	1.35	1.33	1.26
38 x 140 mm	2.68	2.63	2.51	2.51	2.45	2.32	2.37	2.32	2.18
38 x 184 mm	3.75	3.67	3.48	3.48	3.40	3.19	3.27	3.19	2.98
38 x 235 mm	5.01	4.90	4.53	4.61	4.49	4.18	4.32	4.20	3.91
45 x 95 mm	1.75	1.72	1.65	1.65	1.63	1.55	1.58	1.55	1.47
45 x 120 mm	2.36	2.33	2.22	2.22	2.18	2.06	2.11	2.06	1.95
45 x 145 mm	3.00	2.95	2.80	2.80	2.74	2.58	2.65	2.58	2.42
45 x 170 mm	3.65	3.57	3.39	3.39	3.31	3.11	3.19	3.11	2.91
45 x 195 mm	4.29	4.20	3.97	3.97	3.88	3.63	3.73	3.63	3.39
45 x 220 mm	4.94	4.83	4.48	4.56	4.44	4.14	4.28	4.16	3.87
72 x 120 mm	2.88	2.83	2.70	2.69	2.64	2.49	2.55	2.49	2.34
72 x 145 mm	3.62	3.55	3.37	3.37	3.29	3.10	3.18	3.10	2.90
72 x 170 mm	4.36	4.27	4.04	4.05	3.95	3.71	3.81	3.71	3.46
72 x 195 mm	5.11	5.00	4.62	4.72	4.61	4.28	4.44	4.32	4.02
72 x 220 mm	5.84	5.67	5.19	5.39	5.25	4.82	5.06	4.92	4.53
89 x 184 mm	5.15	5.04	4.66	4.77	4.65	4.33	4.48	4.37	4.07
89 x 235 mm	6.64	6.42	5.90	6.19	5.98	5.49	5.83	5.64	5.17

The above table provides a general summary of common permissible clear spans of flat roof joists of solid timber for specified loadings, sizes and spacings. The table is solely for guidance on the loadbearing capacity of solid timber members, and cannot be adapted for hardwoods or engineered timber products. In preparing this table, Timber Development UK has assumed the complete design and build will be delivered by competent people and that thorough engineering calculations will be undertaken to verify the guidance provided above for each specific circumstance.

C16 Span Table - Domestic Flat Roof Joists

Access for maintenance and repair only.

Imposed load not exceeding q_k = 1.02 kN/m² or Q_k = 0.9 kN.

C16	Dead load G_k per square metre excluding weight of joist								
	G_k not more than 0.5 kN/m²			G_k not more than 0.75 kN/m²			G_k not more than 1.0 kN/m²		
	Centre-to-centre spacing of joists								
Joist size (breadth x depth)	400mm	450mm	600mm	400mm	450mm	600mm	400mm	450mm	600mm
	Maximum clear span in metres								
38 x 89 mm	1.48	1.46	1.41	1.41	1.39	1.33	1.35	1.33	1.26
38 x 140 mm	2.68	2.63	2.48	2.51	2.45	2.32	2.37	2.32	2.18
38 x 184 mm	3.71	3.57	3.25	3.48	3.36	3.05	3.27	3.19	2.89
38 x 235 mm	4.72	4.55	4.14	4.44	4.28	3.89	4.22	4.06	3.69
45 x 95 mm	1.75	1.72	1.65	1.65	1.63	1.55	1.58	1.55	1.47
45 x 120 mm	2.36	2.33	2.22	2.22	2.18	2.06	2.11	2.06	1.95
45 x 145 mm	3.00	2.95	2.72	2.80	2.74	2.55	2.65	2.58	2.42
45 x 170 mm	3.63	3.50	3.18	3.39	3.29	2.99	3.19	3.11	2.83
45 x 195 mm	4.15	4.00	3.64	3.91	3.76	3.42	3.71	3.57	3.24
45 x 220 mm	4.67	4.50	4.10	4.40	4.23	3.85	4.18	4.02	3.66
72 x 120 mm	2.88	2.83	2.63	2.69	2.64	2.47	2.55	2.49	2.34
72 x 145 mm	3.61	3.48	3.17	3.37	3.27	2.98	3.18	3.10	2.83
72 x 170 mm	4.21	4.06	3.71	3.97	3.82	3.49	3.78	3.64	3.31
72 x 195 mm	4.81	4.64	4.24	4.54	4.37	3.99	4.32	4.16	3.79
72 x 220 mm	5.41	5.21	4.77	5.10	4.92	4.49	4.86	4.68	4.27
89 x 184 mm	4.85	4.68	4.28	4.58	4.42	4.04	4.36	4.20	3.83
89 x 235 mm	6.13	5.92	5.43	5.80	5.60	5.12	5.53	5.33	4.87

The above table provides a general summary of common permissible clear spans of flat roof joists of solid timber for specified loadings, sizes and spacings. The table is solely for guidance on the loadbearing capacity of solid timber members, and cannot be adapted for hardwoods or engineered timber products. In preparing this table, Timber Development UK has assumed the complete design and build will be delivered by competent people and that thorough engineering calculations will be undertaken to verify the guidance provided above for each specific circumstance.

C16 Span Table - Domestic Floor Joists

Imposed load not exceeding q_k = 1.5 kN/m² or Q_k = 2.0 kN or "slab loading".

C16	Dead load G_k per square metre excluding weight of joist								
	G_k not more than 0.25 kN/m²			G_k not more than 0.5 kN/m²			G_k not more than 1.25 kN/m²		
	Centre-to-centre spacing of joists								
Joist size (breadth x depth)	400mm	450mm	600mm	400mm	450mm	600mm	400mm	450mm	600mm
	Maximum clear span in metres								
38 x 89 mm	1.60	1.60	1.36	1.60	1.60	1.28	1.46	1.38	1.10
38 x 140 mm	2.52	2.52	2.43	2.52	2.52	2.29	2.29	2.20	1.99
38 x 184 mm	3.31	3.31	3.18	3.31	3.30	3.00	3.00	2.89	2.62
38 x 235 mm	4.23	4.23	4.05	4.23	4.20	3.82	3.83	3.68	3.34
45 x 95 mm	1.81	1.81	1.75	1.81	1.81	1.63	1.65	1.59	1.38
45 x 120 mm	2.28	2.28	2.20	2.28	2.28	2.08	2.08	2.00	1.81
45 x 145 mm	2.76	2.76	2.66	2.76	2.76	2.51	2.51	2.41	2.19
45 x 170 mm	3.23	3.23	3.11	3.23	3.23	2.93	2.94	2.83	2.56
45 x 195 mm	3.71	3.71	3.56	3.71	3.69	3.36	3.37	3.24	2.94
45 x 220 mm	4.19	4.19	4.01	4.19	4.16	3.78	3.79	3.65	3.31
72 x 120 mm	2.67	2.67	2.58	2.67	2.67	2.43	2.44	2.34	2.13
72 x 145 mm	3.23	3.23	3.10	3.23	3.22	2.93	2.94	2.82	2.57
72 x 170 mm	3.78	3.78	3.63	3.78	3.76	3.43	3.43	3.30	3.00
72 x 195 mm	4.34	4.34	4.15	4.34	4.30	3.92	3.93	3.78	3.44
72 x 220 mm	4.90	4.90	4.67	4.89	4.84	4.41	4.32	4.20	3.87
89 x 184 mm	4.39	4.39	4.19	4.39	4.34	3.97	3.97	3.83	3.48
89 x 235 mm	5.61	5.61	5.32	5.61	5.51	5.04	4.74	4.62	4.33

The above table provides a general summary of common permissible clear spans of simply supported domestic floor joists of solid timber for specified loadings, sizes and spacings. The table is solely for guidance on the loadbearing capacity of solid timber members, and cannot be adapted for hardwoods or engineered timber products. In preparing this table, Timber Development UK has assumed the complete design and build will be delivered by competent people and that thorough engineering calculations will be undertaken to verify the guidance provided above for each specific circumstance.

C16 Span Table - Single Span Common or Jack Rafters

Roof slope between 30 and 45 degrees.

Imposed load not exceeding q_k = 0.6 kN/m² or Q_k = 0.9 kN.

C16	Dead load G_k per square metre excluding weight of joist								
	G_k not more than 0.5 kN/m²			G_k not more than 0.75 kN/m²			G_k not more than 1.0 kN/m²		
	Centre-to-centre spacing of joists								
Joist size (breadth x depth)	400mm	450mm	600mm	400mm	450mm	600mm	400mm	450mm	600mm
	Maximum clear span in metres								
38 x 89 mm	1.48	1.46	1.41	1.41	1.39	1.33	1.35	1.33	1.26
38 x 140 mm	2.68	2.63	2.51	2.51	2.45	2.32	2.37	2.32	2.18
38 x 184 mm	3.75	3.67	3.48	3.48	3.40	3.19	3.27	3.19	2.98
38 x 235 mm	5.01	4.90	4.61	4.61	4.49	4.20	4.32	4.20	3.91
45 x 95 mm	1.75	1.72	1.65	1.65	1.63	1.55	1.58	1.55	1.47
45 x 120 mm	2.36	2.33	2.22	2.22	2.18	2.06	2.11	2.06	1.95
45 x 145 mm	3.00	2.95	2.80	2.80	2.74	2.58	2.65	2.58	2.42
45 x 170 mm	3.65	3.57	3.39	3.39	3.31	3.11	3.19	3.11	2.91
45 x 195 mm	4.29	4.20	3.97	3.97	3.88	3.63	3.73	3.63	3.39
45 x 220 mm	4.94	4.83	4.56	4.56	4.44	4.16	4.28	4.16	3.87
72 x 120 mm	2.88	2.83	2.70	2.69	2.64	2.49	2.55	2.49	2.34
72 x 145 mm	3.62	3.55	3.37	3.37	3.29	3.10	3.18	3.10	2.90
72 x 170 mm	4.36	4.27	4.05	4.05	3.95	3.71	3.81	3.71	3.46
72 x 195 mm	5.11	5.00	4.71	4.72	4.61	4.32	4.44	4.32	4.02
72 x 220 mm	5.84	5.71	5.30	5.39	5.25	4.89	5.06	4.92	4.58
89 x 184 mm	5.15	5.04	4.75	4.77	4.65	4.37	4.48	4.37	4.07
89 x 235 mm	6.73	6.53	6.01	6.21	6.06	5.57	5.83	5.67	5.23

The above table provides a general summary of common permissible clear spans of single span common or jack rafters of solid timber for specified loadings, sizes and spacings. The table is solely for guidance on the loadbearing capacity of solid timber members, and cannot be adapted for hardwoods or engineered timber products. In preparing this table, Timber Development UK has assumed the complete design and build will be delivered by competent people and that thorough engineering calculations will be undertaken to verify the guidance provided above for each specific circumstance.

C16 Span Table - Single Span Common or Jack Rafters

Roof slope between 30 and 45 degrees.

Imposed load not exceeding q_k = 1.02 kN/m² or Q_k = 0.9 kN.

C16	Dead load G_k per square metre excluding weight of joist								
	G_k not more than 0.5 kN/m²			G_k not more than 0.75 kN/m²			G_k not more than 1.0 kN/m²		
	Centre-to-centre spacing of joists								
Joist size (breadth x depth)	400mm	450mm	600mm	400mm	450mm	600mm	400mm	450mm	600mm
	Maximum clear span in metres								
38 x 89 mm	1.48	1.46	1.41	1.41	1.39	1.33	1.35	1.33	1.26
38 x 140 mm	2.68	2.63	2.51	2.51	2.45	2.32	2.37	2.32	2.18
38 x 184 mm	3.75	3.67	3.34	3.48	3.40	3.12	3.27	3.19	2.95
38 x 235 mm	4.85	4.67	4.25	4.54	4.37	3.98	4.30	4.14	3.76
45 x 95 mm	1.75	1.72	1.65	1.65	1.63	1.55	1.58	1.55	1.47
45 x 120 mm	2.36	2.33	2.22	2.22	2.18	2.06	2.11	2.06	1.95
45 x 145 mm	3.00	2.95	2.79	2.80	2.74	2.58	2.65	2.58	2.42
45 x 170 mm	3.65	3.57	3.27	3.39	3.31	3.05	3.19	3.11	2.89
45 x 195 mm	4.26	4.11	3.74	3.97	3.84	3.50	3.73	3.63	3.31
45 x 220 mm	4.79	4.62	4.21	4.49	4.33	3.94	4.26	4.10	3.73
72 x 120 mm	2.88	2.83	2.70	2.69	2.64	2.49	2.55	2.49	2.34
72 x 145 mm	3.62	3.55	3.25	3.37	3.29	3.05	3.18	3.10	2.88
72 x 170 mm	4.32	4.16	3.80	4.05	3.91	3.56	3.81	3.70	3.37
72 x 195 mm	4.93	4.76	4.35	4.63	4.47	4.08	4.40	4.24	3.86
72 x 220 mm	5.54	5.35	4.89	5.21	5.02	4.59	4.94	4.76	4.35
89 x 184 mm	4.97	4.80	4.39	4.68	4.51	4.12	4.44	4.28	3.90
89 x 235 mm	6.28	6.07	5.57	5.92	5.71	5.23	5.62	5.43	4.96

The above table provides a general summary of common permissible clear spans of single span common or jack rafters of solid timber for specified loadings, sizes and spacings. The table is solely for guidance on the loadbearing capacity of solid timber members, and cannot be adapted for hardwoods or engineered timber products. In preparing this table, Timber Development UK has assumed the complete design and build will be delivered by competent people and that thorough engineering calculations will be undertaken to verify the guidance provided above for each specific circumstance.