

METROLL PURLIN DESIGN GUIDE & CAPACITY TABLES

C & Z STANDARD PURLINS



A Met-TECH™ GUIDE

JULY 2019



Metroll®

BETTER SERVICE • BETTER BUILDING SOLUTIONS

BRIDGING

The limit state capacity tables provide design solutions for an equal number of rows of bridging in each span. Provision is made for 0, 1, 2 or 3 rows.

In some combinations of span configuration and loading there is no benefit in increasing the number of bridging rows.

When using the Safebridge® bridging system 3 rows of bridging should be selected.

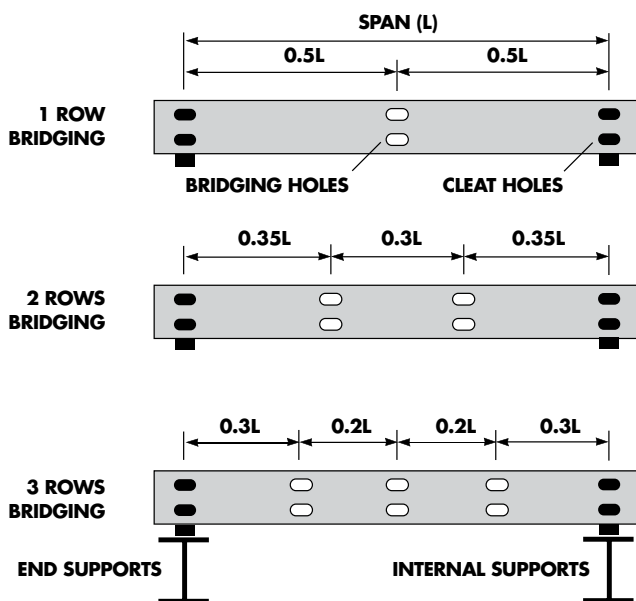
Metroll recommends that bridging is installed such that the maximum un-braced length is $20 \times D$ (D = purlin web height), or 4000mm, whichever is the least. In addition to enhancing purlin performance this requirement assists with the installation of roof sheeting. Location of the bridging must be as shown below (to the nearest 50mm), or as determined by the design engineer.

RECOMMENDED MAX. BRIDGING SPACING

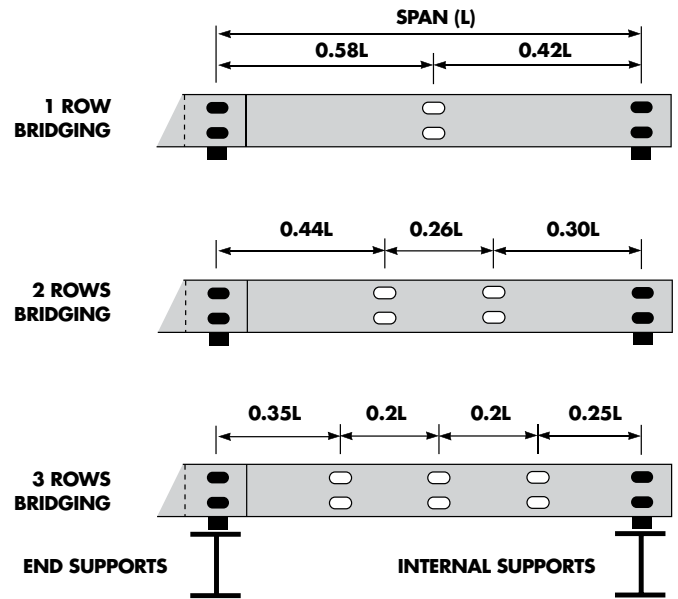
PURLIN SIZE MM	MAX. BRIDGING SPACING MM
100	2000
150	3000
200, 250, 300, 350, 400	4000

BRIDGING HOLE LOCATIONS

SINGLE OR INTERNAL SPANS



DOUBLE OR END SPANS



MEMBER WEIGHT

All limit state loads are in kN/m. Limit state loads make no allowance for the mass of the member. In some cases, limit state loads are limited by the bolting.

DEFLECTION

There are no specific rules governing acceptable deflections, though structural codes give guidance. One needs to consider the specific requirements of any structure. It may be necessary to design under more than one load combination. Load stated is calculated to produce a deflection of $\text{Span}/150$ for the critical span. Solutions for other deflection ratios may be obtained using linear proportioning. Where a suspended ceiling is to be installed, such as in residential and commercial construction, more stringent deflection limits may be necessary to prevent damage to the ceiling components or joints. Both the end span and the internal span must be considered in the analysis of lapped and continuous spans.

PURLIN DESIGN CAPACITY TABLES

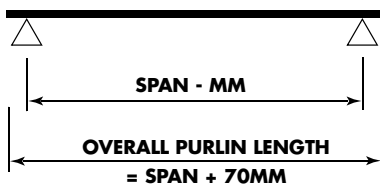
HOW TO USE THE TABLES

The tables indicate the maximum limit state capacity of the sections. Capacities are based on uniformly distributed loads and any point loads need to be converted.

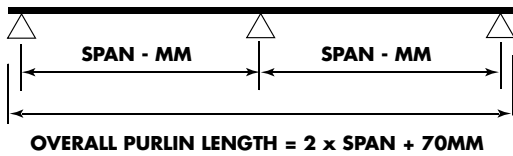
Required loads are established by a project designer using the appropriate building codes and standards. Once the purlin and girt outwards and inwards loads are determined the preferred span configuration can be checked using the tables.

When using the Safebridge® bridging system 3 rows of bridging should be selected.

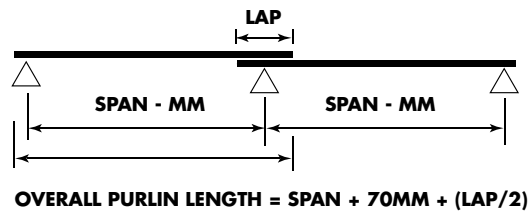
SINGLE SPAN



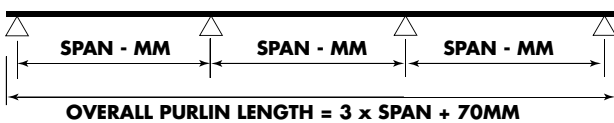
2 SPAN CONTINUOUS UNLAPPED



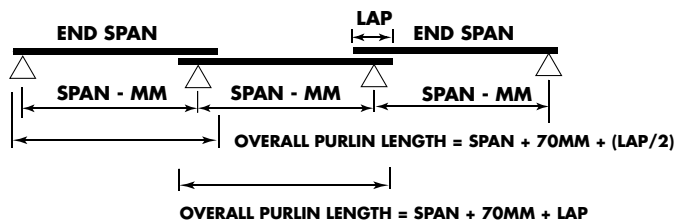
2 SPAN LAPPED



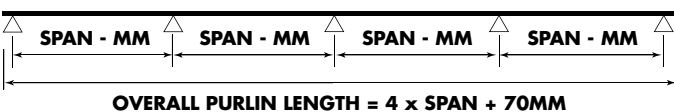
3 SPAN CONTINUOUS UNLAPPED



3 SPAN LAPPED



4 SPAN CONTINUOUS UNLAPPED



4 SPAN LAPPED

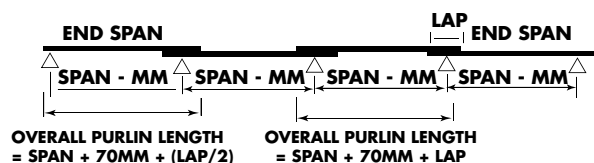
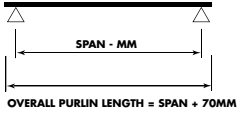


TABLE 1A: C & Z SECTION SINGLE SPAN OUTWARD LOAD (kN/m)



Bolt capacity exceeded.
M12 bolts for 100 - 250 series, M16 bolts for 300 series or greater.

BOLD Grade 8.8 bolts required.

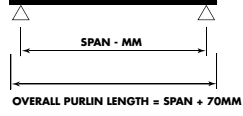
For Safebridge® system use data for 3 rows of bracing.

Span	C/Z 100 10					C/Z 100 12					C/Z 100 15					C/Z 100 19					Span
	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	
2000	4.495	4.495	4.495	4.495	4.268	5.455	5.455	5.455	5.455	5.157	6.959	7.103	7.103	7.103	6.566	9.287	9.894	9.894	9.894	8.459	2000
2500	2.877	2.877	2.877	2.877	2.185	3.491	3.491	3.491	3.491	2.640	4.385	4.546	4.546	4.545	3.362	5.801	6.332	6.332	6.332	4.331	2500
3000	1.998	1.998	1.998	1.998	1.265	2.424	2.424	2.424	2.424	1.528	3.011	3.157	3.157	3.157	1.946	3.957	4.397	4.397	4.397	2.506	3000
3500	1.468	1.468	1.468	1.468	0.796	1.781	1.781	1.781	1.781	0.962	2.192	2.319	2.319	2.319	1.225	2.868	3.231	3.231	3.231	1.578	3500
4000	1.124	1.124	1.124	1.124	0.533	1.364	1.364	1.364	1.364	0.645	1.666	1.776	1.776	1.776	0.821	2.171	2.473	2.474	2.474	1.057	4000
4500	0.888	0.888	0.888	0.888	0.288	1.077	1.077	1.077	1.077	0.453	1.308	1.403	1.403	1.403	0.576	1.700	1.954	1.954	1.954	0.743	4500
5000	0.719	0.719	0.719	0.719	0.179	0.873	0.873	0.873	0.873	0.273	1.054	1.136	1.136	1.136	0.420	1.366	1.582	1.583	1.583	0.541	5000
5500	0.594	0.594	0.594	0.594	0.129	0.718	0.721	0.721	0.721	0.179	0.867	0.939	0.939	0.939	0.273	1.122	1.302	1.308	1.308	0.407	5500
6000	0.499	0.499	0.499	0.499	0.099	0.601	0.606	0.606	0.606	0.129	0.726	0.789	0.789	0.789	0.207	0.937	1.09	1.099	1.099	0.331	6000
6500	0.426	0.426	0.426	0.426	0.079	0.510	0.516	0.516	0.516	0.099	0.616	0.672	0.672	0.672	0.179	0.794	0.925	0.937	0.937	0.273	6500
7000						0.439	0.445	0.445	0.445		0.529	0.580	0.580	0.580		0.681	0.795	0.808	0.808	0.700	7000
7500											0.460	0.505	0.505	0.505		0.591	0.691	0.704	0.704	0.600	7500
8000												0.403	0.444	0.444		0.518	0.605	0.618	0.618	0.500	8000
8500													0.457	0.505		0.457	0.535	0.548	0.548	0.400	8500
9000													0.406	0.444		0.406	0.476	0.488	0.489	0.300	9000
9500														0.437		0.427	0.437	0.437	0.437	0.200	9500

Span	C/Z 150 12					C/Z 150 15					C/Z 150 19					C/Z 150 24					C/Z 200 15					Span
	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	
2000	9.259	9.259	9.259	9.259	14.816	12.210	12.210	12.210	12.210	9.857	16.865	17.278	17.279	17.279	24.647	22.642	24.511	24.511	24.511	31.921	15.452	15.452	15.452	15.452	40.502	2000
2500	5.925	5.926	5.926	5.926	7.586	7.815	7.815	7.815	7.815	5.704	10.428	11.058	11.058	11.058	12.620	13.764	15.687	15.687	15.687	16.344	10.916	10.916	10.916	10.916	20.740	2500
3000	4.115	4.115	4.115	4.115	5.427	5.427	5.427	5.427	5.427	3.592	7.050	7.679	7.679	7.679	7.303	9.177	10.894	10.894	10.894	9.458	7.581	7.581	7.581	7.581	12.002	3000
3500	3.023	3.024	3.023	3.023	2.764	3.929	3.987	3.987	3.987	2.406	5.072	5.642	5.642	5.642	4.599	6.529	8.004	8.004	8.003	5.956	5.569	5.570	5.570	5.569	7.558	3500
4000	2.315	2.315	2.315	2.315	1.852	2.966	3.052	3.053	3.053	1.690	3.817	4.320	4.320	4.320	3.081	4.871	6.128	6.128	6.128	3.990	4.264	4.264	4.264	4.264	5.064	4000
4500	1.829	1.829	1.829	1.829	1.301	2.316	2.412	2.412	2.412	1.232	2.973	3.413	3.413	3.413	2.164	3.767	4.839	4.842	4.842	2.802	3.348	3.369	3.369	3.369	3.556	4500
5000	1.481	1.481	1.481	1.482	0.948	1.857	1.954	1.954	1.954	0.926	2.379	2.765	2.765	2.765	1.577	2.997	3.867	3.922	3.922	2.043	2.685	2.729	2.729	2.729	2.592	5000
5500	1.224	1.224	1.224	1.224	0.712	1.522	1.615	1.615	1.615	0.713	1.946	2.285	2.285	2.285	1.185	2.439	3.158	3.241	3.241	1.535	2.200	2.255	2.255	2.255	1.948	5500
6000	1.029	1.029	1.029	1.029	0.549	1.269	1.357	1.357	1.357	0.561	1.620	1.920	1.920	1.920	0.913	2.022	2.625	2.723	2.723	1.182	1.834	1.895	1.895	1.895	1.500	6000
6500	0.877	0.877	0.877	0.877	0.432	1.073	1.156	1.156	1.156	0.449	1.368	1.636	1.636	1.636	0.718	1.703	2.216	2.321	2.321	0.930	1.552	1.615	1.615	1.615	1.180	6500
7000	0.756	0.756	0.756	0.756	0.331	0.919	0.997	0.997	0.997	0.331	1.171	1.411	1.410	1.410	0.575	1.453	1.895	2.001	2.001	0.745	1.330	1.392	1.392	1.392	0.945	7000
7500	0.658	0.658	0.658	0.658	0.259	0.796	0.868	0.868	0.868	0.259	1.013	1.227	1.229	1.229	0.467	1.254	1.638	1.743	1.743	0.605	1.152	1.213	1.213	1.213	0.768	7500
8000	0.577	0.579	0.579	0.579	0.207	0.696	0.763	0.763	0.763	0.207	0.885	1.074	1.080	1.080	0.373	1.093	1.430	1.520	1.520	0.499	1.007	1.066	1.066	1.066	0.633	8000
8500	0.509	0.513	0.513	0.513	0.163	0.613	0.676	0.676	0.676	0.163	0.779	0.948	0.957	0.957	0.299	0.960	1.259	1.336	1.357	0.416	0.888	0.944	0.944	0.944	0.528	8500
9000	0.453	0.457	0.457	0.457	0.129	0.545	0.603	0.603	0.603	0.129	0.691	0.843	0.853	0.853	0.219	0.850	1.116	1.184	1.210	0.351	0.788	0.842	0.842	0.842	0.445	9000
9500	0.405	0.410	0.410	0.410	0.101	0.487	0.541	0.541	0.541	0.101	0.617	0.754	0.766	0.766	0.163	0.758	0.997	1.056	1.086	0.273	0.705	0.756	0.756	0.756	0.361	9500
10000						0.437	0.488	0.488	0.488		0.555	0.678	0.691	0.691		0.680	0.895	0.947	0.98		0.633	0.682	0.682	0.682	0.419	10000
10500							0.443	0.443	0.443		0.501	0.614	0.627	0.627		0.612	0.809	0.854	0.887		0.571	0.619	0.619	0.619	0.361	10500
11000							0.404	0.404	0.404		0.454	0.558	0.571	0.571		0.554	0.734	0.775	0.804		0.518	0.564	0.564	0.564	0.273	11000
11500											0.414	0.509	0.523	0.523		0.504	0.669	0.705	0.731		0.471	0.516	0.516	0.516	0.219	11500
12000											0.467	0.480	0.480		0.460	0.612	0.645	0.668		0.431	0.474	0.474	0.474	0.163	12000	
12500											0.429	0.442	0.442		0.422	0.563	0.592	0.613		0.403	0.437	0.437	0.437	0.101	12500	
13000												0.409	0.409		0.422	0.519	0.545	0.564		0.403	0.404	0.404	0.404	0.079	13000	
13500															0.480	0.480	0.503	0.521		0.480	0.480	0.480	0.480	0.057	13500	
14000															0.445	0.466	0.482	0.482		0.445	0.445	0.445	0.445	0.043	14000	
14500															0.414	0.433	0.448	0.448		0.414	0.414	0.414	0.414	0.031	14500	
15000															0.404	0.404	0.417	0.417		0.404	0.404	0.404	0.404	0.021	15000	

Span	C/Z 200 19					C/Z 200 24					C/Z 250 19					C/Z 250 24					C/Z 300 24					Span
	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	
2000	25.938	25.938	25.938	25.939	34.537	36.254	37.089	37.089	37.090	69.833	24.840	24.840	24.840	24.840	90.184	47.165	47.166	47.166	47.166	118.289	42.164	42.164	42.164	42.165	203.695	2000
2500	16.558	16.601	16.600	16.601	27.831	21.986	23.739	23.738	23.737	35.755	19.872	19.872	19.872	19.872	46.175	29.225	30.185	30.185	30.185	60.564	33.332	33.331	33.332	33.332	104.292	2500
3000	11.027	11.528	11.528	11.528	16.106	14.560	16.484	16.484	16.484	20.691	14.538	14.538	14.538	14.538	26.720	19.191	20.963	20.963	20.963	35.049	28.109	28.110	28.109	28.110	60.354	3000
3500	7.821	8.47	8.469	8.469	10.143	10.268	12.110	12.111	12.110	13.030	10.366	10.682	10.681	10.682	16.827	13.424	15.401	15.401	15.400	22.700	19.698					

TABLE 1B: C & Z SECTION SINGLE SPAN INWARD LOAD (kN/m)



Bolt capacity exceeded. M12 bolts for 100 - 250 series, M16 bolts for 300 series or greater.

BOLD Grade 8.8 bolts required.

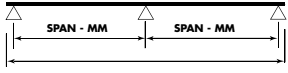
3/SB For Safebridge® system use data for 3 rows of bracing.

Span	C/Z 100 10					C/Z 100 12					C/Z 100 15					C/Z 100 19					Span
	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	
2000	4.495	4.495	4.495	4.495	4.268	5.455	5.455	5.455	5.455	5.157	6.959	7.103	7.103	7.103	6.566	9.287	9.894	9.894	9.894	8.459	2000
2500	2.877	2.877	2.877	2.877	2.185	3.491	3.491	3.491	3.491	2.640	4.385	4.546	4.546	4.545	3.362	5.801	6.332	6.332	6.332	4.331	2500
3000	1.998	1.998	1.998	1.998	1.265	2.424	2.424	2.424	2.424	1.528	3.011	3.157	3.157	3.157	1.946	3.957	4.397	4.397	4.397	2.506	3000
3500	1.468	1.468	1.468	1.468	0.796	1.781	1.781	1.781	1.781	0.962	2.192	2.319	2.319	2.319	1.225	2.868	3.231	3.231	3.231	1.578	3500
4000	1.124	1.124	1.124	1.124	0.533	1.364	1.364	1.364	1.364	0.645	1.666	1.776	1.776	1.776	0.821	2.171	2.473	2.474	2.474	1.057	4000
4500	0.888	0.888	0.888	0.888		1.077	1.077	1.077	1.077	0.453	1.308	1.403	1.403	1.403	0.576	1.700	1.954	1.954	1.954	0.743	4500
5000	0.719	0.719	0.719	0.719		0.873	0.873	0.873	0.873		1.054	1.136	1.136	1.136	0.420	1.366	1.582	1.583	1.583	0.541	5000
5500	0.594	0.594	0.594	0.594		0.718	0.721	0.721	0.721		0.867	0.939	0.939	0.939		1.122	1.302	1.308	1.308	0.407	5500
6000	0.499	0.499	0.499	0.499		0.601	0.606	0.606	0.606		0.726	0.789	0.789	0.789		0.937	1.090	1.099	1.099		6000
6500	0.426	0.426	0.426	0.426		0.510	0.516	0.516	0.516		0.616	0.672	0.672	0.672		0.794	0.925	0.937	0.937		6500
7000						0.439	0.445	0.445	0.445		0.529	0.580	0.580	0.580		0.681	0.795	0.808	0.808		7000
7500											0.460	0.505	0.505	0.505		0.591	0.691	0.704	0.704		7500
8000											0.403	0.444	0.444	0.444		0.518	0.605	0.618	0.618		8000
8500																0.457	0.535	0.548	0.548		8500
9000																0.406	0.476	0.488	0.488		9000
9500																	0.427	0.437	0.439		9500

Span	C/Z 150 12					C/Z 150 15					C/Z 150 19					C/Z 150 24					C/Z 200 15					Span
	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	
2000	9.259	9.259	9.259	9.259	14.816	12.210	12.210	12.211	12.21	19.251	16.865	17.278	17.279	17.279	24.647	22.642	24.511	24.511	24.511	31.921	15.452	15.452	15.452	15.452	40.508	2000
2500	5.925	5.926	5.926	5.926	7.586	7.815	7.815	7.815	7.815	9.857	10.428	11.058	11.058	11.058	12.620	13.764	15.687	15.687	15.687	16.344	10.916	10.916	10.916	10.916	20.740	2500
3000	4.115	4.115	4.115	4.115	4.150	5.427	5.427	5.427	5.427	5.704	7.050	7.679	7.679	7.679	7.303	9.177	10.894	10.894	10.894	9.458	7.581	7.581	7.581	7.581	12.002	3000
3500	3.023	3.024	3.023	3.023	2.764	3.929	3.987	3.987	3.987	3.592	5.072	5.642	5.642	5.642	4.599	6.529	8.004	8.004	8.003	5.956	5.569	5.570	5.570	5.569	7.558	3500
4000	2.315	2.315	2.315	2.315	1.852	2.966	3.052	3.053	3.053	2.406	3.817	4.320	4.320	4.320	3.081	4.871	6.128	6.128	6.128	3.990	4.264	4.264	4.264	4.264	5.064	4000
4500	1.829	1.829	1.829	1.829	1.301	2.316	2.412	2.412	2.412	1.690	2.973	3.413	3.413	3.413	2.164	3.767	4.839	4.842	4.842	2.802	3.348	3.369	3.369	3.369	3.556	4500
5000	1.481	1.481	1.481	1.482	0.948	1.857	1.954	1.954	1.954	1.232	2.379	2.765	2.765	2.765	1.577	2.997	3.867	3.922	3.922	2.043	2.685	2.729	2.729	2.729	2.592	5000
5500	1.224	1.224	1.224	1.224	0.712	1.522	1.615	1.615	1.615	0.926	1.946	2.285	2.285	2.285	1.185	2.439	3.158	3.241	3.241	1.535	2.200	2.255	2.255	2.255	1.948	5500
6000	1.029	1.029	1.029	1.029	0.549	1.269	1.357	1.357	1.357	0.713	1.620	1.920	1.920	1.920	0.913	2.022	2.625	2.723	2.723	1.182	1.834	1.895	1.895	1.895	1.500	6000
6500	0.877	0.877	0.877	0.877	0.432	1.073	1.156	1.156	1.156	0.561	1.368	1.636	1.636	1.636	0.718	1.703	2.216	2.321	2.321	0.930	1.552	1.615	1.615	1.615	1.180	6500
7000	0.756	0.756	0.756	0.756		0.919	0.997	0.997	0.997	0.449	1.171	1.411	1.410	1.410	0.575	1.453	1.895	2.001	2.001	0.745	1.330	1.392	1.392	1.392	0.945	7000
7500	0.658	0.658	0.658	0.658		0.796	0.868	0.868	0.868		1.013	1.227	1.229	1.229	0.467	1.254	1.638	1.743	1.743	0.605	1.152	1.213	1.213	1.213	0.768	7500
8000	0.577	0.579	0.579	0.579		0.696	0.763	0.763	0.763		0.885	1.074	1.080	1.080		1.093	1.430	1.520	1.520	0.499	1.007	1.066	1.066	1.066	0.633	8000
8500	0.509	0.513	0.513	0.513		0.613	0.676	0.676	0.676		0.779	0.948	0.957	0.957		0.960	1.259	1.336	1.357	0.416	0.888	0.944	0.944	0.944	0.528	8500
9000	0.453	0.457	0.457	0.457		0.545	0.603	0.603	0.603		0.691	0.843	0.853	0.853		0.850	1.116	1.184	1.210		0.788	0.842	0.842	0.842	0.445	9000
9500	0.405	0.410	0.410	0.410		0.487	0.541	0.541	0.541		0.617	0.754	0.766	0.766		0.758	0.997	1.056	1.086		0.705	0.756	0.756	0.756		9500
10000						0.437	0.488	0.488	0.488		0.555	0.678	0.691	0.691		0.680	0.895	0.947	0.98		0.633	0.682	0.682	0.682		10000
10500							0.443	0.443	0.443		0.501	0.614	0.627	0.627		0.612	0.809	0.854	0.887		0.571	0.619	0.619	0.619		10500
11000							0.404	0.404	0.404		0.454	0.558	0.571	0.571		0.554	0.734	0.775	0.804		0.518	0.564	0.564	0.564		11000
11500											0.414	0.509	0.523	0.523		0.504	0.669	0.705	0.731		0.471	0.516	0.516	0.516		11500
12000											0.467	0.480	0.480			0.460	0.612	0.645	0.668		0.431	0.474	0.474	0.474		12000
12500											0.429	0.442	0.442			0.422	0.563	0.592	0.613							12500
13000												0.409	0.409			0.451	0.545	0.564								13000
13500																0.480	0.503	0.521								13500
14000																0.445	0.466	0.482								14000
14500																0.414	0.433	0.448								14500
15000																	0.404	0.417								15000

Span	C/Z 200 19					C/Z 200 24					C/Z 250 19					C/Z 250 24					C/Z 300 24					Span
	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	
2000	25.938	25.938	25.938	25.938	54.357	36.254	37.089	37.089	37.090	69.833	24.840	24.840	24.840	24.840	90.184	47.165	47.166	47.166	47.166	118.289	42.164	42.164	42.164	42.165	203.695	2000
2500	16.558	16.601	16.600	16.601	27.831	21.986	23.739	23.738	23.737	35.755	19.872	19.872	19.872	19.872	46.175	29.225	30.185	30.185	30.185	60.564	33.332	33.731	33.732	33.732	104.292	2500
3000	11.027	11.528	11.528	11.528	16.106	14.560	16.484	16.484	16.484	20.691	14.538	14.538	14.538	14.538	26.720	19.191	20.963	20.963	20.962	35.049	28.109	28.110	28.109	28.110	60.354	3000
3500	7.821	8.470	8.469	8.469	10.143	10.268	12.110	12.111	12.110	13.030	10.366	10.682	10.682	10.682	16.827	13.424	15.401	15.401	15.400	22.070	19.698	21.524	21.522	21.524		

TABLE 2A: C & Z SECTION 2 SPAN OUTWARD LOAD (kN/m)



OVERALL PURLIN LENGTH = 2 x SPAN + 70MM

Bolt capacity exceeded. M12 bolts for 100 - 250 series, M16 bolts for 300 series or greater.
BOLD Grade 8.8 bolts required.
3/SB For Safebridge® system use data for 3 rows of bridging.

Span	C/Z 100 10				C/Z 100 12				C/Z 100 15				C/Z 100 19				Span
	0	1	2	3/SB	0	1	2	3/SB	0	1	2	3/SB	0	1	2	3/SB	
2000	4.495	4.495	4.495	4.495	5.455	5.455	5.455	5.455	7.103	7.103	7.103	7.103	9.894	9.894	9.894	9.894	2000
2500	2.877	2.877	2.877	2.877	3.491	3.491	3.491	3.491	4.546	4.546	4.546	4.546	6.332	6.332	6.332	6.332	2500
3000	1.998	1.998	1.998	1.998	2.424	2.424	2.424	2.424	3.116	3.157	3.157	3.157	4.285	4.397	4.397	4.397	3000
3500	1.468	1.468	1.468	1.468	1.749	1.781	1.781	1.781	2.195	2.319	2.319	2.319	3.000	3.231	3.231	3.231	3500
4000	1.065	1.124	1.124	1.124	1.256	1.364	1.364	1.364	1.602	1.776	1.776	1.776	2.179	2.473	2.473	2.473	4000
4500	0.769	0.888	0.888	0.888	0.920	1.077	1.077	1.077	1.200	1.383	1.403	1.403	1.627	1.908	1.954	1.954	4500
5000	0.558	0.719	0.719	0.719	0.682	0.866	0.873	0.873	0.916	1.087	1.136	1.136	1.240	1.494	1.583	1.583	5000
5500	0.405	0.582	0.594	0.594	0.510	0.684	0.721	0.721	0.708	0.869	0.939	0.939	0.962	1.191	1.308	1.308	5500
6000		0.460	0.499	0.499		0.547	0.606	0.606		0.544	0.704	0.784		0.757	0.962	1.083	6000
6500			0.426	0.426		0.440	0.516	0.516		0.419	0.576	0.654		0.600	0.786	0.901	6500
7000							0.437	0.445			0.476	0.551		0.475	0.648	0.757	7000
7500											0.468	0.501		0.450	0.538	0.641	7500
8000												0.433			0.450	0.548	8000
8500															0.406	0.518	8500
9000																0.452	9000
9500																	9500

Span	C/Z 150 12				C/Z 150 15				C/Z 150 19				C/Z 150 24				C/Z 200 15				Span
	0	1	2	3/SB	0	1	2	3/SB	0	1	2	3/SB	0	1	2	3/SB	0	1	2	3/SB	
2000	6.820	6.820	6.819	6.821	11.041	11.04	11.041	11.041	16.927	16.927	16.928	16.928	24.374	24.375	24.375	24.375	10.598	10.597	10.598	10.598	2000
2500	4.961	4.961	4.961	4.961	7.681	7.681	7.681	7.681	11.058	11.058	11.058	11.058	15.687	15.687	15.687	15.687	7.909	7.910	7.908	7.909	2500
3000	3.755	3.755	3.755	3.755	5.427	5.427	5.427	5.427	7.679	7.679	7.679	7.679	10.894	10.894	10.894	10.894	6.123	6.124	6.123	6.123	3000
3500	2.930	2.930	2.930	2.930	3.987	3.987	3.987	3.987	5.642	5.642	5.642	5.642	8.004	8.004	8.004	8.004	4.869	4.869	4.869	4.870	3500
4000	2.315	2.315	2.315	2.315	3.053	3.053	3.053	3.053	4.282	4.320	4.320	4.320	5.917	6.128	6.128	6.128	3.955	3.955	3.954	3.955	4000
4500	1.829	1.829	1.829	1.829	2.412	2.412	2.412	2.412	3.254	3.413	3.413	3.413	4.475	4.842	4.842	4.842	3.268	3.268	3.268	3.268	4500
5000	1.459	1.481	1.481	1.482	1.865	1.954	1.954	1.954	2.524	2.765	2.765	2.765	3.456	3.922	3.922	3.922	2.729	2.729	2.729	2.729	5000
5500	1.150	1.224	1.224	1.224	1.457	1.615	1.615	1.615	1.987	2.285	2.285	2.285	2.713	3.235	3.241	3.241	2.255	2.255	2.255	2.255	5500
6000	0.893	1.029	1.029	1.029	1.148	1.357	1.357	1.357	1.583	1.906	1.920	1.920	2.158	2.645	2.723	2.723	1.887	1.895	1.895	1.895	6000
6500	0.692	0.877	0.877	0.877	0.909	1.156	1.156	1.156	1.271	1.581	1.636	1.636	1.735	2.189	2.321	2.321	1.550	1.615	1.615	1.615	6500
7000	0.537	0.756	0.756	0.756	0.724	0.977	0.997	0.997	1.017	1.323	1.410	1.411	1.408	1.828	2.001	2.001	1.278	1.392	1.392	1.392	7000
7500	0.423	0.640	0.658	0.658	0.580	0.820	0.868	0.868	0.808	1.117	1.229	1.229	1.136	1.540	1.743	1.743	1.037	1.213	1.213	1.213	7500
8000		0.543	0.579	0.579	0.470	0.692	0.763	0.763	0.649	0.948	1.080	1.080	0.917	1.305	1.505	1.532	0.840	1.066	1.066	1.066	8000
8500		0.455	0.513	0.513		0.585	0.676	0.676	0.531	0.808	0.941	0.957	0.748	1.113	1.306	1.357	0.682	0.944	0.944	0.944	8500
9000			0.457	0.457		0.496	0.603	0.603	0.441	0.692	0.822	0.853	0.618	0.953	1.139	1.210	0.560	0.832	0.842	0.842	9000
9500			0.410	0.410		0.421	0.533	0.541		0.594	0.722	0.766	0.517	0.820	0.999	1.084	0.465	0.727	0.756	0.756	9500
10000							0.468	0.488		0.509	0.637	0.691	0.438	0.708	0.879	0.963		0.638	0.682	0.682	10000
10500							0.413	0.434		0.432	0.563	0.619		0.613	0.777	0.859		0.553	0.619	0.619	10500
11000								0.404		0.500	0.555			0.525	0.689	0.769		0.478	0.564	0.564	11000
11500										0.445	0.499			0.451	0.613	0.691		0.412	0.516	0.516	11500
12000											0.450				0.546	0.622			0.474	0.474	12000
12500												0.407			0.488	0.562			0.437	0.437	12500
13000																0.462					13000
13500																				0.462	13500
14000																					14000
14500																					14500
15000																					15000

Span	C/Z 200 19				C/Z 200 24				C/Z 250 19				C/Z 250 24				C/Z 300 24				Span
	0	1	2	3/SB	0	1	2	3/SB	0	1	2	3/SB	0	1	2	3/SB	0	1	2	3/SB	
2000	19.630	19.631	19.630	19.633	32.393	32.394	32.394	32.396	17.750	17.751	17.751	17.754	32.871	32.870	32.873	32.867	30.961	30.958	30.958	30.962	2000
2500	14.208	14.208	14.207	14.207	22.414	22.416	22.416	22.416	13.455	13.457	13.456	13.456	24.138	24.137	24.138	24.145	23.739	23.739	23.741	23.738	2500
3000	10.710	10.711	10.710	10.710	16.334	16.334	16.334	16.334	10.573	10.574	10.574	10.573	18.421	18.421	18.421	18.422	18.867	18.866	18.863	18.870	3000
3500	8.330	8.330	8.328	8.329	12.111	12.110	12.111	12.111	8.521	8.520	8.523	8.523	14.470	14.472	14.470	14.469	15.370	15.369	15.370	15.373	3500
4000	6.485	6.485	6.484	6.485	9.272	9.272	9.272	9.273	7.002	7.002	7.003	7.002	11.633	11.633	11.633	11.632	12.757	12.756	12.757	12.754	4000
4500	5.124	5.124	5.124	5.123	7.326	7.326	7.327	7.327	5.846	5.847	5.846	5.846	9.317	9.317	9.317	9.316	10.746	10.745	10.746	10.746	4500
5000	4.150	4.150	4.150	4.150	5.805	5.934	5.934	5.934	4.946	4.946	4.946	4.945	7.546	7.547	7.547	7.546	9.162	9.162	9.162	9.162	5000
5500	3.396	3.430	3.430	3.430	4.634	4.904	4.904	4.904	4.232	4.232	4.232	4.232	6.212	6.237	6.237	6.237	7.895	7.895	7.895	7.895	5500
6000	2.728	2.882	2.882	2.882	3.748	4.121	4.121	4.121	3.635	3.635	3.634	3.635	5.000	5.241	5.241	5.241	6.865	6.865	6.865	6.864	6000
6500	2.210	2.456	2.456	2.456	3.063	3.511	3.511	3.511	2.954	3.097	3.097	3.097	4.061	4.465	4.465	4.465	6.017	6.018	6.018	6.017	6500
7000	1.802	2.117	2.117	2.117	2.523	3.028	3.028	3.028	2.391	2.670	2.670	2.670	3.311	3.850	3.850	3.850	5.313	5.313	5.313	5.313	7000
7500	1.477	1.844	1.845	1.844	2.064	2.594	2.637	2.638	1.948	2.326	2.326	2.326	2.682	3.354	3.354	3.354	4.567	4.687	4.687	4.687	7500
8000	1.217	1.621	1.621	1.621	1.693	2.228	2.318	2.318	1.588	2.044	2.044	2.044	2.175	2.948	2.948	2.948	3.854	4.120	4.120	4.120	8000
8500	1.004	1.401	1.436	1.436	1.392	1.925	2.053	2.053	1.299	1.811	1.811	1.811	1.769	2.575	2.611	2.611	3.264	3.649	3.649	3.649	8500
9000	0.835	1.209	1.281	1.281	1.152	1.671	1.832	1.832	1.075	1.613	1.										

TABLE 2B: C & Z SECTION 2 SPAN INWARD LOAD (kN/m)

Span	C/Z 100 10					C/Z 100 12					C/Z 100 15					C/Z 100 19					Span
	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	
	2000	4.495	4.495	4.495	4.495	10.261	5.455	5.455	5.455	5.455	12.399	7.035	7.103	7.103	7.102	15.788	9.484	9.894	9.894	9.894	
2500	2.877	2.877	2.877	2.877	5.254	3.491	3.491	3.491	3.491	6.349	4.416	4.546	4.546	4.546	8.084	5.903	6.332	6.332	6.332	10.413	2500
3000	1.998	1.998	1.998	1.998	3.040	2.424	2.424	2.424	2.424	3.674	3.016	3.157	3.157	3.157	4.678	4.007	4.397	4.397	4.397	6.026	3000
3500	1.468	1.468	1.468	1.468	1.915	1.781	1.781	1.781	1.781	2.314	2.182	2.319	2.319	2.319	2.974	2.886	3.231	3.231	3.231	3.397	3500
4000	1.124	1.124	1.124	1.124	1.283	1.346	1.346	1.346	1.346	1.550	1.646	1.776	1.776	1.776	1.974	2.169	2.473	2.474	2.473	2.542	4000
4500	0.888	0.888	0.888	0.888	0.901	1.044	1.077	1.077	1.077	1.089	1.281	1.403	1.403	1.403	1.366	1.683	1.954	1.954	1.954	1.786	4500
5000	0.719	0.719	0.719	0.719	0.657	0.829	0.873	0.873	0.873	0.794	1.021	1.136	1.136	1.136	1.011	1.339	1.583	1.583	1.583	1.302	5000
5500	0.584	0.594	0.594	0.594	0.493	0.671	0.721	0.721	0.721	0.596	0.830	0.939	0.939	0.939	0.759	1.087	1.308	1.308	1.308	0.978	5500
6000	0.478	0.499	0.499	0.499		0.551	0.606	0.606	0.606	0.459	0.686	0.789	0.789	0.789	0.585	0.897	1.097	1.099	1.099	0.753	6000
6500		0.426	0.426	0.426		0.458	0.516	0.516	0.516		0.574	0.672	0.672	0.672	0.460	0.750	0.924	0.937	0.937	0.592	6500
7000							0.445	0.445	0.445		0.485	0.575	0.580	0.580		0.634	0.786	0.808	0.808	0.474	7000
7500											0.414	0.494	0.505	0.505		0.541	0.675	0.704	0.704		7500
8000												0.428	0.444	0.444		0.466	0.584	0.614	0.618		8000
8500															0.404	0.404	0.509	0.537	0.548		8500
9000																	0.446	0.472	0.489		9000
9500																		0.417	0.437		9500

Bolt capacity exceeded. M12 bolts for 100 - 250 series, M16 bolts for 300 series or greater.

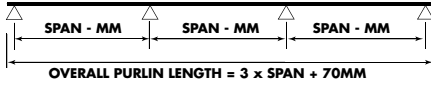
BOLD Grade 8.8 bolts required.

3/SB For Safebridge® system use data for 3 rows of bridging.

Span	C/Z 150 12					C/Z 150 15					C/Z 150 19					C/Z 150 24					C/Z 200 15					Span
	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	
	2000	6.820	6.820	6.820	6.820	35.624	11.041	11.041	11.041	11.041	46.290	16.927	16.926	16.927	16.927	59.263	23.549	24.375	24.374	24.374	76.751	10.598	10.598	10.597	10.598	
2500	4.961	4.960	4.961	4.960	18.239	7.681	7.681	7.681	7.681	23.700	10.690	11.058	11.058	11.058	30.343	14.347	15.687	15.687	15.687	39.297	7.909	7.908	7.908	7.909	49.867	2500
3000	3.755	3.755	3.755	3.755	10.555	5.427	5.427	5.427	5.427	13.715	7.212	7.679	7.679	7.679	17.560	9.561	10.894	10.894	10.894	22.741	6.123	6.123	6.123	6.123	28.859	3000
3500	2.930	2.930	2.930	2.930	6.647	3.969	3.987	3.987	3.987	8.637	5.170	5.642	5.642	5.642	11.058	6.787	8.004	8.004	8.004	14.321	4.869	4.869	4.869	4.870	18.174	3500
4000	2.315	2.315	2.315	2.315	4.453	2.979	3.053	3.053	3.053	5.786	3.873	4.320	4.320	4.320	7.408	5.045	6.128	6.128	6.128	9.594	3.955	3.955	3.955	3.955	10.775	4000
4500	1.829	1.829	1.829	1.829	3.127	2.311	2.412	2.412	2.412	4.064	3.001	3.413	3.413	3.413	5.203	3.884	4.842	4.842	4.842	6.738	3.268	3.268	3.268	3.268	8.551	4500
5000	1.481	1.481	1.481	1.481	2.280	1.838	1.954	1.954	1.954	2.962	2.386	2.765	2.765	2.765	3.793	3.074	3.922	3.922	3.922	4.912	2.696	2.729	2.729	2.729	6.233	5000
5500	1.216	1.224	1.224	1.224	1.713	1.492	1.615	1.615	1.615	2.226	1.937	2.285	2.285	2.285	2.850	2.486	3.241	3.241	3.241	3.690	2.199	2.255	2.255	2.255	4.683	5500
6000	1.008	1.029	1.029	1.029	1.319	1.231	1.357	1.357	1.357	1.714	1.599	1.920	1.920	1.920	2.195	2.047	2.723	2.723	2.723	2.843	1.824	1.895	1.895	1.895	3.607	6000
6500	0.847	0.877	0.877	0.877	1.038	1.030	1.156	1.156	1.156	1.348	1.339	1.636	1.636	1.636	1.726	1.710	2.321	2.321	2.321	2.236	1.534	1.615	1.615	1.615	2.837	6500
7000	0.719	0.756	0.756	0.756	0.831	0.871	0.997	0.997	0.997	1.080	1.134	1.411	1.411	1.411	1.382	1.446	1.994	2.001	2.001	1.790	1.306	1.392	1.392	1.392	2.272	7000
7500	0.616	0.658	0.658	0.658	0.676	0.743	0.868	0.868	0.868	0.878	0.970	1.229	1.229	1.229	1.124	1.236	1.717	1.743	1.743	1.455	1.121	1.213	1.213	1.213	1.847	7500
8000	0.529	0.579	0.579	0.579	0.557	0.639	0.763	0.763	0.763	0.723	0.836	1.080	1.080	1.080	0.926	1.066	1.492	1.532	1.532	1.199	0.965	1.066	1.066	1.066	1.522	8000
8500	0.456	0.513	0.513	0.513	0.464	0.554	0.676	0.676	0.676	0.603	0.726	0.956	0.957	0.957	0.772	0.923	1.306	1.357	1.357	1.000	0.837	0.944	0.944	0.944	1.269	8500
9000		0.457	0.457	0.457		0.482	0.603	0.603	0.603	0.508	0.634	0.843	0.853	0.853	0.650	0.803	1.151	1.210	1.210	0.842	0.730	0.842	0.842	0.842	1.069	9000
9500		0.410	0.410	0.410		0.422	0.541	0.541	0.541	0.432	0.553	0.748	0.766	0.766	0.553	0.703	1.019	1.086	1.086	0.716	0.640	0.756	0.756	0.756	0.909	9500
10000							0.488	0.488	0.488		0.485	0.667	0.691	0.691	0.474	0.618	0.908	0.980	0.98	0.614	0.560	0.682	0.682	0.682	0.779	10000
10500							0.443	0.443	0.443		0.427	0.597	0.627	0.627	0.470	0.546	0.812	0.879	0.889	0.530	0.498	0.619	0.619	0.619	0.673	10500
11000							0.402	0.404	0.404			0.537	0.571	0.571		0.484	0.729	0.791	0.8100	0.461	0.442	0.564	0.564	0.564	0.585	11000
11500												0.485	0.517	0.523		0.431	0.658	0.714	0.741	0.404		0.516	0.516	0.516	0.512	11500
12000												0.439	0.469	0.48			0.595	0.647	0.681			0.474	0.474	0.474	0.437	12000
12500													0.427	0.442			0.539	0.589	0.626			0.437	0.437	0.437	0.474	12500
13000																	0.490	0.537	0.573			0.404	0.404	0.404	0.404	13000
13500																	0.447	0.490	0.525			0.404	0.404	0.404	0.404	13500
14000																	0.408	0.449	0.483			0.404	0.404	0.404	0.404	14000
14500																		0.412	0.444			0.404	0.404	0.404	0.404	14500
15000																						0.404	0.404	0.404	0.404	15000

Span	C/Z 200 19					C/Z 200 24					C/Z 250 19					C/Z 250 24					C/Z 300 24					Span
	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	
	2000	19.631	19.630	19.631	19.635	130.694	32.394	32.393	32.393	32.396	167.907	17.751	17.751	17.750	17.752	216.830	32.870	32.871	32.870	32.876	284.414	30.963	30.962	30.957	30.961	
2500	14.207	14.208	14.207	14.208	66.915	22.415	22.415	22.415	22.416	85.969	13.456	13.456	13.457	13.456	113.623	24.138	24.138	24.138	24.136	145.616	23.740	23.740	23.735	23.740	250.753	2500
3000	10.711	10.711	10.711	10.711	38.725	15.214	16.334	16.334	16.334	49.749	10.573	10.574	10.574	10.573	64.250	18.422	18.420	18.422	18.422	84.272	18.867	18.867	18.866	18.868	145.119	3000
3500	8.100	8.330	8.329	8.328	24.386	10.743																				

**TABLE 3A:
C & Z SECTION
3 SPAN OUTWARD LOAD
(kN/m)**



Span	C/Z 100 10				C/Z 100 12				C/Z 100 15				C/Z 100 19			
	0	1	2	3/SB	0	1	2	3/SB	0	1	2	3/SB	0	1	2	3/SB
2000	5.283	5.283	5.283	5.283	6.818	6.818	6.818	6.818	8.879	8.878	8.878	8.878	12.367	12.367	12.367	12.367
2500	3.596	3.596	3.596	3.596	4.364	4.364	4.364	4.364	5.558	5.682	5.682	5.682	7.631	7.915	7.915	7.915
3000	2.457	2.497	2.497	2.497	2.879	3.031	3.030	3.030	3.640	3.946	3.946	3.946	4.952	5.497	5.497	5.497
3500	1.616	1.835	1.835	1.835	1.924	2.226	2.226	2.226	2.493	2.894	2.899	2.899	3.363	3.995	4.038	4.038
4000	1.072	1.405	1.405	1.405	1.307	1.705	1.705	1.705	1.757	2.136	2.220	2.220	2.357	2.934	3.092	3.092
4500	0.714	1.086	1.110	1.110	0.897	1.276	1.347	1.347	1.247	1.619	1.754	1.754	1.689	2.211	2.443	2.443
5000	0.496	0.815	0.899	0.899	0.634	0.968	1.091	1.091	0.872	1.250	1.407	1.421	1.216	1.698	1.940	1.940
5500		0.615	0.743	0.743	0.462	0.741	0.902	0.902	0.630	0.978	1.132	1.174	0.878	1.324	1.555	1.555
6000		0.462	0.623	0.624		0.569	0.730	0.758	0.470	0.773	0.923	0.986	0.655	1.043	1.263	1.263
6500			0.504	0.532		0.438	0.595	0.646		0.611	0.761	0.824	0.503	0.829	1.037	1.037
7000			0.41	0.459			0.488	0.554		0.475	0.632	0.694		0.664	0.859	0.859
7500							0.402	0.467			0.529	0.590		0.525	0.716	0.716
8000											0.445	0.505		0.417	0.601	0.601
8500												0.435			0.507	0.507
9000															0.429	0.429
9500																0.429

Bolt capacity exceeded. M12 bolts for 100 - 250 series, M16 bolts for 300 series or greater.

BOLD Grade 8.8 bolts required.

3/SB For Safebridge® system use data for 3 rows of bridging.

Span	C/Z 150 12				C/Z 150 15				C/Z 150 19				C/Z 150 24				C/Z 200 15					
	0	1	2	3/SB	0	1	2	3/SB	0	1	2	3/SB	0	1	2	3/SB	0	1	2	3/SB	Span	
2000	7.548	7.548	7.548	7.547	12.663	12.663	12.663	12.662	20.122	20.124	20.123	20.122	29.355	29.356	29.356	29.357	11.515	11.515	11.516	11.515	2000	
2500	5.596	5.596	5.595	5.595	8.984	8.984	8.984	8.984	13.671	13.671	13.670	13.672	19.609	19.609	19.609	19.609	8.733	8.733	8.733	8.734	2500	
3000	4.306	4.306	4.306	4.306	6.667	6.667	6.667	6.667	9.599	9.599	9.599	9.600	13.498	13.617	13.617	13.617	6.865	6.865	6.865	6.866	3000	
3500	3.406	3.406	3.406		4.984	4.984	4.984	4.984	6.817	7.053	7.052	7.052	9.391	10.005	10.005	10.005	5.535	5.535	5.535	5.534	3500	
4000	2.754	2.754	2.754		3.648	3.816	3.816	3.816	4.934	5.399	5.400	5.400	6.753	7.660	7.660	7.659	4.551	4.551	4.551	4.550	4000	
4500	2.106	2.268	2.268		2.674	3.015	3.015	3.015	3.651	4.266	4.266	4.266	4.970	6.046	6.052	6.052	3.800	3.800	3.800	3.800	4500	
5000	1.526	1.852	1.852		1.980	2.442	2.442	2.442	2.741	3.414	3.456	3.456	3.721	4.731	4.902	4.902	3.216	3.216	3.216	3.216	5000	
5500	1.102	1.530	1.530		1.474	2.018	2.018	2.018	2.054	2.725	2.856	2.856	2.821	3.763	4.051	4.051	2.630	2.751	2.750	2.749	5500	
6000	0.812	1.265	1.286		1.107	1.623	1.696	1.696	1.517	2.202	2.400	2.400	2.104	3.030	3.404	3.404	2.023	2.369	2.369	2.369	6000	
6500	0.614	1.033	1.096		0.850	1.315	1.445	1.445	1.149	1.796	2.045	2.045	1.582	2.464	2.861	2.901	1.547	2.018	2.018	2.018	6500	
7000	0.476	0.832	0.945		0.655	1.070	1.246	1.246	0.893	1.475	1.735	1.763	1.219	2.020	2.404	2.501	1.192	1.740	1.740	1.740	7000	
7500		0.666	0.823		0.512	0.873	1.085	1.085	0.697	1.217	1.473	1.536	0.959	1.666	2.036	2.179	0.936	1.487	1.516	1.516	7500	
8000		0.532	0.723		0.410	0.713	0.93	0.954	0.553	1.004	1.260	1.350	0.768	1.380	1.737	1.898	0.750	1.263	1.333	1.333	8000	
8500		0.428	0.622			0.583	0.796	0.845	0.447	0.815	1.083	1.188	0.626	1.141	1.489	1.648	0.612	1.068	1.180	1.180	8500	
9000			0.537			0.481	0.684	0.754		0.663	0.935	1.039	0.517	0.934	1.283	1.439	0.505	0.891	1.053	1.053	9000	
9500			0.458			0.401	0.588	0.676		0.547	0.810	0.913	0.432	0.766	1.110	1.262	0.418	0.742	0.945	0.945	9500	
10000							0.507	0.595		0.457	0.703	0.806		0.635	0.963	1.111		0.618	0.850	0.853	10000	
10500							0.437	0.525			0.612	0.714		0.533	0.838	0.982		0.519	0.753	0.774	10500	
11000							0.464				0.532	0.634		0.451	0.731	0.871		0.439	0.669	0.705	11000	
11500								0.412			0.457	0.564			0.638	0.774			0.594	0.645	0.645	11500
12000												0.503			0.551	0.690			0.521	0.592	0.592	12000
12500												0.450			0.476	0.616			0.457	0.544	0.544	12500
13000												0.402			0.412	0.515			0.400	0.493	0.493	13000
13500																0.493			0.449	0.449	0.449	13500
14000																			0.408	0.408	0.408	14000
14500																						14500
15000																						15000

Span	C/Z 200 19				C/Z 200 24				C/Z 250 19				C/Z 250 24				C/Z 300 24				
	0	1	2	3/SB	0	1	2	3/SB	0	1	2	3/SB	0	1	2	3/SB	0	1	2	3/SB	Span
2000	21.805	21.807	21.805	21.806	37.327	37.328	37.327	37.330	19.089	19.089	19.089	19.092	36.120	36.124	36.119	36.123	33.056	33.061	33.058	33.053	2000
2500	16.091	16.091	16.092	16.091	26.333	26.333	26.332	26.332	14.667	14.666	14.667	14.667	27.011	27.013	27.013	27.014	25.629	25.628	25.630	25.631	2500
3000	12.333	12.332	12.333	12.332	19.458	19.459	19.457	19.458	11.681	11.681	11.681	11.681	20.953	20.952	20.953	20.953	20.608	20.607	20.606	20.610	3000
3500	9.723	9.722	9.723	9.721	14.901	14.903	14.902	14.901	9.536	9.537	9.535	9.536	16.691	16.690	16.691	16.690	16.983	16.983	16.984	16.982	3500
4000	7.839	7.839	7.839	7.838	11.420	11.591	11.590	11.590	7.930	7.930	7.931	7.930	13.576	13.575	13.577	13.575	14.254	14.253	14.254	14.252	4000
4500	6.317	6.405	6.405	6.405	8.630	9.158	9.158	9.158	6.691	6.691	6.692	6.692	11.233	11.233	11.233	11.232	12.130	12.131	12.132	12.130	4500
5000	4.819	5.188	5.188	5.188	6.643	7.418	7.418	7.418	5.714	5.715	5.715	5.715	8.864	9.430	9.430	9.431	10.442	10.443	10.442	10.442	5000
5500	3.713	4.287	4.287	4.287	5.180	6.131	6.131	6.131	4.931	4.928	4.926	4.925	6.859	7.796	7.796	7.796	9.076	9.069	9.066	9.062	5500
6000	2.882	3.603	3.603	3.602	4.019	5.114	5.151	5.151	3.819	4.293	4.293	4.293	5.258	6.550	6.551	6.551	7.953	7.953	7.953	7.953	6000
6500	2.250	3.070	3.070	3.070	3.114	4.235	4.389	4.389	2.948	3.766	3.765	3.764	4.021	5.581	5.582	5.582	7.021	7.017	7.015	7.013	6500
7000	1.763	2.578	2.647	2.647	2.420	3.539	3.785	3.785	2.292	3.330	3.330	3.330	3.100	4.741	4.813	4.813	5.958	6.237	6.237	6.238	7000
7500	1.391	2.154	2.306	2.306	1.898	2.979	3.297	3.297	1.790	2.886	2.908	2.908	2.413	3.974	4.192	4.193	4.858	5.572	5.571	5.569	7500
8000	1.105	1.808	2.026	2.026	1.498	2.521	2.898	2.898	1.416	2.416	2.556	2.556	1.896	3.347	3.685	3.685	3.983	5.007	5.007	5.007	8000
8500	0.893	1.520	1.795	1.795	1.201	2.142	2.529	2.567	1.141	2.023	2.264	2.264	1.513	2.823	3.264	3.264	3.283	4.519	4.518	4.518	8500
9000	0.730	1.283	1.601	1.601	0.976	1.805	2.209	2.289	0.928	1.699	2.019	2.019	1.225	2.360	2.911	2.911	2.71				

TABLE 3B: C & Z SECTION 3 SPAN INWARD LOAD (kN/m)

Span	C/Z 100 10				C/Z 100 12				C/Z 100 15				C/Z 100 19				Span			
	0	1	2	3/SB	0	1	2	3/SB	0	1	2	3/SB	0	1	2	3/SB				
2000	5.283	5.283	5.283	5.283	6.818	6.818	6.818	6.818	9.757	8.508	8.878	8.878	8.878	12.424	11.327	12.367	12.367	12.367	16.005	2000
2500	3.596	3.596	3.596	3.596	4.134	4.361	4.364	4.364	4.996	5.309	5.682	5.682	5.682	6.362	6.992	7.915	7.915	7.915	8.195	2500
3000	2.497	2.497	2.497	2.497	2.393	2.956	3.030	3.030	3.030	3.607	3.946	3.946	3.946	3.681	4.714	5.497	5.497	5.497	4.742	3000
3500	1.835	1.835	1.835	1.835	1.507	2.118	2.227	2.226	2.226	1.821	2.596	2.899	2.899	2.318	3.375	4.038	4.038	4.038	2.986	3500
4000	1.378	1.405	1.405	1.405	1.009	1.577	1.705	1.705	1.220	1.946	2.220	2.220	2.220	1.553	2.521	3.092	3.092	3.092	2.001	4000
4500	1.050	1.110	1.110	1.110	0.709	1.208	1.347	1.347	1.347	0.857	1.503	1.754	1.754	1.091	1.943	2.443	2.443	2.443	1.405	4500
5000	0.815	0.899	0.899	0.899	0.517	0.943	1.091	1.091	1.091	0.624	1.186	1.421	1.421	0.795	1.534	1.979	1.979	1.979	1.024	5000
5500	0.641	0.743	0.743	0.743	0.408	0.748	0.902	0.902	0.902	0.469	0.953	1.174	1.174	0.597	1.233	1.634	1.634	1.634	0.770	5500
6000	0.508	0.624	0.624	0.624	0.312	0.599	0.758	0.758	0.758	0.348	0.776	0.986	0.986	0.460	1.006	1.362	1.374	1.374	0.593	6000
6500	0.405	0.532	0.532	0.532	0.238	0.484	0.646	0.646	0.646	0.268	0.638	0.840	0.841	0.411	0.830	1.147	1.171	1.171	0.466	6500
7000		0.459	0.459	0.459		0.445	0.557	0.557		0.528	0.715	0.725	0.725	0.352	0.692	0.977	1.010	1.010		7000
7500		0.400	0.400	0.400		0.485	0.485	0.485		0.435	0.615	0.631	0.631	0.282	0.582	0.839	0.879	0.879		7500
8000						0.426	0.426	0.426			0.533	0.555	0.555	0.212	0.489	0.727	0.769	0.773		8000
8500											0.465	0.488	0.492	0.158	0.412	0.633	0.673	0.685		8500
9000															0.555	0.591	0.611			9000
9500															0.489	0.523	0.545			9500
10000															0.433	0.464	0.486			
10500																0.414	0.435			

Bolt capacity exceeded. M12 bolts for 100 - 250 series, M16 bolts for 300 series or greater.

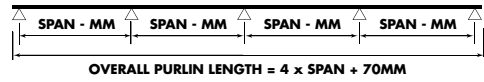
BOLD Grade 8.8 bolts required.

3/SB For Safebride® system use data for 3 rows of bridging.

Span	C/Z 150 12				C/Z 150 15				C/Z 150 19				C/Z 150 24				C/Z 200 15				Span				
	0	1	2	3/SB	0	1	2	3/SB	0	1	2	3/SB	0	1	2	3/SB	0	1	2	3/SB					
2000	7.548	7.548	7.548	7.548	12.662	12.663	12.663	12.662	16.427	20.123	20.122	20.123	20.122	46.636	28.014	29.356	29.355	29.356	60.398	11.515	11.515	11.515	11.515	76.648	2000
2500	5.595	5.596	5.595	5.596	8.984	8.984	8.984	8.983	18.650	12.710	13.671	13.671	13.671	23.877	16.808	19.609	19.608	19.609	30.923	8.733	8.733	8.733	8.734	39.243	2500
3000	4.306	4.306	4.306	4.306	6.530	6.667	6.667	6.666	10.793	8.493	9.599	9.600	9.599	13.817	11.056	13.617	13.617	13.617	17.896	6.865	6.865	6.864	6.865	22.710	3000
3500	3.406	3.406	3.406	3.406	5.231	4.660	4.984	4.984	6.797	6.038	7.052	7.052	7.053	8.702	7.761	10.005	10.005	10.005	11.270	5.535	5.535	5.536	5.535	14.301	3500
4000	2.754	2.754	2.754	2.754	4.464	3.816	3.816	3.816	4.553	4.490	5.400	5.400	5.400	5.830	5.716	7.660	7.660	7.659	7.550	5.555	4.551	4.551	4.555	15.481	4000
4500	2.212	2.268	2.268	2.268	2.461	2.676	3.015	3.015	3.198	3.454	4.266	4.266	4.266	4.094	4.365	6.052	6.052	6.052	5.302	3.800	3.800	3.800	3.800	6.729	4500
5000	1.758	1.852	1.852	1.852	1.794	2.112	2.442	2.442	2.331	2.727	3.456	3.456	3.456	2.985	3.430	4.902	4.902	4.902	3.866	3.167	3.216	3.216	3.216	4.905	5000
5500	1.418	1.530	1.530	1.530	1.348	1.700	2.018	2.018	1.751	2.197	2.856	2.856	2.856	2.242	2.741	4.051	4.051	4.051	2.904	2.544	2.751	2.750	2.749	3.686	5500
6000	1.153	1.286	1.286	1.286	1.038	1.388	1.696	1.696	1.349	1.799	2.400	2.400	2.400	1.727	2.224	3.374	3.404	3.404	2.237	2.078	2.369	2.369	2.369	2.839	6000
6500	0.946	1.096	1.096	1.096	0.817	1.146	1.445	1.445	1.061	1.481	2.045	2.045	2.045	1.359	1.830	2.844	2.901	2.901	1.759	1.719	2.018	2.019	2.018	2.333	6500
7000	0.782	0.945	0.945	0.945	0.654	0.955	1.246	1.246	0.850	1.231	1.763	1.763	1.763	1.088	1.525	2.427	2.501	2.501	1.409	1.437	1.740	1.740	1.740	1.788	7000
7500	0.649	0.823	0.823	0.823	0.532	0.803	1.085	1.085	0.691	1.032	1.536	1.536	1.536	0.884	1.283	2.093	2.179	2.179	1.145	1.212	1.516	1.516	1.516	1.453	7500
8000	0.541	0.723	0.723	0.723	0.438	0.679	0.954	0.954	0.569	0.870	1.346	1.350	1.35	0.729	1.089	1.822	1.915	1.915	0.944	1.028	1.333	1.333	1.333	1.198	8000
8500	0.454	0.641	0.641	0.641	0.376	0.576	0.845	0.845	0.475	0.739	1.182	1.196	1.196	0.608	0.933	1.598	1.696	1.696	0.787	0.878	1.180	1.180	1.180	0.998	8500
9000		0.572	0.572	0.572		0.493	0.754	0.754	0.400	0.633	1.044	1.067	1.067	0.512	0.805	1.410	1.513	1.513	0.663	0.754	1.053	1.053	1.053	0.841	9000
9500		0.513	0.513	0.513		0.424	0.676	0.676	0.346	0.546	0.927	0.957	0.957	0.435	0.698	1.252	1.358	1.358	0.564	0.652	0.945	0.945	0.945	0.715	9500
10000		0.463	0.463	0.463		0.310	0.610	0.610	0.274	0.474	0.827	0.864	0.864	0.346	0.610	1.118	1.222	1.222	0.483	0.566	0.853	0.853	0.853	0.613	10000
10500		0.420	0.420	0.420		0.254	0.554	0.554	0.214	0.474	0.741	0.784	0.784	0.274	0.535	1.002	1.098	1.112	0.417	0.495	0.774	0.774	0.774	0.530	10500
11000						0.499	0.505	0.505		0.667	0.714	0.714		0.471	0.901	0.989	1.013		0.434	0.705	0.705	0.705	0.461	11000	
11500						0.449	0.462	0.462		0.601	0.648	0.653		0.417	0.814	0.894	0.927			0.645	0.645	0.645	0.403	11500	
12000						0.405	0.424	0.424		0.544	0.588	0.600		0.409	0.737	0.811	0.851			0.592	0.592	0.592		12000	
12500										0.494	0.535	0.553			0.669	0.738	0.780			0.546	0.546	0.546		12500	
13000										0.449	0.488	0.511			0.608	0.673	0.713			0.505	0.505	0.505		13000	
13500										0.409	0.447	0.471			0.555	0.615	0.654			0.468	0.468	0.468		13500	
14000											0.410	0.433			0.507	0.563	0.600			0.435	0.435	0.435		14000	
14500												0.400			0.464	0.517	0.553			0.400	0.406	0.406		14500	
15000															0.425	0.476	0.510							15000	

Span	C/Z 200 19				C/Z 200 24				C/Z 250 19				C/Z 250 24				C/Z 300 24				Span
	0	1	2	3/SB	0	1	2	3/SB	0	1	2	3/SB	0	1	2	3/SB	0	1	2	3/SB	
2000	21.806	21.805	21.804	21.806	102.847	37.327	37.328	37.327	37.328	132.130	19.090	19.090	19.089	19.090	170.635	36.122	36.120</				

TABLE 4A: C & Z SECTION 4 SPAN OUTWARD LOAD (kN/m)



Bolt capacity exceeded. M12 bolts for 100 - 250 series, M16 bolts for 300 series or greater.

BOLD Grade 8.8 bolts required.

3/SB For Safebridge® system use data for 3 rows of bridging.

Span	C/Z 100 10				C/Z 100 12				C/Z 100 15				C/Z 100 19				Span
	0	1	2	3/SB	0	1	2	3/SB	0	1	2	3/SB	0	1	2	3/SB	
2000	5.050	5.050	5.050	5.050	6.364	6.364	6.364	6.364	8.287	8.287	8.286	8.286	11.543	11.543	11.543	11.543	2000
2500	3.356	3.356	3.356	3.356	4.073	4.073	4.073	4.073	5.275	5.303	5.303	5.303	7.264	7.388	7.388	7.387	2500
3000	2.331	2.331	2.331	2.331	2.775	2.828	2.828	2.828	3.482	3.683	3.683	3.683	4.757	5.130	5.130	5.130	3000
3500	1.593	1.712	1.712	1.712	1.882	2.078	2.078	2.078	2.410	2.706	2.706	2.706	3.267	3.769	3.769	3.769	3500
4000	1.086	1.311	1.311	1.311	1.306	1.591	1.591	1.591	1.721	2.030	2.072	2.072	2.319	2.797	2.886	2.886	4000
4500	0.740	1.036	1.036	1.036	0.917	1.228	1.257	1.257	1.253	1.547	1.637	1.637	1.686	2.120	2.280	2.280	4500
5000	0.513	0.797	0.839	0.839	0.650	0.941	1.018	1.018	0.908	1.202	1.326	1.326	1.249	1.640	1.838	1.847	5000
5500		0.611	0.693	0.693	0.476	0.729	0.841	0.842	0.657	0.948	1.074	1.096	0.925	1.289	1.480	1.526	5500
6000		0.469	0.583	0.583		0.528	0.700	0.707	0.491	0.756	0.879	0.921	0.691	1.025	1.207	1.283	6000
6500			0.489	0.497		0.444	0.574	0.603		0.608	0.728	0.780	0.530	0.822	0.996	1.077	6500
7000				0.401			0.474	0.520		0.488	0.608	0.660	0.416	0.665	0.829	0.908	7000
7500								0.448			0.512	0.563		0.542	0.696	0.772	7500
8000											0.433	0.483		0.436	0.587	0.661	8000
8500												0.417			0.498	0.570	8500
9000														0.425	0.494	0.569	9000
9500															0.429	0.494	9500

Span	C/Z 150 12				C/Z 150 15				C/Z 150 19				C/Z 150 24				C/Z 200 15				Span	
	0	1	2	3/SB	0	1	2	3/SB	0	1	2	3/SB	0	1	2	3/SB	0	1	2	3/SB		
2000	7.330	7.330	7.329	7.329	12.163	12.164	12.164	12.164	19.107	19.107	19.107	19.107	27.753	27.753	27.753	27.753	11.244	11.244	11.245	11.244	2000	
2500	5.403	5.403	5.403	5.402	8.576	8.576	8.575	8.576	12.901	12.901	12.901	12.901	18.302	18.302	18.302	18.302	8.487	8.487	8.488	8.488	2500	
3000	4.136	4.136	4.136	4.136	6.331	6.331	6.331	6.331	8.959	8.959	8.959	8.959	12.709	12.709	12.710	12.709	6.641	6.641	6.641	6.641	3000	
3500	3.258	3.255	3.253	3.251	4.652	4.651	4.652	4.652	6.505	6.583	6.582	6.582	8.990	9.338	9.338	9.338	5.332	5.325	5.323	5.317	3500	
4000	2.625	2.625	2.625	2.625	3.522	3.561	3.561	3.561	4.746	5.040	5.039	5.040	6.520	7.149	7.149	7.149	4.367	4.367	4.366	4.367	4000	
4500	2.053	2.134	2.134	2.134	2.613	2.814	2.814	2.814	3.547	3.982	3.982	3.982	4.847	5.649	5.649	5.649	3.635	3.632	3.631	3.629	4500	
5000	1.536	1.728	1.728	1.728	1.965	2.279	2.279	2.279	2.696	3.225	3.225	3.225	3.669	4.510	4.575	4.575	3.067	3.067	3.067	3.066	5000	
5500	1.137	1.428	1.428	1.428	1.488	1.884	1.884	1.884	2.071	2.603	2.666	2.665	2.817	3.605	3.781	3.781	2.545	2.545	2.545	2.545	5500	
6000	0.841	1.200	1.200	1.200	1.133	1.564	1.583	1.583	1.579	2.115	2.240	2.240	2.182	2.919	3.177	3.177	2.029	2.211	2.211	2.211	6000	
6500	0.636	0.997	1.023	1.023	0.870	1.276	1.349	1.349	1.196	1.736	1.908	1.908	1.666	2.389	2.707	2.707	1.585	1.884	1.884	1.884	6500	
7000	0.491	0.824	0.882	0.882	0.682	1.048	1.163	1.163	0.926	1.436	1.646	1.646	1.284	1.971	2.291	2.334	1.234	1.624	1.624	1.624	7000	
7500		0.670	0.768	0.768	0.536	0.865	1.013	1.013	0.735	1.194	1.405	1.433	1.010	1.638	1.947	2.034	0.969	1.415	1.415	1.415	7500	
8000		0.544	0.675	0.675	0.427	0.714	0.890	0.890	0.584	0.998	1.205	1.260	0.810	1.368	1.667	1.704	0.773	1.218	1.244	1.244	8000	
8500		0.440	0.597	0.598		0.591	0.768	0.789	0.472	0.835	1.040	1.116	0.659	1.149	1.435	1.568	0.628	1.044	1.102	1.102	8500	
9000			0.518	0.533		0.490	0.663	0.703		0.687	0.902	0.989	0.544	0.965	1.242	1.372	0.518	0.892	0.983	0.983	9000	
9500			0.451	0.479		0.408	0.574	0.631		0.566	0.785	0.871	0.455	0.801	1.080	1.207	0.433	0.753	0.882	0.882	9500	
10000						0.498	0.570	0.631		0.472	0.686	0.771		0.666	0.942	1.066		0.634	0.796	0.796	10000	
10500						0.433	0.506	0.566			0.601	0.685		0.558	0.824	0.945		0.534	0.722	0.722	10500	
11000							0.449	0.506			0.527	0.610		0.472	0.723	0.841		0.452	0.644	0.658	11000	
11500								0.400			0.462	0.545		0.403	0.636	0.751			0.575	0.602	11500	
12000											0.400	0.489			0.560	0.671			0.515	0.553	12000	
12500															0.491	0.602			0.457	0.509	12500	
13000															0.428	0.541			0.404	0.471	13000	
13500																0.487				0.431	0.487	13500
14000																					0.431	14000
14500																						14500
15000																						15000

Span	C/Z 200 19				C/Z 200 24				C/Z 250 19				C/Z 250 24				C/Z 300 24				Span
	0	1	2	3/SB	0	1	2	3/SB	0	1	2	3/SB	0	1	2	3/SB	0	1	2	3/SB	
2000	21.154	21.155	21.154	21.154	35.803	35.803	35.804	35.806	18.696	18.697	18.696	18.698	35.153	35.156	35.154	35.157	33.056	33.061	33.058	33.053	2000
2500	15.518	15.517	15.517	15.518	25.100	25.101	25.100	25.101	14.309	14.309	14.309	14.309	26.146	26.145	26.145	26.148	25.629	25.628	25.630	25.631	2500
3000	11.832	11.831	11.831	11.831	18.462	18.462	18.463	18.462	11.350	11.350	11.350	11.350	20.179	20.180	20.178	20.179	20.608	20.607	20.606	20.610	3000
3500	9.287	9.278	9.275	9.267	14.092	14.084	14.082	14.076	9.230	9.217	9.211	9.200	16.004	15.986	15.979	15.966	16.983	16.983	16.984	16.982	3500
4000	7.461	7.461	7.461	7.461	10.818	10.818	10.818	10.818	6.747	6.747	6.746	6.747	12.968	12.967	12.968	12.967	14.254	14.253	14.254	14.252	4000
4500	5.978	5.978	5.978	5.978	8.266	8.548	8.547	8.548	6.432	6.426	6.423	6.420	10.697	10.690	10.687	10.683	12.130	12.131	12.132	12.130	4500
5000	4.678	4.842	4.842	4.842	6.409	6.923	6.923	6.923	5.476	5.476	5.476	5.476	8.583	8.804	8.804	8.804	10.442	10.443	10.442	10.442	5000
5500	3.646	4.002	4.002	4.001	4.009	4.808	4.808	4.808	3.812	4.094	4.094	4.093	5.284	6.114	6.114	6.114	7.953	7.953	7.953	7.953	5500
6000	2.864	3.362	3.362	3.362	3.159	4.041	4.097	4.097	2.994	3.583	3.583	3.582	4.118	5.210	5.210	5.209	7.021	7.017	7.015	7.013	6000
6500	2.266	2.865	2.865	2.865	2.494	3.391	3.532	3.532	2.351	3.115	3.115	3.115	3.209	4.492	4.492	4.492	5.958	6.237	6.237	6.238	6500
7000	1.800	2.470	2.470	2.470	1.975	2.868	3.077	3.077	1.862	2.714	2.714	2.714	2.522	3.839	3.913	3.913	4.858	5.572	5.571	5.569	7000
7500	1.435	2.086	2.152	2.152	1.579	2.440	2.704	2.704	1.480	2.363	2.385	2.385	2.000	3.253	3.439	3.439	3.983	5.007	5.007	5.007	7500
8000	1.153	1.763	1.891	1.891	1.266	2.087	2.396	2.396	1.188	1.999	2.113	2.113	1.597	2.769	3.046	3.046	3.283	4.519	4.518	4.518	8000
8500	0.929	1.495	1.675	1.675	1.030	1.791	2.106	2.137	0.970	1.691	1.885	1.885	1.293	2.362	2.717	2.717	2.713	4.068	4.069	4.069	8500
9000	0.760	1.271	1.494	1.494	0.848	1.527	1.853	1.918	0.801	1.435	1.691	1.691	1.060	1.996	2.439	2.439	2.243	3.535	3.652	3.652	9000
9500	0.632	1.083	1.341	1.341	0.706	1.301	1.638	1.731	0.662	1.217	1.527	1.527	0.879	1.687	2.196	2.201	1.855	3.079	3.296	3.296	9500

TABLE 4B: C & Z SECTION 4 SPAN INWARD LOAD

(kN/m)

Span	C/Z 100 10				C/Z 100 12				C/Z 100 15				C/Z 100 19				Span	
	0	1	2	3/SB	0	1	2	3/SB	0	1	2	3/SB	0	1	2	3/SB		
2000	5.050	5.049	5.050	5.050	6.802	6.364	6.364	6.364	10.394	8.040	8.286	8.286	13.235	10.760	11.543	11.543	17.049	2000
2500	3.356	3.356	3.356	3.356	4.404	4.073	4.073	4.073	5.322	5.028	5.303	5.303	6.776	6.661	7.387	7.387	7.388	2500
3000	2.331	2.331	2.331	2.331	2.549	2.808	2.828	2.828	3.080	3.423	3.683	3.683	3.921	4.503	5.130	5.130	5.130	3000
3500	1.712	1.713	1.712	1.712	1.605	2.020	2.078	2.078	1.939	2.469	2.706	2.706	2.470	3.231	3.769	3.769	3.769	3500
4000	1.311	1.311	1.311	1.311	1.075	1.512	1.591	1.591	1.299	1.856	2.072	2.072	1.654	2.420	2.886	2.886	2.886	4000
4500	1.019	1.036	1.036	1.036	0.755	1.166	1.257	1.257	0.913	1.440	1.637	1.637	1.162	1.872	2.280	2.280	2.280	4500
5000	0.801	0.839	0.839	0.839	0.551	0.920	1.018	1.018	0.665	1.143	1.326	1.326	0.847	1.484	1.847	1.847	1.847	5000
5500	0.640	0.693	0.693	0.693	0.414	0.739	0.841	0.841	0.500	0.925	1.096	1.096	0.636	1.200	1.526	1.526	1.526	5500
6000	0.518	0.583	0.583	0.583	0.302	0.707	0.707	0.707	0.432	0.760	0.921	0.921	0.490	0.986	1.279	1.283	1.283	6000
6500	0.424	0.497	0.496	0.497	0.495	0.602	0.602	0.602	0.432	0.632	0.785	0.784	0.785	0.820	1.080	1.093	1.093	6500
7000		0.428	0.428	0.428	0.411	0.519	0.520	0.519	0.450	0.531	0.673	0.676	0.676	0.690	0.920	0.942	0.942	7000
7500						0.453	0.453	0.453			0.503	0.518	0.518	0.501	0.686	0.720	0.721	7500
8000											0.439	0.457	0.459	0.432	0.598	0.630	0.639	8000
8500												0.403	0.409		0.525	0.554	0.570	8500
9000															0.464	0.490	0.509	9000
9500															0.411	0.436	0.455	9500
10000																	0.407	

Bolt capacity exceeded. M12 bolts for 100 - 250 series, M16 bolts for 300 series or greater.

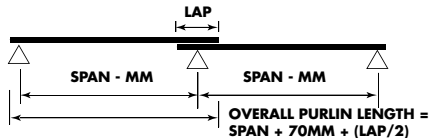
BOLD Grade 8.8 bolts required.

3/SB For Safebridge® system use data for 3 rows of bridging.

Span	C/Z 150 12				C/Z 150 15				C/Z 150 19				C/Z 150 24				C/Z 200 15				Span				
	0	1	2	3/SB	0	1	2	3/SB	0	1	2	3/SB	0	1	2	3/SB	0	1	2	3/SB					
2000	7.331	7.330	7.331	7.331	12.163	12.163	12.164	12.164	38.802	19.107	19.106	19.108	19.106	49.679	26.684	27.754	27.753	27.753	64.337	11.244	11.243	11.244	11.244	81.646	2000
2500	5.402	5.403	5.403	5.404	8.576	8.576	8.576	8.577	19.867	12.096	12.902	12.901	12.901	25.435	16.101	18.302	18.302	18.301	32.941	8.487	8.488	8.486	8.488	41.803	2500
3000	4.136	4.146	4.136	4.136	6.222	6.331	6.331	6.331	11.497	8.110	8.959	8.959	8.959	14.719	10.640	12.700	12.710	12.709	19.062	6.641	6.641	6.641	6.642	24.191	3000
3500	3.258	3.255	3.253	3.251	4.452	4.652	4.652	4.652	7.240	5.783	6.582	6.582	6.583	9.269	7.498	9.338	9.338	9.338	12.005	5.332	5.325	5.323	5.317	15.234	3500
4000	2.625	2.625	2.625	2.624	3.328	3.561	3.561	3.561	4.850	4.312	5.040	5.040	5.039	6.210	5.541	7.149	7.149	7.149	8.042	4.367	4.367	4.367	4.366	10.206	4000
4500	2.106	2.134	2.134	2.134	2.622	2.571	2.814	2.814	3.406	3.326	3.982	3.982	3.982	4.361	4.244	5.649	5.649	5.649	5.648	3.634	3.632	3.631	3.629	7.168	4500
5000	1.679	1.728	1.728	1.728	1.911	2.036	2.279	2.279	2.483	2.634	3.225	3.225	3.225	3.179	3.344	4.575	4.575	4.575	4.118	3.025	3.067	3.067	3.067	5.225	5000
5500	1.364	1.428	1.428	1.428	1.436	1.646	1.884	1.884	1.884	1.866	2.129	2.666	2.666	2.666	2.389	2.694	3.781	3.781	3.094	2.459	2.617	2.616	2.615	3.926	5500
6000	1.127	1.200	1.200	1.200	1.106	1.351	1.583	1.583	1.583	1.437	1.750	2.240	2.240	2.240	1.840	2.210	3.177	3.177	2.383	2.024	2.211	2.211	2.211	3.024	6000
6500	0.925	1.023	1.023	1.023	0.870	1.124	1.349	1.349	1.130	1.459	1.908	1.908	1.909	1.447	1.829	2.694	2.707	2.707	1.874	1.682	1.884	1.884	1.884	2.378	6500
7000	0.782	0.882	0.882	0.882	0.696	0.944	1.163	1.163	0.905	1.228	1.646	1.646	1.646	1.159	1.532	2.300	2.334	2.334	1.501	1.414	1.624	1.624	1.624	1.904	7000
7500	0.660	0.768	0.768	0.768	0.566	0.800	1.013	1.013	0.736	1.038	1.433	1.433	1.433	0.942	1.295	1.984	2.033	2.034	1.220	1.200	1.415	1.415	1.415	1.548	7500
8000	0.560	0.675	0.675	0.675	0.467	0.683	0.890	0.890	0.606	0.883	1.260	1.260	1.260	0.776	1.105	1.727	1.787	1.787	1.005	1.026	1.244	1.244	1.244	1.276	8000
8500	0.477	0.598	0.598	0.598	0.387	0.587	0.789	0.789	0.505	0.757	1.115	1.116	1.116	0.647	0.950	1.514	1.583	1.583	0.838	0.883	1.102	1.102	1.102	1.064	8500
9000	0.408	0.533	0.533	0.533	0.308	0.508	0.703	0.703	0.426	0.652	0.985	0.985	0.985	0.545	0.822	1.337	1.412	1.412	0.764	0.764	0.983	0.983	0.983	0.896	9000
9500	0.479	0.479	0.479	0.479	0.441	0.631	0.631	0.631	0.565	0.875	0.893	0.893	0.893	0.464	0.717	1.187	1.267	1.267	0.600	0.664	0.882	0.882	0.882	0.762	9500
10000	0.432	0.432	0.432	0.432	0.570	0.570	0.570	0.570	0.493	0.782	0.806	0.806	0.806	0.628	0.628	1.059	1.144	1.144	0.515	0.581	0.796	0.796	0.796	0.653	10000
10500					0.517	0.517	0.517	0.517	0.433	0.701	0.731	0.731	0.731	0.554	0.554	0.949	1.030	1.038	0.445	0.510	0.722	0.722	0.722	0.564	10500
11000					0.471	0.471	0.471	0.471	0.631	0.666	0.666	0.666	0.666	0.491	0.491	0.854	0.928	0.945	0.450	0.658	0.658	0.658	0.658	0.491	11000
11500					0.427	0.431	0.431	0.431	0.570	0.607	0.61	0.61	0.61	0.437	0.437	0.772	0.839	0.865	0.450	0.602	0.602	0.602	0.602	0.429	11500
12000					0.517	0.517	0.517	0.517	0.469	0.502	0.516	0.516	0.516	0.469	0.469	0.699	0.761	0.794	0.450	0.553	0.553	0.553	0.553	0.450	12000
12500					0.428	0.458	0.477	0.477	0.469	0.502	0.516	0.516	0.516	0.469	0.469	0.635	0.692	0.730	0.450	0.509	0.509	0.509	0.509	0.450	12500
13000					0.428	0.458	0.477	0.477	0.469	0.502	0.516	0.516	0.516	0.469	0.469	0.578	0.631	0.667	0.450	0.509	0.509	0.509	0.509	0.450	13000
13500					0.428	0.458	0.477	0.477	0.469	0.502	0.516	0.516	0.516	0.469	0.469	0.528	0.577	0.612	0.450	0.509	0.509	0.509	0.509	0.450	13500
14000					0.428	0.458	0.477	0.477	0.469	0.502	0.516	0.516	0.516	0.469	0.469	0.483	0.529	0.562	0.450	0.509	0.509	0.509	0.509	0.450	14000
14500					0.428	0.458	0.477	0.477	0.469	0.502	0.516	0.516	0.516	0.469	0.469	0.443	0.486	0.518	0.450	0.509	0.509	0.509	0.509	0.450	14500
15000					0.428	0.458	0.477	0.477	0.469	0.502	0.516	0.516	0.516	0.469	0.469	0.407	0.447	0.478	0.450	0.509	0.509	0.509	0.509	0.450	15000

Span	C/Z 200 19				C/Z 200 24				C/Z 250 19				C/Z 250 24				C/Z 300 24				Span
	0	1	2	3/SB	0	1	2	3/SB	0	1	2	3/SB	0	1	2	3/SB	0	1	2	3/SB	
2000	21.153	21.153	21.153	21.155	10																

TABLE 5A: Z SECTION 2 SPAN LAPPED OUTWARD LOAD (kN/m)



Bolt capacity exceeded. M12 bolts for 100 - 250 series, M16 bolts for 300 series or greater.

BOLD Grade 8.8 bolts required.

3/SB For Safebride® system use data for 3 rows of bridging.

Span	Z 100 10				Z 100 12				Z 100 15				Z 100 19				Span
	0	1	2	3/SB	0	1	2	3/SB	0	1	2	3/SB	0	1	2	3/SB	
2000	7.439	7.439	7.437	7.434	9.472	9.472	9.471	9.471	12.129	12.128	12.129	12.128	16.850	16.850	16.851	16.850	2000
2500	4.711	4.711	4.710	4.710	6.058	6.058	6.058	6.058	7.624	7.757	7.757	7.757	10.370	10.777	10.777	10.777	2500
3000	3.056	3.056	3.056	3.056	3.692	3.770	3.770	3.770	4.567	4.828	4.828	4.828	6.170	6.708	6.708	6.707	3000
3500	2.000	2.089	2.089	2.089	2.381	2.578	2.578	2.578	2.985	3.301	3.300	3.300	4.007	4.585	4.585	4.585	3500
4000	1.339	1.520	1.520	1.520	1.616	1.875	1.875	1.875	2.063	2.393	2.401	2.401	2.755	3.275	3.336	3.336	4000
4500	0.919	1.156	1.156	1.156	1.132	1.426	1.426	1.426	1.480	1.772	1.826	1.826	1.972	2.415	2.537	2.538	4500
5000	0.638	0.909	0.909	0.909	0.809	1.087	1.122	1.122	1.090	1.353	1.436	1.436	1.454	1.836	1.996	1.996	5000
5500	0.455	0.703	0.734	0.734	0.589	0.840	0.905	0.905	0.807	1.057	1.155	1.159	1.097	1.429	1.583	1.611	5500
6000		0.546	0.605	0.605	0.440	0.659	0.746	0.746	0.599	0.840	0.933	0.956	0.833	1.132	1.274	1.328	6000
6500		0.454	0.560	0.560		0.559	0.669	0.692	0.475	0.730	0.833	0.886	0.659	0.979	1.132	1.215	6500
7000			0.457	0.473		0.441	0.546	0.583		0.588	0.685	0.736	0.514	0.789	0.928	1.006	7000
7500				0.404		0.450	0.499	0.422		0.479	0.570	0.618	0.410	0.529	0.646	0.774	7500
8000										0.479	0.525	0.566	0.436	0.546	0.646	0.774	8000
8500											0.405	0.449		0.464	0.566	0.674	8500
9000														0.464	0.525	0.606	9000
9500														0.455	0.525	0.606	9500

Span	Z 150 12				Z 150 15				Z 150 19				Z 150 24				Z 200 15				Span
	0	1	2	3/SB	0	1	2	3/SB	0	1	2	3/SB	0	1	2	3/SB	0	1	2	3/SB	
2000	12.178	12.179	12.175	12.173	19.429	19.428	19.428	19.428	29.026	29.027	29.027	29.027	40.922	40.922	40.922	40.922	17.693	17.692	17.687	17.681	2000
2500	8.255	8.254	8.255	8.255	13.430	13.430	13.431	13.430	18.928	18.927	18.928	18.928	26.684	26.684	26.684	26.684	12.273	12.271	12.273	12.272	2500
3000	5.942	5.942	5.942	5.942	9.492	9.491	9.491	9.491	13.377	13.377	13.377	13.376	18.617	18.860	18.859	18.859	9.067	9.066	9.067	9.067	3000
3500	4.448	4.449	4.448	4.448	6.950	6.951	6.950	6.951	9.595	9.977	9.977	9.977	13.108	14.066	14.067	14.066	6.957	6.957	6.955	6.958	3500
4000	3.433	3.433	3.433	3.433	4.923	5.114	5.114	5.114	6.641	7.208	7.207	7.208	9.030	10.161	10.161	10.161	5.486	5.486	5.486	5.486	4000
4500	2.716	2.716	2.716	2.716	3.467	3.778	3.778	3.778	4.707	5.325	5.325	5.325	6.381	7.507	7.507	7.507	4.419	4.419	4.419	4.419	4500
5000	1.999	2.195	2.195	2.194	2.525	2.908	2.908	2.908	3.457	4.099	4.099	4.099	4.680	5.684	5.779	5.779	3.623	3.623	3.623	3.623	5000
5500	1.466	1.760	1.759	1.759	1.880	2.310	2.310	2.310	2.604	3.202	3.255	3.255	3.527	4.405	4.589	4.589	3.016	3.016	3.016	3.016	5500
6000	1.086	1.432	1.432	1.432	1.425	1.879	1.879	1.879	1.972	2.542	2.648	2.648	2.674	3.491	3.734	3.734	2.413	2.527	2.527	2.527	6000
6500	0.814	1.188	1.188	1.188	1.095	1.518	1.559	1.559	1.506	2.054	2.198	2.198	2.053	2.815	3.098	3.098	1.913	2.097	2.097	2.097	6500
7000	0.623	0.975	1.002	1.002	0.852	1.237	1.315	1.315	1.163	1.683	1.853	1.853	1.590	2.303	2.572	2.613	1.503	1.768	1.768	1.768	7000
7500	0.487	0.807	0.856	0.856	0.675	1.018	1.124	1.124	0.917	1.394	1.565	1.584	1.246	1.906	2.158	2.233	1.186	1.511	1.511	1.511	7500
8000		0.663	0.741	0.741	0.534	0.844	0.972	0.972	0.727	1.164	1.329	1.370	0.995	1.593	1.829	1.931	0.941	1.307	1.307	1.307	8000
8500		0.547	0.647	0.647	0.431	0.704	0.841	0.849	0.584	0.980	1.138	1.196	0.807	1.342	1.564	1.680	0.758	1.141	1.141	1.141	8500
9000		0.451	0.567	0.570		0.590	0.723	0.748	0.477	0.829	0.981	1.054	0.664	1.138	1.347	1.458	0.618	0.984	1.006	1.006	9000
9500			0.519	0.541		0.516	0.658	0.710	0.403	0.720	0.898	0.980	0.566	0.996	1.231	1.351	0.530	0.898	0.955	0.955	9500
10000				0.449		0.434	0.568	0.632		0.603	0.780	0.859	0.476	0.838	1.069	1.183	0.444	0.770	0.850	0.850	10000
10500							0.493	0.560		0.506	0.680	0.757	0.405	0.707	0.933	1.041		0.657	0.862	0.762	10500
11000							0.429	0.494		0.429	0.596	0.671		0.598	0.818	0.921		0.560	0.686	0.686	11000
11500								0.438			0.524	0.596		0.509	0.720	0.819		0.478	0.617	0.622	11500
12000											0.460	0.532		0.436	0.634	0.730		0.409	0.551	0.566	12000
12500												0.421	0.516			0.584	0.707		0.534	0.574	12500
13000													0.460		0.510	0.631		0.510	0.622	0.622	13000
13500															0.446	0.566			0.508	0.686	13500
14000																0.508				0.617	14000
14500																0.457				0.574	14500
15000																0.409				0.480	15000

Span	Z 200 19				Z 200 24				Z 250 19				Z 250 24				Z 300 24				Span
	0	1	2	3/SB	0	1	2	3/SB	0	1	2	3/SB	0	1	2	3/SB	0	1	2	3/SB	
2000	35.183	35.182	35.181	35.183	56.602	56.603	56.601	56.604	28.637	28.636	28.630	28.637	57.133	57.129	57.120	57.131	48.810	48.812	48.793	48.780	2000
2500	23.837	23.834	23.838	23.839	39.209	39.208	39.208	39.208	20.138	20.136	20.139	20.137	39.065	39.058	39.065	39.063	34.624	34.617	34.627	34.626	2500
3000	16.996	16.994	16.995	16.995	28.394	28.396	28.395	28.395	15.130	15.128	15.129	15.130	28.390	28.390	28.391	28.391	26.298	26.296	26.297	26.297	3000
3500	12.618	12.619	12.617	12.618	20.242	20.243	20.238	20.242	11.811	11.810	11.807	11.811	21.444	21.444	21.438	21.444	20.778	20.779	20.771	20.778	3500
4000	9.671	9.671	9.672	9.671	14.949	14.949	14.948	14.949	9.465	9.465	9.464	9.464	16.673	16.673	16.673	16.673	16.851	16.850	16.850	16.851	4000
4500	7.610	7.610	7.609	7.610	10.870	11.303	11.303	11.303	7.736	7.736	7.736	7.736	13.272	13.272	13.271	13.271	13.929	13.930	13.929	13.928	4500
5000	5.855	5.972	5.972	5.972	8.091	8.701	8.701	8.701	6.423	6.424	6.423	6.424	10.775	10.775	10.775	10.774	11.686	11.687	11.686	11.687	5000
5500	4.448	4.743	4.742	4.742	6.189	6.909	6.909	6.909	5.406	5.406	5.406	5.405	8.252	8.788	8.789	8.788	9.926	9.925	9.926	9.926	5500
6000	3.443	3.859	3.859	3.859	4.833	5.622	5.622	5.622	4.603	4.603	4.602	4.603	6.407	7.151	7.151	7.151	8.521	8.521	8.520	8.521	6000
6500	2.701	3.202	3.202	3.202	3.812	4.665	4.665	4.665	3.589	3.959	3.959	3.959	5.005	5.934	5.934	5.933	7.382	7.382	7.382	7.382	6500
7000	2.143	2.700	2.700	2.700	3.019	3.879	3.934	3.934	2.830	3.405	3.405	3.405	3.929	5.003	5.004	5.004	6.448	6.448	6.448	6.448	7000
7500	1.716	2.308	2.308	2.308	2.410	3.246	3.363	3.363	2.243	2.910	2.910	2.910	3.104	4.277	4.277	4.277	5.480	5.674	5.674	5.674	7500
8000	1.381	1.979	1.996	1.996	1.938	2.744	2.908	2.908	1.794	2.517	2.517	2.517	2.472	3.675	3.699	3.699	4.627	5.026	5.026	5.026	8000
8500	1.126	1.678	1.743	1.743	1.572	2.338	2.540	2.540	1.455	2.198	2.198	2.198	1.988	3.123	3.230	3.230	3.768	4.446	4.446		

TABLE 5B: Z SECTION 2 SPAN LAPPED INWARD LOAD (kN/m)

Span	Z 100 10					Z 100 12					Z 100 15					Z 100 19					Span
	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	
2.439	7.439	7.436	7.434	12.638	9.035	9.471	9.471	9.471	15.357	10.944	12.129	12.128	12.128	19.445	14.208	16.850	16.850	16.851	24.915	2000	
4.711	4.711	4.710	4.709	6.302	5.565	6.057	6.058	6.058	7.658	6.749	7.757	7.757	9.697	6.630	10.777	10.777	10.777	12.424	2500		
3.031	3.056	3.056	3.056	3.569	3.477	3.770	3.770	3.770	4.337	4.216	4.828	4.828	5.492	5.397	6.708	6.708	6.707	7.036	3000		
2.064	2.089	2.089	2.089	2.208	2.370	2.578	2.578	2.578	2.683	2.877	3.301	3.301	3.301	3.397	3.686	4.585	4.585	4.585	4.353	3500	
1.489	1.520	1.520	1.520	1.458	1.712	1.875	1.875	1.875	1.772	2.083	2.401	2.401	2.401	2.243	2.670	3.336	3.336	3.336	2.874	4000	
1.188	1.156	1.156	1.156	1.012	1.289	1.426	1.426	1.426	1.229	1.573	1.826	1.826	1.826	1.557	2.070	2.520	2.520	2.527	1.994	4500	
0.866	0.909	0.909	0.909	0.730	1.000	1.122	1.122	1.122	0.887	1.226	1.436	1.436	1.436	1.123	1.572	1.963	1.966	1.966	1.439	5000	
0.685	0.734	0.734	0.734	0.544	0.795	0.905	0.905	0.905	0.661	0.978	1.158	1.159	1.159	0.837	1.255	1.568	1.611	1.611	1.072	5500	
0.553	0.605	0.605	0.605	0.416	0.643	0.746	0.746	0.746	0.505	0.796	0.946	0.956	0.956	0.640	1.022	1.279	1.328	1.328	0.820	6000	
0.475	0.560	0.560	0.560	0.357	0.692	0.692	0.692	0.692	0.409	0.700	0.853	0.886	0.886	0.518	0.892	1.147	1.230	1.230	0.664	6500	
	0.473	0.473	0.473	0.460	0.582	0.583	0.583	0.583		0.582	0.712	0.747	0.747	0.473	0.743	0.956	1.030	1.030	0.528	7000	
	0.404	0.404	0.404		0.49	0.499	0.499	0.499		0.490	0.602	0.637	0.638		0.627	0.808	0.870	0.877	0.426	7500	
					0.417	0.431	0.431	0.431		0.416	0.514	0.545	0.552		0.534	0.689	0.744	0.767		8000	
										0.443	0.471	0.482			0.459	0.593	0.641	0.670		8500	
											0.410	0.425			0.515	0.558	0.587			9000	
															0.450	0.488	0.515			9500	
															0.430	0.455	0.455				

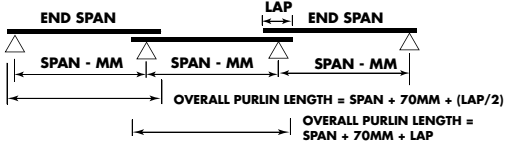
Bolt capacity exceeded. M12 bolts for 100 - 250 series, M16 bolts for 300 series or greater.

BOLD Grade 8.8 bolts required.

3/SB For Safebridge® system use data for 3 rows of bridging.

Span	Z 150 12					Z 150 15					Z 150 19					Z 150 24					Z 200 15					Span
	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	
2000	12.179	12.178	12.176	12.175	45.684	19.429	19.428	19.428	19.429	59.211	26.315	29.028	29.027	29.027	75.779	34.974	40.922	40.922	40.921	98.095	17.692	17.692	17.688	17.678	124.232	2000
2500	8.255	8.254	8.255	8.255	22.977	12.179	13.430	13.430	13.430	29.779	15.957	18.928	18.928	18.927	38.114	20.766	26.684	26.685	26.684	49.337	12.672	12.671	12.273	12.273	62.483	2500
3000	5.941	5.942	5.942	5.941	13.041	8.116	9.492	9.492	9.492	16.902	10.565	13.377	13.377	13.377	21.633	13.228	18.858	18.858	18.859	28.003	9.066	9.067	9.067	9.067	35.462	3000
3500	4.449	4.449	4.448	4.449	8.065	5.742	6.951	6.950	6.951	10.453	7.318	9.978	9.978	9.978	13.379	8.941	14.066	14.066	14.067	17.319	6.957	6.957	6.956	6.957	21.932	3500
4000	3.433	3.433	3.433	3.433	5.318	4.113	5.114	5.114	5.114	6.892	5.217	7.208	7.207	7.208	8.820	6.328	10.063	10.061	10.067	11.418	5.486	5.486	5.486	5.485	14.459	4000
4500	2.578	2.716	2.716	2.716	3.683	3.047	3.779	3.778	3.778	4.773	3.869	5.325	5.325	5.325	6.109	4.691	7.352	7.507	7.507	7.909	4.414	4.419	4.419	4.419	10.015	4500
5000	1.979	2.195	2.195	2.194	2.652	2.342	2.908	2.908	2.908	3.438	2.974	4.099	4.099	4.099	4.400	3.607	5.600	5.779	5.779	5.695	3.384	3.623	3.623	3.623	7.212	5000
5500	1.561	1.760	1.760	1.759	1.971	1.850	2.310	2.309	2.310	2.555	2.351	3.248	3.255	3.255	3.270	2.852	4.401	4.589	4.589	4.233	2.670	3.016	3.016	3.016	5.361	5500
6000	1.258	1.432	1.432	1.432	1.504	1.494	1.879	1.879	1.879	1.950	1.898	2.622	2.648	2.648	2.495	2.305	3.546	3.734	3.734	3.230	2.155	2.527	2.527	2.527	4.091	6000
6500	1.031	1.188	1.188	1.188	1.173	1.227	1.559	1.559	1.559	1.521	1.560	2.159	2.198	2.198	1.947	1.895	2.914	3.098	3.098	2.520	1.771	2.097	2.097	2.097	3.191	6500
7000	0.857	1.002	1.002	1.002	0.933	1.023	1.315	1.315	1.315	1.209	1.300	1.806	1.853	1.853	1.547	1.583	2.433	2.613	2.613	2.003	1.476	1.768	1.768	1.768	2.536	7000
7500	0.720	0.856	0.856	0.856	0.753	0.864	1.124	1.124	1.124	0.977	1.096	1.514	1.584	1.584	1.250	1.336	2.060	2.233	2.233	1.618	1.246	1.511	1.511	1.511	2.049	7500
8000	0.610	0.741	0.741	0.741	0.617	0.736	0.972	0.972	0.972	0.800	0.933	1.312	1.370	1.370	1.024	1.139	1.763	1.931	1.931	1.325	1.062	1.307	1.307	1.307	1.678	8000
8500	0.521	0.647	0.647	0.647	0.512	0.632	0.849	0.849	0.849	0.663	0.801	1.135	1.196	1.196	0.849	0.981	1.524	1.687	1.687	1.099	0.913	1.141	1.141	1.141	1.392	8500
9000	0.448	0.570	0.570	0.570	0.429	0.547	0.747	0.748	0.748	0.556	0.693	0.991	1.054	1.054	0.712	0.850	1.329	1.477	1.486	0.922	0.791	1.006	1.006	1.006	1.167	9000
9500		0.541	0.541	0.541		0.487	0.688	0.710	0.710	0.483	0.611	0.915	1.000	1.001	0.618	0.747	1.224	1.371	1.411	0.800	0.699	0.955	0.955	0.955	1.013	9500
10000		0.482	0.482	0.482		0.260	0.605	0.632	0.632	0.412	0.535	0.806	0.882	0.891	0.527	0.656	1.078	1.209	1.256	0.683	0.612	0.850	0.850	0.850	0.864	10000
10500		0.428	0.432	0.432			0.535	0.566	0.566		0.471	0.714	0.783	0.798	0.453	0.580	0.955	1.072	1.125	0.587	0.539	0.762	0.762	0.762	0.743	10500
11000							0.475	0.510	0.510		0.417	0.636	0.698	0.719		0.515	0.85	0.955	1.014	0.508	0.478	0.686	0.686	0.686	0.644	11000
11500							0.424	0.462	0.462			0.569	0.626	0.651		0.459	0.761	0.856	0.912	0.443	0.425	0.622	0.622	0.622	0.561	11500
12000							0.420	0.421	0.421			0.511	0.564	0.593		0.411	0.683	0.770	0.823		0.425	0.566	0.566	0.566	0.492	12000
12500								0.405	0.427			0.489	0.548	0.587			0.654	0.747	0.808			0.560	0.574	0.574	0.450	12500
13000												0.440	0.494	0.531			0.587	0.674	0.730			0.507	0.524	0.524	0.474	13000
13500													0.448	0.482			0.529	0.610	0.663			0.460	0.480	0.480	0.440	13500
14000													0.407	0.439			0.478	0.554	0.603			0.419	0.442	0.442	0.408	14000
14500														0.402			0.433	0.505	0.551			0.408	0.408	0.408	0.408	14500
15																										

TABLE 6A: Z SECTION 3 SPAN LAPPED OUTWARD LOAD (kN/m)



Span	Z 100 10				Z 100 12				Z 100 15				Z 100 19				
	0	1	2	3/SB	0	1	2	3/SB	0	1	2	3/SB	0	1	2	3/SB	
2000	7.513	7.517	7.51	7.513	9.270	9.276	9.266	9.270	11.871	11.878	11.866	11.871	16.492	16.503	16.486	16.492	2000
2500	4.760	4.764	4.760	4.762	5.825	5.878	5.874	5.875	7.193	7.527	7.522	7.524	9.744	10.458	10.45	10.453	2500
3000	3.056	3.283	3.281	3.282	3.656	4.051	4.048	4.049	4.608	5.188	5.184	5.185	6.165	7.207	7.203	7.204	3000
3500	1.929	2.398	2.397	2.397	2.364	2.958	2.957	2.957	3.075	3.715	3.787	3.787	4.070	5.067	5.261	5.262	3500
4000	1.214	1.827	1.826	1.826	1.546	2.180	2.253	2.254	2.084	2.711	2.886	2.886	2.763	3.671	4.009	4.009	4000
4500	0.798	1.340	1.438	1.438	1.038	1.606	1.774	1.774	1.381	2.029	2.252	2.271	1.860	2.726	3.079	3.156	4500
5000	0.555	0.980	1.149	1.149	0.719	1.192	1.416	1.418	0.952	1.534	1.750	1.816	1.276	2.049	2.381	2.523	5000
5500	0.401	0.715	0.927	0.927	0.509	0.887	1.101	1.144	0.679	1.168	1.371	1.462	0.914	1.554	1.857	2.001	5500
6000		0.524	0.727	0.764	0.667	0.869	0.943	0.947	0.497	0.901	1.094	1.180	0.678	1.197	1.475	1.610	6000
6500		0.404	0.602	0.690	0.524	0.730	0.830	0.830		0.707	0.936	1.031	0.529	0.959	1.253	1.398	6500
7000				0.577	0.407	0.588	0.687	0.687		0.539	0.767	0.860	0.413	0.732	1.023	1.163	7000
7500				0.474		0.473	0.569	0.569		0.421	0.629	0.721		0.569	0.836	0.968	7500
8000											0.517	0.604		0.687	0.809	0.880	8000
8500											0.420	0.510		0.568	0.682	0.750	8500
9000												0.434		0.450	0.578	0.636	9000
9500														0.493	0.578	0.650	9500
10000														0.422	0.510	0.580	10000
10500															0.578	0.650	10500
11000															0.682	0.760	11000
11500															0.809	0.880	11500
12000															0.968	1.050	12000
12500															1.163	1.250	12500
13000															1.398	1.480	13000
13500															1.636	1.720	13500
14000															1.970	2.060	14000
14500															2.301	2.390	14500
15000															2.636	2.720	15000

Bolt capacity exceeded. M12 bolts for 100 - 250 series, M16 bolts for 300 series or greater.

BOLD Grade 8.8 bolts required.

3/SB For Safebridge® system use data for 3 rows of bridging.

Span	Z 150 12				Z 150 15				Z 150 19				Z 150 24				Z 200 15				
	0	1	2	3/SB	0	1	2	3/SB	0	1	2	3/SB	0	1	2	3/SB	0	1	2	3/SB	
2000	13.760	13.760	13.755	13.759	21.445	21.255	21.227	21.229	30.221	29.955	29.915	29.918	42.606	42.232	42.175	42.177	19.748	19.748	19.742	19.747	2000
2500	9.679	9.677	9.680	9.600	13.512	13.492	13.476	13.483	19.043	19.014	18.993	19.001	26.848	26.806	26.777	26.788	14.005	14.003	14.006	14.006	2500
3000	7.078	7.082	7.075	7.077	4.631	5.163	5.159	5.161	12.913	13.100	13.087	13.093	17.727	18.469	18.452	18.458	10.597	10.597	10.597	10.596	3000
3500	5.163	5.167	5.163	5.165	6.587	6.783	6.777	6.779	8.890	9.559	9.551	9.554	12.126	13.478	13.465	13.470	8.313	8.314	8.311	8.313	3500
4000	3.686	3.934	3.931	3.932	4.631	5.163	5.159	5.161	6.315	7.276	7.271	7.273	8.568	10.256	10.251	10.253	6.679	6.679	6.679	6.679	4000
4500	2.572	3.093	3.091	3.091	3.301	4.060	4.057	4.058	4.571	5.668	5.718	5.719	6.188	7.803	8.061	8.062	5.433	5.458	5.455	5.456	4500
5000	1.785	2.495	2.494	2.494	2.376	3.271	3.273	3.274	3.260	4.411	4.613	4.613	4.410	6.050	6.503	6.504	4.148	4.403	4.401	4.401	5000
5500	1.267	2.022	2.054	2.054	1.725	2.570	2.695	2.696	2.328	3.486	3.799	3.799	3.136	4.767	5.330	5.356	3.110	3.626	3.624	3.625	5500
6000	0.927	1.618	1.720	1.721	1.268	2.039	2.258	2.258	1.696	2.788	3.158	3.183	2.272	3.803	4.350	4.487	2.301	3.037	3.036	3.036	6000
6500	0.706	1.273	1.462	1.462	0.950	1.627	1.919	1.919	1.256	2.247	2.614	2.705	1.696	3.064	3.592	3.814	1.724	2.581	2.580	2.581	6500
7000	0.547	0.999	1.258	1.258	0.723	1.301	1.615	1.651	0.954	1.817	2.185	2.327	1.298	2.476	2.995	3.237	1.322	2.184	2.220	2.220	7000
7500	0.425	0.780	1.058	1.083	0.557	1.043	1.344	1.421	0.740	1.445	1.827	1.983	1.016	1.977	2.499	2.731	1.037	1.815	1.911	1.911	7500
8000		0.616	0.888	0.936	0.438	0.837	1.122	1.229	0.586	1.149	1.532	1.683	0.811	1.580	2.094	2.314	0.828	1.504	1.652	1.652	8000
8500		0.493	0.742	0.817	0.678	0.942	1.067	1.067	0.471	0.923	1.295	1.440	0.657	1.265	1.769	1.977	0.670	1.233	1.442	1.442	8500
9000		0.400	0.619	0.719	0.553	0.795	0.917	0.917		0.751	1.101	1.242	0.541	1.020	1.504	1.702	0.546	1.011	1.270	1.270	9000
9500			0.531	0.657	0.462	0.696	0.832	0.832		0.619	0.973	1.133	0.458	0.846	1.330	1.550	0.455	0.850	1.178	1.205	9500
10000			0.441	0.570		0.590	0.720	0.720		0.510	0.819	0.985		0.699	1.124	1.346		0.704	1.025	1.075	10000
10500				0.491		0.500	0.624	0.624		0.424	0.691	0.859		0.584	0.951	1.173		0.589	0.894	0.963	10500
11000				0.423			0.543	0.543			0.584	0.752		0.493	0.805	1.027		0.498	0.772	0.867	11000
11500							0.473	0.473			0.497	0.660		0.419	0.682	0.907		0.425	0.666	0.783	11500
12000							0.413	0.413			0.426	0.578			0.581	0.790			0.574	0.699	12000
12500											0.519	0.624			0.506	0.712			0.507	0.659	12500
13000											0.452	0.557			0.437	0.542			0.507	0.592	13000
13500												0.452				0.542			0.525	0.616	13500
14000																0.473			0.466	0.557	14000
14500																0.413			0.413	0.504	14500
15000																0.414			0.414	0.504	15000

Span	Z 200 19				Z 200 24				Z 250 19				Z 250 24				Z 300 24				
	0	1	2	3/SB	0	1	2	3/SB	0	1	2	3/SB	0	1	2	3/SB	0	1	2	3/SB	
2000	40.296	40.296	40.284	40.297	64.153	63.589	63.503	63.510	31.749	31.750	31.738	31.748	64.244	64.248	64.230	64.244	53.894	53.896	53.880	53.892	2000
2500	27.747	27.703	27.673	27.684	40.424	40.362	40.316	40.332	22.618	22.613	22.618	22.614	45.336	45.328	45.339	45.342	38.497	38.492	38.500	38.497	2500
3000	19.076	19.088	19.068	19.076	27.792	27.809	27.782	27.791	17.279	17.278	17.279	17.277	33.954	33.953	33.955	33.953	29.587	29.586	29.588	29.584	3000
3500	13.915	13.928	13.917	13.921	20.272	20.292	20.274	20.280	13.728	13.727	13.722	13.728	25.786	25.810	25.788	25.796	23.696	23.696	23.688	23.696	3500
4000	10.596	10.602	10.594	10.597	14.779	15.446	15.434	15.438	11.185	11.183	11.183	11.184	19.636	19.647	19.633						

TABLE 6B: Z SECTION 3 SPAN LAPPED INWARD LOAD (kN/m)

Span	Z 100 10				Z 100 12				Z 100 15				Z 100 19				Span				
	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0		1	2	3/SB	L/150
2000	7.513	7.518	7.510	7.513	8.894	8.912	9.276	9.267	9.27	10.808	10.790	11.878	11.867	11.871	13.684	14.054	16.502	16.486	16.492	17.534	2000
2500	4.760	4.764	4.760	4.762	4.502	5.464	5.878	5.874	5.875	5.470	6.621	7.528	7.522	7.524	6.927	8.507	10.458	10.45	10.452	8.875	2500
3000	3.194	3.283	3.281	3.282	2.581	3.663	4.051	4.048	4.049	3.136	4.449	5.187	5.184	5.185	3.971	5.663	7.207	7.203	7.204	5.088	3000
3500	2.266	2.398	2.396	2.397	1.613	2.604	2.959	2.957	2.957	1.960	3.176	3.788	3.787	3.787	2.481	4.017	5.263	5.261	5.262	3.179	3500
4000	1.670	1.827	1.826	1.826	1.073	1.927	2.254	2.253	2.254	1.304	2.365	2.887	2.886	2.886	1.652	2.980	3.978	4.009	4.009	2.116	4000
4500	1.262	1.438	1.437	1.438	0.750	1.467	1.774	1.774	1.774	0.911	1.816	2.272	2.271	2.271	1.154	2.284	3.091	3.156	3.156	1.478	4500
5000	0.964	1.149	1.149	1.149	0.544	1.130	1.418	1.418	1.418	0.661	1.416	1.816	1.816	1.816	0.837	1.784	2.445	2.523	2.523	1.073	5000
5500	0.742	0.927	0.927	0.927	0.407	0.880	1.144	1.144	1.144	0.495	1.118	1.456	1.465	1.465	0.627	1.415	1.957	2.036	2.036	0.803	5500
6000	0.578	0.764	0.764	0.764	0.293	0.695	0.943	0.943	0.943	0.348	0.896	1.191	1.207	1.207	0.481	1.142	1.599	1.677	1.677	0.616	6000
6500	0.465	0.690	0.690	0.690	0.216	0.573	0.851	0.851	0.851	0.258	0.742	1.053	1.090	1.090	0.354	0.955	1.411	1.514	1.514	0.491	6500
7000		0.594	0.593	0.593		0.463	0.732	0.732	0.732		0.601	0.895	0.938	0.938		0.782	1.198	1.297	1.303		7000
7500		0.510	0.511	0.511			0.620	0.630	0.630		0.490	0.762	0.807	0.807		0.644	1.020	1.103	1.121		7500
8000		0.442	0.442	0.442			0.527	0.545	0.545		0.403	0.651	0.691	0.698		0.536	0.872	0.943	0.969		8000
8500							0.451	0.476	0.476			0.561	0.596	0.609		0.449	0.752	0.813	0.846		8500
9000								0.419	0.419			0.487	0.519	0.537			0.653	0.707	0.739		9000
9500												0.425	0.455	0.473			0.570	0.618	0.648		9500
10000																	0.501	0.544	0.572		10000
10500																	0.442	0.481	0.507		10500
11000																	0.427	0.452	0.452		11000
11500																		0.405	0.405		11500

Bolt capacity exceeded. M12 bolts for 100 - 250 series, M16 bolts for 300 series or greater.

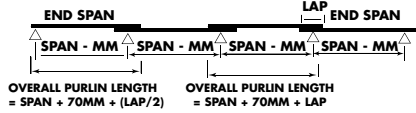
BOLD Grade 8.8 bolts required.

3/SB For Safebridge® system use data for 3 rows of bridging.

Span	Z 150 12				Z 150 15				Z 150 19				Z 150 24				Z 200 15				Span					
	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150						
2000	13.759	13.760	13.755	13.759	31.563	20.640	21.255	21.227	21.229	40.908	27.182	29.955	29.915	29.917	52.354	36.110	42.231	42.175	42.180	67.774	19.748	19.748	19.742	19.748	85.830	2000
2500	9.679	9.677	9.680	9.680	15.999	12.260	13.492	13.476	13.482	20.736	16.073	19.014	18.994	19.001	26.539	20.950	26.807	26.776	26.788	34.356	14.005	14.002	14.006	14.006	43.505	2500
3000	6.736	7.082	7.075	7.078	9.178	8.046	9.295	9.286	9.289	11.895	10.484	13.100	13.088	13.092	15.225	13.249	18.469	18.450	18.458	19.706	10.597	10.596	10.597	10.596	24.957	3000
3500	4.766	5.167	5.163	5.165	5.734	5.644	6.783	6.777	6.779	7.432	7.261	9.559	9.551	9.554	9.512	8.970	13.476	13.465	13.469	12.313	8.296	8.313	8.310	8.313	15.593	3500
4000	3.514	3.934	3.931	3.932	3.815	4.152	5.163	5.159	5.161	4.945	5.269	7.277	7.271	7.273	6.328	6.403	10.229	10.251	10.253	8.192	6.023	6.679	6.679	6.679	10.374	4000
4500	2.680	3.093	3.091	3.091	2.663	3.165	4.060	4.057	4.058	3.452	3.972	5.721	5.718	5.719	4.418	4.764	7.889	8.061	8.062	5.718	5.451	5.458	5.455	5.456	7.242	4500
5000	2.094	2.495	2.494	2.494	1.931	2.483	3.275	3.273	3.273	2.503	3.081	4.615	4.613	4.613	3.203	3.666	6.250	6.503	6.504	4.146	3.523	4.408	4.401	4.401	5.251	5000
5500	1.667	2.055	2.054	2.054	1.444	1.988	2.697	2.695	2.696	1.872	2.447	3.673	3.799	3.799	2.395	2.900	5.063	5.356	5.356	3.101	2.798	3.626	3.624	3.625	3.927	5500
6000	1.344	1.721	1.720	1.721	1.108	1.616	2.259	2.258	2.258	1.436	1.981	3.116	3.183	3.183	1.837	2.345	4.176	4.487	4.487	2.378	2.264	3.037	3.036	3.037	3.012	6000
6500	1.093	1.463	1.462	1.462	0.868	1.330	1.920	1.919	1.919	1.125	1.630	2.620	2.705	2.705	1.440	1.929	3.498	3.813	3.813	1.864	1.663	2.581	2.58	2.581	2.360	6500
7000	0.896	1.258	1.258	1.258	0.693	1.105	1.652	1.651	1.651	0.898	1.358	2.231	2.327	2.327	1.149	1.609	2.969	3.280	3.280	1.487	1.553	2.221	2.220	2.220	1.884	7000
7500	0.740	1.083	1.083	1.083	0.562	0.923	1.421	1.421	1.421	0.728	1.140	1.904	2.003	2.003	0.931	1.358	2.529	2.817	2.824	1.206	1.306	1.911	1.911	1.911	1.527	7500
8000	0.615	0.936	0.936	0.936	0.461	0.778	1.229	1.229	1.229	0.598	0.962	1.635	1.732	1.732	0.765	1.157	2.168	2.42	2.441	0.991	1.108	1.652	1.652	1.652	1.255	8000
8500	0.515	0.817	0.817	0.817	0.360	0.660	1.073	1.073	1.073	0.497	0.817	1.417	1.512	1.512	0.637	0.994	1.877	2.101	2.131	0.824	0.947	1.442	1.442	1.442	1.044	8500
9000	0.434	0.720	0.720	0.720	0.270	0.561	0.940	0.945	0.945	0.418	0.699	1.239	1.332	1.332	0.535	0.860	1.640	1.840	1.877	0.693	0.815	1.270	1.270	1.270	0.877	9000
9500		0.683	0.683	0.683		0.487	0.867	0.896	0.896		0.607	1.146	1.262	1.263	0.459	0.756	1.512	1.716	1.780	0.595	0.718	1.205	1.205	1.205	0.753	9500
10000		0.609	0.609	0.609		0.418	0.765	0.799	0.799		0.524	1.014	1.117	1.127		0.661	1.338	1.521	1.583	0.509	0.626	1.075	1.075	1.075	0.644	10000
10500		0.541	0.546	0.545			0.677	0.716	0.716		0.455	0.900	0.992	1.009		0.587	1.188	1.352	1.412	0.439	0.528	0.963	0.963	0.963	0.555	10500
11000		0.481	0.491	0.491			0.602	0.645	0.645		0.403	0.803	0.885	0.909		0.513	1.061	1.208	1.267		0.467	0.867	0.867	0.867		11000
11500		0.430	0.445	0.445			0.537	0.584	0.584		0.352	0.72	0.794	0.823		0.455	0.953	1.084	1.143		0.418	0.785	0.785	0.785		11500
12000							0.481	0.531	0.531		0.307	0.647	0.714	0.749		0.404	0.858	0.976	1.034		0.372	0.715	0.715	0.715		12000
12500							0.447	0.501	0.520		0.267	0.607	0.677	0.717		0.357	0.808	0.924	0.987		0.326	0.688	0.699	0.699		12500
13000							0.403	0.455	0.480		0.221	0.551	0.616	0.655		0.311	0.735	0.841	0.901		0.287	0.628	0.645	0.645		13000
13500								0.414	0.444		0.201	0.501	0.563	0.600		0.287	0.668	0.768	0.824		0.258	0.575	0.598	0.597		13500
14000									0.408		0.181	0.455	0.514	0.550		0.267	0.607	0.702	0.755		0.239	0.528	0.555	0.555		14000
14500											0.161	0.412	0.471	0.505		0.247	0.553	0.643	0.693		0.221	0.485	0.516	0.516		14500
15000											0.140	0.430	0.463	0.463		0.230	0.503	0.587	0.635		0.203	0.444	0.478	0.478		15000

Span	Z 200 19				Z 200 24				Z 250 19				Z 250 24				Z 300 24				Span
	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	
2000	40.297	40.295	40.284	40.295	115.374	59.210	63.589	63.504	63.508	14											

TABLE 7A: Z SECTION 4 SPAN LAPPED OUTWARD LOAD (kN/m)



Span	Z 100 10				Z 100 12				Z 100 15				Z 100 19				
	0	1	2	3/SB	0	1	2	3/SB	0	1	2	3/SB	0	1	2	3/SB	
2000	7.985	7.997	7.989	7.984	9.852	9.868	9.858	9.852	12.617	12.636	12.624	12.616	17.528	17.555	17.538	17.527	2000
2500	5.045	5.050	5.044	5.039	6.204	6.231	6.224	6.218	7.652	7.980	7.970	7.963	10.368	11.087	11.072	11.063	2500
3000	3.262	3.472	3.466	3.463	3.895	4.284	4.276	4.273	4.900	5.486	5.476	5.472	6.558	7.621	7.608	7.602	3000
3500	2.030	2.429	2.429	2.430	2.471	2.998	2.998	2.998	3.187	3.795	3.839	3.839	4.227	5.183	5.333	5.333	3500
4000	1.285	1.770	1.770	1.770	1.609	2.162	2.184	2.184	2.143	2.676	2.797	2.797	2.831	3.635	3.886	3.886	4000
4500	0.839	1.317	1.348	1.348	1.078	1.568	1.663	1.663	1.460	1.962	2.130	2.130	1.964	2.651	2.937	2.937	4500
5000	0.575	0.969	1.061	1.061	0.752	1.166	1.309	1.309	1.004	1.480	1.648	1.676	1.366	1.989	2.250	2.328	5000
5500	0.414	0.723	0.856	0.856	0.539	0.882	1.048	1.057	0.719	1.139	1.297	1.353	0.977	1.524	1.764	1.880	5500
6000		0.542	0.701	0.706		0.674	0.833	0.871	0.532	0.890	1.040	1.110	0.724	1.187	1.409	1.520	6000
6500		0.423	0.599	0.653		0.544	0.721	0.805	0.411	0.740	0.914	0.995	0.567	0.992	1.229	1.354	6500
7000			0.477	0.551		0.419	0.580	0.660		0.569	0.745	0.821	0.443	0.776	0.998	1.114	7000
7500				0.459			0.470	0.547		0.442	0.613	0.686		0.606	0.819	0.927	7500
8000								0.458			0.508	0.578		0.491	0.678	0.779	8000
8500											0.424	0.491			0.565	0.660	8500
9000												0.420			0.563	0.660	9000
9500															0.483	0.580	9500
10000															0.416	0.510	10000
10500																0.416	10500
11000																	11000
11500																	11500

Bolt capacity exceeded. M12 bolts for 100 - 250 series, M16 bolts for 300 series or greater.

BOLD Grade 8.8 bolts required.

3/SB For Safebridge® system use data for 3 rows of bridging.

Span	Z 150 12				Z 150 15				Z 150 19				Z 150 24				Z 200 15				
	0	1	2	3/SB	0	1	2	3/SB	0	1	2	3/SB	0	1	2	3/SB	0	1	2	3/SB	
2000	13.224	13.225	13.220	13.222	21.737	21.737	21.737	21.737	32.208	32.071	32.050	32.049	45.407	45.216	45.184	45.183	19.025	19.026	19.019	19.025	2000
2500	9.176	9.174	9.177	9.174	14.387	14.396	14.384	14.379	20.276	20.290	20.272	20.266	28.585	28.604	28.578	28.570	13.392	13.389	13.389	13.388	2500
3000	6.745	6.745	6.745	6.745	9.873	9.889	9.878	9.873	13.769	13.936	13.922	13.914	18.905	19.647	19.627	19.615	10.050	10.051	10.050	10.050	3000
3500	5.133	5.134	5.120	5.134	7.027	7.198	7.189	7.183	9.475	10.144	10.132	10.124	12.923	14.301	14.284	14.273	7.824	7.825	7.801	7.823	3500
4000	3.936	4.007	4.006	4.010	4.943	5.469	5.461	5.455	6.731	7.707	7.697	7.688	9.130	10.865	10.851	10.839	6.246	6.241	6.240	6.246	4000
4500	2.760	3.199	3.199	3.199	3.530	4.293	4.286	4.282	4.876	6.010	6.040	6.034	6.600	8.277	8.515	8.507	5.081	5.081	5.081	5.081	4500
5000	1.914	2.575	2.575	2.575	2.523	3.380	3.380	3.380	3.472	4.588	4.764	4.764	4.691	6.298	6.716	6.716	4.198	4.199	4.199	4.199	5000
5500	1.349	2.048	2.048	2.048	1.821	2.613	2.688	2.688	2.478	3.536	3.788	3.788	3.356	4.842	5.340	5.340	3.248	3.516	3.517	3.517	5500
6000	0.982	1.613	1.668	1.668	1.348	2.044	2.189	2.189	1.813	2.781	3.085	3.085	2.435	3.801	4.276	4.350	2.420	2.943	2.943	2.943	6000
6500	0.734	1.282	1.385	1.385	1.006	1.621	1.818	1.818	1.349	2.222	2.522	2.562	1.816	3.033	3.473	3.611	1.814	2.444	2.444	2.444	6500
7000	0.568	1.015	1.168	1.168	0.768	1.299	1.534	1.534	1.024	1.796	2.082	2.161	1.389	2.451	2.862	3.047	1.385	2.062	2.062	2.062	7000
7500	0.449	0.806	0.999	0.999	0.599	1.048	1.285	1.311	0.794	1.465	1.739	1.848	1.086	2.002	2.386	2.575	1.078	1.743	1.763	1.763	7500
8000		0.641	0.848	0.864	0.470	0.852	1.079	1.134	0.627	1.186	1.466	1.587	0.866	1.626	2.008	2.188	0.858	1.463	1.525	1.525	8000
8500		0.513	0.721	0.755		0.695	0.912	0.991	0.504	0.962	1.246	1.363	0.702	1.326	1.704	1.876	0.694	1.237	1.332	1.332	8500
9000		0.416	0.612	0.665		0.571	0.776	0.873	0.411	0.784	1.065	1.179	0.577	1.083	1.457	1.620	0.569	1.031	1.174	1.174	9000
9500			0.536	0.627		0.486	0.690	0.799		0.662	0.958	1.084	0.490	0.903	1.310	1.486	0.485	0.886	1.114	1.114	9500
10000			0.451	0.547		0.401	0.587	0.694		0.544	0.823	0.944	0.412	0.746	1.127	1.293	0.400	0.734	0.98	0.992	10000
10500				0.479		0.503	0.605	0.605		0.452	0.702	0.827		0.623	0.964	1.131		0.613	0.859	0.889	10500
11000				0.418		0.431	0.530	0.530		0.599	0.727			0.525	0.826	0.995		0.517	0.756	0.801	11000
11500						0.465	0.565	0.565		0.512	0.642			0.446	0.709	0.878		0.439	0.665	0.726	11500
12000						0.409	0.498	0.498		0.439	0.568				0.609	0.777			0.579	0.660	12000
12500							0.532				0.532				0.533	0.729			0.526	0.650	12500
13000							0.466				0.466				0.460	0.640			0.582	0.582	13000
13500								0.408			0.408					0.562			0.523	0.523	13500
14000																0.495			0.468	0.468	14000
14500																0.435			0.417	0.417	14500
15000																0.435			0.417	0.417	15000

Span	Z 200 19				Z 200 24				Z 250 19				Z 250 24				Z 300 24				
	0	1	2	3/SB	0	1	2	3/SB	0	1	2	3/SB	0	1	2	3/SB	0	1	2	3/SB	
2000	38.526	38.525	38.525	38.525	63.545	63.547	63.544	63.544	30.628	30.626	30.620	30.629	61.800	61.802	61.789	61.790	52.034	52.035	52.022	52.031	2000
2500	26.689	26.686	26.692	26.691	43.039	43.069	43.031	43.017	21.734	21.730	21.735	21.733	43.121	43.113	43.128	43.125	37.106	37.099	37.109	37.110	2500
3000	19.460	19.460	19.460	19.459	29.536	29.583	29.533	29.535	16.515	16.516	16.516	16.514	31.947	31.946	31.947	31.947	28.420	28.419	28.421	28.419	3000
3500	14.687	14.690	14.652	14.690	21.506	21.533	21.508	21.490	13.045	13.048	13.005	13.045	24.516	24.520	24.448	24.521	22.664	22.670	22.651	22.669	3500
4000	11.222	11.229	11.214	11.203	15.706	16.359	16.338	16.320	10.573	10.563	10.560	10.573	19.301	19.286	19.285	19.301	18.562	18.561	18.539	18.561	4000
4500	8.411	8.815	8.800	8.792	11.689	12.843	12.821	12.810	8.727	8.727	8.727	8.727	15.504	15.504	15.503	15.503	15.483	15.483	15.483	15.482	4500
5000	6.200	6.940	6.941	6.940	8.713	10.112	10.112	10.112	7.305	7.309	7.308	7.307	11.582	12.670	12.662	12.658	13.093	13.099	13.099	13.097	5000
5500	4.602	5.519	5.519	5.519	6.503	8.041	8.041	8.041	6.128	6.191	6.194	6.194	8.563	10.227	10.227	10.227	11.209	11.202	11.209	11.207	5500
6000	3.477	4.495	4.495	4.495	4.891	6.449	6.449	6.449	4.593	5.305	5.301	5.305	6.378	8.330	8.330						

TABLE 7B: Z SECTION 4 SPAN LAPPED INWARD LOAD (kN/m)

Span	Z 100 10					Z 100 12					Z 100 15					Z 100 19					Span
	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	
2000	7.985	7.997	7.989	7.984	9.951	9.341	9.868	9.858	9.851	12.092	11.326	12.637	12.624	12.616	15.311	14.707	17.555	17.537	17.527	19.617	2000
2500	4.972	5.05	5.044	5.039	4.999	5.701	6.232	6.224	6.218	6.075	6.919	7.980	7.970	7.963	7.692	8.857	11.087	11.073	11.062	9.855	2500
3000	3.324	3.472	3.466	3.463	2.849	3.810	4.284	4.276	4.273	3.462	4.634	5.485	5.476	5.472	4.383	5.873	7.621	7.608	7.602	5.616	3000
3500	2.297	2.429	2.429	2.430	1.772	2.636	2.998	2.998	2.998	2.153	3.212	3.839	3.839	3.839	2.726	4.064	5.333	5.333	5.333	3.493	3500
4000	1.655	1.770	1.770	1.770	1.175	1.904	2.188	2.184	2.184	1.248	2.327	2.797	2.797	2.797	1.808	2.966	3.881	3.886	3.886	2.317	4000
4500	1.240	1.348	1.348	1.348	0.819	1.431	1.663	1.663	1.663	0.995	1.756	2.130	2.130	2.130	1.259	2.225	2.930	2.959	2.959	1.614	4500
5000	0.955	1.061	1.061	1.061	0.593	1.107	1.309	1.309	1.309	0.720	1.366	1.676	1.676	1.676	0.912	1.733	2.286	2.328	2.328	1.168	5000
5500	0.751	0.856	0.856	0.856	0.443	0.875	1.057	1.057	1.057	0.538	1.088	1.353	1.353	1.353	0.681	1.382	1.831	1.880	1.880	0.873	5500
6000	0.600	0.706	0.706	0.706		0.703	0.871	0.871	0.871	0.412	0.882	1.110	1.116	1.116	0.522	1.123	1.496	1.550	1.550	0.669	6000
6500	0.506	0.653	0.653	0.653		0.601	0.806	0.806	0.806		0.768	1.003	1.032	1.032	0.419	0.973	1.346	1.434	1.434	0.537	6500
7000	0.410	0.551	0.551	0.551		0.492	0.680	0.680	0.680		0.633	0.839	0.871	0.871		0.809	1.125	1.208	1.210	0.428	7000
7500		0.471	0.471	0.471		0.407	0.581	0.582	0.582		0.526	0.711	0.745	0.745		0.678	0.953	1.022	1.035		7500
8000		0.408	0.408	0.408			0.496	0.503	0.503		0.441	0.609	0.640	0.644		0.572	0.815	0.874	0.895		8000
8500							0.426	0.439	0.439			0.526	0.554	0.563		0.486	0.704	0.755	0.782		8500
9000												0.457	0.482	0.496		0.416	0.613	0.657	0.685		9000
9500																	0.536	0.575	0.601		9500
10000																	0.472	0.507	0.531		10000
10500																	0.418	0.449	0.471		10500
11000																			0.421		11000

Bolt capacity exceeded. M12 bolts for 100 - 250 series, M16 bolts for 300 series or greater.

BOLD Grade 8.8 bolts required.

3/SB For Safebridge® system use data for 3 rows of bridging.

Span	Z 150 12					Z 150 15					Z 150 19					Z 150 24					Z 200 15					Span
	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	
2000	13.224	13.224	13.220	13.223	35.672	21.653	21.737	21.737	21.737	46.232	28.592	32.072	32.051	32.050	59.169	37.939	45.216	45.186	45.183	76.592	19.025	19.025	19.020	19.026	97.001	2000
2500	6.744	6.744	6.745	6.745	18.000	12.806	14.397	14.384	14.380	23.328	16.801	20.290	20.272	20.265	29.857	21.831	28.605	28.579	28.570	38.650	10.050	10.050	10.051	10.049	48.947	2500
3000	4.929	5.134	5.120	5.133	6.382	8.834	7.198	7.189	7.183	8.272	7.453	10.144	10.132	10.124	10.587	9.163	14.301	14.284	14.273	13.705	7.824	7.825	7.820	7.825	17.355	3000
3500	3.623	4.007	4.006	4.010	4.227	4.276	5.468	5.461	5.455	4.579	5.383	7.077	7.069	7.062	7.012	6.503	10.811	10.851	10.839	9.077	6.712	6.240	6.240	6.246	11.495	3500
4000	2.756	3.199	3.199	3.199	2.940	3.258	4.293	4.286	4.282	3.810	4.042	6.050	6.040	6.034	4.876	4.823	8.318	8.515	8.507	6.312	4.630	5.081	5.081	5.081	7.994	4000
4500	2.134	2.575	2.575	2.575	2.125	2.528	3.380	3.380	3.380	2.754	3.121	4.674	4.764	4.764	3.524	3.709	6.454	6.716	6.716	4.562	3.657	4.199	4.199	4.199	5.778	4500
5000	1.683	2.048	2.048	2.048	1.585	1.998	2.688	2.688	2.688	2.054	2.467	3.765	3.788	3.788	2.628	2.934	5.078	5.340	5.340	3.403	2.812	3.516	3.517	3.517	4.309	5000
5500	1.353	1.668	1.668	1.668	1.213	1.613	2.189	2.189	2.189	1.572	1.991	3.044	3.085	3.085	2.011	2.372	4.095	4.349	4.349	2.604	2.266	2.943	2.943	2.943	3.298	5500
6000	1.105	1.385	1.385	1.385	0.948	1.324	1.818	1.818	1.818	1.229	1.635	2.510	2.562	2.562	1.573	1.952	3.369	3.612	3.612	2.036	1.859	2.444	2.444	2.444	2.579	6000
6500	0.914	1.168	1.168	1.168	0.756	1.101	1.534	1.534	1.534	0.979	1.361	2.103	2.161	2.161	1.253	1.630	2.817	3.047	3.047	1.622	1.548	2.062	2.062	2.062	2.055	6500
7000	0.763	0.999	0.999	0.999	0.612	0.926	1.311	1.311	1.311	0.793	1.147	1.786	1.848	1.848	1.014	1.377	2.388	2.606	2.606	1.313	1.304	1.763	1.763	1.763	1.663	7000
7500	0.642	0.864	0.864	0.864	0.502	0.786	1.134	1.134	1.134	0.650	0.975	1.533	1.599	1.599	0.832	1.176	2.047	2.254	2.254	1.078	1.110	1.525	1.525	1.525	1.365	7500
8000	0.544	0.755	0.755	0.755	0.417	0.672	0.991	0.991	0.991	0.540	0.837	1.330	1.397	1.397	0.682	1.013	1.773	1.969	1.969	0.895	0.952	1.332	1.332	1.332	1.134	8000
8500	0.464	0.665	0.665	0.665		0.579	0.873	0.873	0.873	0.454	0.723	1.162	1.231	1.231	0.591	0.879	1.549	1.723	1.735	0.752	0.824	1.174	1.174	1.174	0.934	8500
9000	0.406	0.631	0.631	0.631		0.514	0.814	0.829	0.829		0.636	1.077	1.168	1.168	0.501	0.775	1.430	1.605	1.646	0.648	0.728	1.114	1.114	1.114	0.821	9000
9500		0.562	0.562	0.562		0.448	0.718	0.738	0.738		0.555	0.951	1.036	1.040	0.428	0.681	1.262	1.417	1.466	0.554	0.638	0.992	0.992	0.992	0.702	9500
10000		0.504	0.504	0.504			0.636	0.661	0.661		0.486	0.845	0.920	0.932		0.602	1.121	1.259	1.313	0.477	0.561	0.889	0.889	0.889	0.604	10000
10500		0.453	0.454	0.454			0.567	0.596	0.596		0.428	0.754	0.822	0.840		0.534	1.001	1.124	1.184	0.414	0.496	0.801	0.801	0.801	0.524	10500
11000		0.406	0.411	0.411			0.507	0.540	0.540			0.676	0.737	0.761		0.476	0.898	1.008	1.064		0.440	0.726	0.726	0.726	0.457	11000
12000							0.455	0.491	0.491			0.609	0.664	0.692			0.778	0.882	0.942			0.662	0.669	0.669		12000
12500							0.434	0.479	0.498			0.586	0.647	0.685			0.778	0.882	0.942			0.601	0.611	0.611		12500
13000									0.454			0.529	0.584	0.619			0.703	0.796	0.851			0.547	0.560	0.560		13000
13500									0.417			0.479	0.529	0.562			0.638	0.722	0.772			0.499	0.516	0.516		13500
14000									0.432			0.435	0.481	0.512			0.579	0.656	0.703			0.457	0.476	0.476		14000
14500												0.401	0.429				0.526	0.598	0.642			0.419	0.441	0.441		14500
15000																	0.480	0.547	0.588							15000

Span	Z 200 19					Z 200 24					Z 250 19					Z 250 24					Z 300 24					Span
	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	
2000	38.525	38.525	38.527	38.527	130.394	62.413	63.545	63.545	63.545	168.189	30.628	30.627	30.620	30.621	216.202	61.803	61.801	61.789	61.800	284.886	52.032	52.037	52.020	52.031	488.302	2000
2500	26.096	26.686	26.691	26.691	65.800	35.673	43.071	43.032	43.019	84.873	21.734	21.730	21.735	21.736	109.095	43.121	43.114	43.125	43.121	143.756	37.106	37.099	37.109	37.109	246.400	2500
3000	16.407	19.461	19.460	19.460	37.537	21.834	29.583	29.552	29.535	48.415	16.516	16.516	16.516	16.516	62.235	27.712										

C & Z SECTION CANTILEVER 1000 INWARDS LOADING

Data is available for spans 2,000 to 20,000, please contact your local Metroll branch.

Bolt capacity exceeded. M12 bolts for 100 - 250 series, M16 bolts for 300 series or greater.

BOLD Grade 8.8 bolts required.

3/SB For Safebridge® system use data for 3 rows of bridging.

**TABLE 8B:
C SECTION
INWARDS**

C 100 10					C 100 12					C 100 15					C 100 19					Span
0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	
2.554	2.529	2.529	2.529	0.889	3.099	3.069	3.068	3.069	1.074	3.806	3.996	3.995	3.996	1.368	4.999	5.556	5.565	5.567	1.762	3000
0.985	0.985	0.983	0.983	0.889	1.196	1.196	1.193	1.192	0.184	1.458	1.557	1.553	1.553	0.234	1.900	2.169	2.163	2.163	0.302	4500
0.529	0.529	0.529	0.528	0.056	0.642	0.642	0.642	0.641	0.068	0.776	0.836	0.835	0.835	0.087	1.006	1.155	1.164	1.163	0.112	6000

C 150 12					C 150 15					C 150 19					C 150 24					C 200 15					Span	
0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150		
3000	5.261	5.209	5.208	5.209	3.087	6.938	6.869	6.868	6.870	4.011	9.069	9.721	9.719	9.721	5.135	11.944	13.790	13.788	13.790	6.650	8.453	8.453	8.453	8.454	8.439	3000
4500	2.029	2.030	2.024	2.024	0.528	2.611	2.677	2.669	2.669	0.686	3.370	3.788	3.777	3.777	0.879	4.330	5.373	5.358	5.358	1.138	3.739	3.739	3.729	3.729	1.444	4500
6000	1.089	1.090	1.089	1.089	0.196	1.373	1.437	1.436	1.436	0.255	1.761	2.034	2.032	2.031	0.422	2.226	2.805	2.883	2.882	0.422	1.989	2.008	2.006	2.005	0.536	6000
																					1.068	1.101	1.100	1.101	0.212	8000

C 200 19					C 200 24					C 250 19					C 250 24					C 300 24					Span	
0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150		
3000	14.493	14.593	14.591	14.594	11.324	19.323	20.866	20.863	20.867	14.549	13.944	13.944	13.944	13.943	18.789	25.664	26.536	26.531	26.536	24.643	24.065	24.066	24.063	24.064	42.435	3000
4500	5.212	5.686	5.671	5.670	1.938	6.859	8.130	8.108	8.108	2.490	6.906	7.171	7.151	7.151	3.215	8.956	10.339	10.311	10.311	4.217	13.303	14.449	14.410	14.409	7.261	4500
6000	2.657	3.054	3.051	3.050	0.719	3.412	4.366	4.363	4.360	0.924	3.488	3.851	3.847	3.846	1.193	4.370	5.553	5.548	5.545	1.565	6.333	7.760	7.753	7.749	2.694	6000
8000	1.388	1.674	1.673	1.674	0.285	1.735	2.314	2.393	2.394	0.366	1.810	2.111	2.110	2.111	0.473	2.187	3.044	3.043	3.044	0.620	3.085	4.254	4.252	4.254	1.068	8000
10000																					1.792	2.691	2.690	2.691	0.532	10000
12000																					1.159	1.785	1.857	1.857	0.304	12000
15000																					0.688	1.076	1.182	1.183	0.154	15000

C 300 30					C 350 24					C 350 30					C 400 24					C 400 30					Span	
0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150		
2000	45.090	45.092	45.089	45.091	54.837	21.000	21.000	21.001	20.996	68.916	40.310	40.310	40.310	40.309	88.594	18.448	18.449	18.447	18.448	83.012	35.648	35.649	35.648	35.644	106.374	2000
4500	17.982	20.619	20.564	20.563	9.384	15.006	15.006	15.006	15.006	11.793	24.537	25.033	24.965	24.963	15.160	13.121	13.121	13.121	13.121	14.205	25.210	25.528	25.528	25.528	18.203	4500
6000	8.258	11.074	11.064	11.059	3.482	8.840	9.824	9.815	9.810	4.376	11.419	13.444	13.431	13.426	5.625	9.054	10.080	10.079	10.079	5.270	11.163	14.694	14.681	14.674	6.754	6000
8000	3.676	5.989	6.068	6.071	1.380	4.313	5.386	5.383	5.385	1.734	5.113	7.371	7.366	7.370	2.229	4.454	5.885	5.882	5.885	2.088	4.878	8.056	8.051	8.055	2.676	8000
10000	2.036	3.592	3.839	3.841	0.688	2.371	3.407	3.405	3.407	0.864	2.820	4.663	4.661	4.662	1.111	2.486	3.648	3.721	3.723	1.041	2.687	5.096	5.094	5.096	1.334	10000
12000	1.287	2.365	2.637	2.650	0.392	1.487	2.281	2.350	2.351	0.493	1.743	3.092	3.217	3.218	0.634	1.577	2.428	2.568	2.569	0.594	1.692	3.328	3.516	3.517	0.761	12000
15000	0.751	1.399	1.598	1.688	0.199	0.860	1.385	1.497	1.497	0.250	0.995	1.797	2.048	2.049	0.321	0.923	1.478	1.621	1.636	0.301	0.984	1.933	2.239	2.239	0.385	15000

**TABLE 9B:
Z SECTION
INWARDS**

Z 100 10					Z 100 12					Z 100 15					Z 100 19					Span
0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	
2.554	2.529	2.529	2.529	0.889	3.151	3.120	3.120	3.121	1.080	3.806	3.996	3.995	3.996	1.368	4.972	5.552	5.551	5.552	1.753	3000
0.985	0.985	0.983	0.983	0.889	1.216	1.216	1.213	1.213	0.185	1.458	1.557	1.553	1.553	0.234	1.891	2.163	2.157	2.157	0.300	4500
0.529	0.529	0.529	0.528	0.056	0.649	0.653	0.652	0.652	0.069	0.776	0.836	0.835	0.835	0.087	1.002	1.149	1.161	1.160	0.111	6000

Z 150 12					Z 150 15					Z 150 19					Z 150 24					Z 200 15					Span	
0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150		
3000	5.413	5.360	5.360	5.361	3.097	7.036	7.036	7.035	7.036	4.013	9.195	9.916	9.914	9.916	5.136	12.079	13.979	13.978	13.980	6.649	8.438	8.438	8.438	8.439	8.420	3000
4500	2.088	2.089	2.083	2.083	0.530	2.642	2.742	2.734	2.734	0.687	3.420	3.864	3.853	3.853	0.879	4.396	5.441	5.432	5.432	1.138	3.685	3.686	3.676	3.676	1.441	4500
6000	1.121	1.122	1.121	1.120	0.197	1.390	1.472	1.471	1.470	0.255	1.789	2.075	2.073	2.072	0.326	2.267	2.817	2.923	2.921	0.422	1.967	1.980	1.978	1.977	0.535	6000
																					1.056	1.085	1.085	1.085	0.212	8000

Z 200 19					Z 200 24					Z 250 19					Z 250 24					Z 300 24					Span	
0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150		
3000	14.426	14.447	14.446	14.448	11.319	19.479	21.049	21.046	21.049	14.600	13.934	13.934	13.932	13.935	18.767	25.864	26.694	26.693	26.692	24.732	24.051	24.050	24.049	24.050	42.388	3000
4500	17.903	20.527	20.471	20.470	9.377	15.000	15.000	15.006	15.006	11.793	24.537	25.033	24.965	24.963	15.160	13.121	13.121	13.121	13.121	14.205	25.210	25.528	25.528	25.528	18.203	4500
6000	2.644	3.023	3.021	3.019	0.719	3.434	4.405	4.401	4.399	0.927	3.473	3.812	3.809	3.807	1.192	4.399	5.603	5.597	5.595	1.570	6.305	7.710	7.703	7.700	2.691	6000
8000	1.381	1.658	1.657	1.657	0.285	1.747	2.329	2.413	2.415	0.367	1.800	2.090	2.089	2.090	0.472	2.203	3.071	3.070	3.071	0.622	3.063	4.227	4.225	4.227	1.066	8000
10000																					1.783	2.674	2.673	2.674	0.532	10000
12000																					1.151	1.777	1.845	1.845	0.303	12000
15000																					0.687	1.072	1.175	1.175	0.154	15000

Z 300 30					Z 350 24					Z 350 30					Z 400 24					Z 400 30					Span
0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	
3000	45.054	45.056	45.054	45.055	54.801	21.000	21.000	21.001	20.996	68.916	4														

C & Z SECTION CANTILEVER 2000 OUTWARDS LOADING

Data is available for spans 2,000 to 20,000, please contact your local Metroll branch.

Bolt capacity exceeded. M12 bolts for 100 - 250 series, M16 bolts for 300 series or greater.

BOLD Grade 8.8 bolts required.

3/SB For Safebridge® system use data for 3 rows of bridging.

TABLE 10A: C SECTION OUTWARDS

	C 100 10				C 100 12				C 100 15				C 100 19				Span
	0	1	2	3/SB	0	1	2	3/SB	0	1	2	3/SB	0	1	2	3/SB	
	1.124	1.124	1.124	1.124	1.364	3.364	1.364	1.364	1.776	1.776	1.776	1.776	2.474	2.473	2.473	2.473	3000
	0.711	1.092	1.124	1.124	0.894	1.285	1.364	1.364	1.243	1.632	1.776	1.776	1.690	2.473	2.474	2.473	4500
	0.206	0.371	0.575	0.632	0.255	0.469	0.682	0.767	0.347	0.648	0.879	0.964	0.489	0.896	1.192	1.323	6000

	C 150 12				C 150 15				C 150 19				C 150 24				C 200 15				Span
	0	1	2	3/SB	0	1	2	3/SB	0	1	2	3/SB	0	1	2	3/SB	0	1	2	3/SB	
3000	2.315	2.315	2.315	2.315	3.053	3.053	3.053	3.053	4.320	4.320	4.320	4.320	6.128	6.128	6.128	6.128	4.173	4.173	4.173	4.173	3000
4500	2.112	2.288	2.288	2.289	2.686	3.053	3.052	3.053	3.672	4.320	4.320	4.320	4.997	6.103	6.128	6.128	3.830	3.830	3.830	3.830	4500
6000	0.636	1.154	1.302	1.302	0.619	1.481	1.717	1.717	1.167	2.036	2.406	2.430	2.311	2.782	3.335	3.448	1.608	2.399	2.399	2.399	6000
																	0.513	0.968	1.213	1.213	8000

	C 200 19				C 200 24				C 250 19				C 250 24				C 300 24				Span
	0	1	2	3/SB	0	1	2	3/SB	0	1	2	3/SB	0	1	2	3/SB	0	1	2	3/SB	
3000	6.485	6.484	6.485	6.485	9.272	9.272	9.272	9.273	7.480	7.480	7.480	7.480	11.791	11.791	11.791	11.791	13.775	13.775	13.773	13.778	3000
4500	6.367	6.485	6.485	6.485	8.703	9.272	9.272	9.272	6.738	6.738	6.738	6.737	11.330	11.331	11.331	11.330	12.205	12.206	12.204	12.206	4500
6000	2.391	3.568	3.648	3.648	3.270	4.893	5.216	5.217	3.115	4.601	4.600	4.601	4.209	6.561	6.633	6.634	8.270	9.270	9.269	9.271	6000
8000	0.731	1.409	1.840	1.845	0.979	1.969	2.517	2.639	0.933	1.858	2.326	2.327	1.235	2.565	3.354	3.355	2.864	4.585	4.687	4.689	8000
10000																	1.148	2.293	2.862	2.861	10000
12000																	0.557	1.208	1.801	1.937	12000
15000																	0.236	0.499	0.895	1.131	15000

	C 300 30				C 350 24				C 350 30				C 400 24				C 400 30				Span
	0	1	2	3/SB	0	1	2	3/SB	0	1	2	3/SB	0	1	2	3/SB	0	1	2	3/SB	
2000	22.045	22.044	22.044	22.043	13.614	13.615	13.612	13.616	23.516	23.515	23.515	23.521	12.673	12.673	12.670	12.676	22.561	22.560	22.558	22.563	2000
4500	20.275	20.275	20.274	20.274	11.634	11.634	11.633	11.636	20.731	20.731	20.730	20.728	10.625	10.625	10.625	10.624	19.424	19.425	19.423	19.425	4500
6000	11.617	13.230	13.228	13.231	9.815	9.815	9.816	9.814	16.220	16.061	16.059	16.062	8.835	8.835	8.835	8.836	16.485	16.485	16.484	16.486	6000
8000	3.795	6.325	6.689	6.692	5.188	5.943	5.934	5.936	6.812	8.134	8.120	8.124	4.223	6.314	6.484	6.487	5.203	8.890	8.876	8.880	8000
10000	1.533	3.269	4.042	4.083	2.358	3.513	3.623	3.622	3.068	4.890	4.959	4.956	1.673	3.371	3.959	3.957	2.077	4.563	5.419	5.417	10000
12000	0.753	1.623	2.517	2.765	1.211	2.165	2.454	2.452	1.553	2.868	3.358	3.356	0.803	1.793	2.518	2.680	1.006	2.216	2.606	3.669	12000
15000	0.326	0.672	1.255	1.580	0.514	1.031	1.445	1.538	0.648	1.369	1.980	2.105	0.335	0.730	1.367	1.581	0.426	0.909	1.729	2.264	15000

TABLE 11A: Z SECTION OUTWARDS

	Z 100 10				Z 100 12				Z 100 15				Z 100 19				Span
	0	1	2	3/SB	0	1	2	3/SB	0	1	2	3/SB	0	1	2	3/SB	
	1.124	1.124	1.124	1.124	1.387	1.387	1.387	1.387	1.776	1.776	1.776	1.776	2.467	2.467	2.467	2.467	3000
	0.711	1.092	1.124	1.124	0.914	1.302	1.387	1.387	1.243	1.632	1.776	1.776	1.673	2.206	2.467	2.467	4500
	0.206	0.371	0.575	0.632	0.260	0.480	0.692	0.780	0.347	0.648	0.879	0.964	0.480	0.879	1.180	1.311	6000

	Z 150 12				Z 150 15				Z 150 19				Z 150 24				Z 200 15				Span
	0	1	2	3/SB	0	1	2	3/SB	0	1	2	3/SB	0	1	2	3/SB	0	1	2	3/SB	
3000	2.382	2.382	2.382	2.382	3.126	3.126	3.126	3.127	4.406	4.406	4.406	4.406	6.212	6.212	6.212	6.212	4.144	4.144	4.144	4.144	3000
4500	2.140	2.319	2.319	2.319	2.711	3.126	3.126	3.127	3.721	4.407	4.406	4.406	5.053	6.119	6.212	6.212	3.808	3.808	3.808	3.808	4500
6000	0.648	1.170	1.340	1.340	0.874	1.495	1.759	1.759	1.159	2.065	2.432	2.479	1.571	2.816	3.347	3.495	1.598	2.365	2.365	2.365	6000
																	0.512	0.962	1.196	1.196	8000

	Z 200 19				Z 200 24				Z 250 19				Z 250 24				Z 300 24				Span
	0	1	2	3/SB	0	1	2	3/SB	0	1	2	3/SB	0	1	2	3/SB	0	1	2	3/SB	
3000	6.420	6.420	6.420	6.420	9.353	9.354	9.353	9.354	7.455	7.455	7.454	7.455	11.897	11.897	11.897	11.897	13.733	13.733	13.731	13.731	3000
4500	6.343	6.420	6.420	6.420	8.775	9.353	9.353	9.353	6.719	6.719	6.718	6.719	11.365	11.366	11.365	11.366	12.176	12.176	12.176	12.175	4500
6000	2.376	3.554	3.612	3.612	3.322	4.934	5.261	5.262	3.100	4.554	4.554	4.555	4.269	6.615	6.692	6.694	8.245	9.212	9.211	9.212	6000
8000	0.733	1.402	1.826	1.827	0.989	1.993	2.537	2.662	0.937	1.851	2.303	2.304	1.248	2.597	3.384	3.386	2.852	4.569	4.657	4.659	8000
10000																	1.152	2.285	2.844	2.843	10000
12000																	0.559	1.204	1.795	1.925	12000
15000																	0.237	0.501	0.890	1.127	15000

	Z 300 30				Z 350 24				Z 350 30				Z 400 24				Z 400 30				Span
	0	1	2	3/SB	0	1	2	3/SB	0	1	2	3/SB	0	1	2	3/SB	0	1	2	3/SB	
3000	21.977	21.979	21.980	21.977	13.614	13.615	13.612	13.616	23.516	23.515	23.515	23.521	12.673	12.673	12.670	12.676	22.561	22.560	22.558	22.563	3000
4500	20.222	20.223	20.221	20.222	11.634	11.634	11.633	11.636	20.731	20.731	20.730	20.728	10.625	10.625	10.625	10.624	19.424	19.425	19.423	19.425	4500
6000	11.579	13.169	13.168	13.171	9.815	9.815	9.816	9.814	16.220	16.061	16.059	16.062	8.835	8.835	8.835	8.836	16.485	16.485	16.484	16.486	6000
8000	3.810	6.289	6.659	6.661	5.188	5.943	5.934	5.936	6.812	8.134	8.120	8.124	4.223	6.314	6.484	6.487	5.203	8.890	8.876	8.880	8000
10000	1.539	3.254	4.020	4.064	2.358	3.513	3.623	3.622	3.068	4.890	4.959	4.956	1.673	3.371	3.959	3.957	2.077	4.563	5.419	5.417	10000
12000	0.755	1.628	2.501	2.752	1.211	2.165	2.454	2.452	1.553	2.868	3.358	3.356	0.803	1.793	2.518	2.680	1.006	2.216	2.606	3.669	12000
15000	0.327	0.674	1.259	1.570	0.514	1.031	1.445	1.538	0.572	1.196	1.804	1.967	0.335	0.730	1.367	1.581	0.426	0.909	1.729	2.264	15000

C & Z SECTION CANTILEVER 2000 INWARDS LOADING

Data is available for spans 2,000 to 20,000, please contact your local Metroll branch.

Bolt capacity exceeded. M12 bolts for 100 - 250 series, M16 bolts for 300 series or greater.

BOLD Grade 8.8 bolts required.

3/SB For Safebridge® system use data for 3 rows of bridging.

**TABLE 10B:
C SECTION
INWARDS**

C 100 10					C 100 12					C 100 15					C 100 19					Span
0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	
1.124	1.124	1.124	1.124	0.237	1.364	1.364	1.364	1.364	0.287	1.776	1.776	1.776	1.776	0.365	2.456	2.473	2.473	2.474	0.470	3000
1.124	1.124	1.124	1.124	0.701	1.316	1.364	1.364	1.364	0.848	1.605	1.776	1.776	1.776	1.079	2.085	2.474	2.473	2.474	1.390	4500
0.639	0.632	0.632	0.632	0.111	0.740	0.767	0.767	0.767	0.134	0.897	0.999	0.999	0.999	0.171	1.146	1.374	1.391	1.392	0.220	6000

C 150 12					C 150 15					C 150 19					C 150 24					C 200 15					Span
0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	
3000	2.315	2.315	2.315	0.823	3.053	3.053	3.053	3.053	1.070	4.320	4.320	4.320	4.320	1.369	6.128	6.128	6.128	6.128	1.773	4.173	4.173	4.173	4.173	2.250	3000
4500	2.288	2.289	2.288	2.435	2.878	3.053	3.053	3.053	3.164	3.722	4.320	4.320	4.320	4.051	4.768	6.218	6.128	6.128	5.247	3.830	3.830	3.830	3.830	6.658	4500
6000	1.297	1.302	1.302	0.386	1.564	1.717	1.717	1.717	0.501	1.997	2.430	2.430	2.430	0.642	2.481	3.333	3.447	3.448	0.831	2.297	2.399	2.399	2.399	1.055	6000
																				1.151	1.215	1.213	1.213	0.281	8000

C 200 19					C 200 24					C 250 19					C 250 24					C 300 24					Span
0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	
3000	6.485	6.485	6.485	3.020	9.272	9.272	9.272	9.273	3.880	7.481	7.480	7.480	7.481	5.010	11.791	11.791	11.791	11.791	6.572	13.775	13.774	13.775	13.775	11.316	3000
4500	5.739	6.485	6.485	8.934	7.537	9.273	9.272	9.272	11.479	6.738	6.738	6.738	6.737	14.824	9.722	11.331	11.329	11.331	19.443	12.205	12.205	12.205	12.205	33.481	4500
6000	2.959	3.648	3.648	1.416	3.696	5.217	5.216	5.217	1.818	3.843	4.601	4.600	4.601	2.349	4.646	6.634	6.633	6.634	3.080	6.905	9.270	9.269	9.271	5.304	6000
8000	1.465	1.847	1.845	0.377	1.794	2.543	2.637	2.639	0.485	1.893	2.330	2.326	2.327	0.626	2.241	3.359	3.354	3.355	0.821	1.808	2.867	2.862	2.861	1.415	8000
10000																				1.163	1.854	1.938	1.937	0.337	10000
12000																				0.684	1.101	1.215	1.215	0.164	12000
15000																									15000

C 300 30					C 350 24					C 350 30					C 400 24					C 400 30					Span	
0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150		
2000	22.045	22.044	22.043	22.044	14.623	13.615	13.613	13.614	16.618	18.378	23.517	23.515	23.513	23.525	23.625	12.672	12.672	1.671	12.674	22.136	22.561	22.561	22.558	22.563	28.368	2000
4500	19.744	20.275	20.274	20.274	43.263	11.634	11.635	11.634	11.634	54.374	20.730	20.731	20.730	20.728	69.889	10.625	10.625	10.624	10.624	65.493	19.424	19.425	19.424	19.424	83.929	4500
6000	8.532	13.230	13.228	12.230	6.855	9.815	9.815	9.815	9.815	8.614	12.366	16.061	16.060	216.062	11.075	8.835	8.835	8.835	8.835	10.377	11.371	16.485	16.486	16.483	13.298	6000
8000	3.697	6.573	6.689	6.692	1.828	4.398	5.943	5.943	5.936	2.297	5.249	8.133	8.120	8.124	2.953	4.742	6.494	6.484	6.487	2.767	4.895	8.889	8.875	8.879	3.564	8000
10000	2.034	3.807	4.084	4.082	0.806	2.385	3.631	3.623	3.622	1.013	2.832	4.970	4.959	4.956	1.303	2.479	3.870	3.959	3.958	1.221	2.680	5.432	5.420	5.417	1.564	10000
12000	1.282	2.456	2.751	2.765	0.435	1.487	2.374	2.454	2.453	0.547	1.739	3.207	3.358	3.357	0.703	1.568	2.525	2.681	2.680	0.659	1.683	3.448	3.670	3.668	0.844	12000
15000	0.747	1.430	1.640	1.734	0.212	0.858	1.419	1.538	1.538	0.266	0.991	1.834	2.105	2.105	0.342	0.916	1.514	1.664	1.681	0.320	0.977	1.972	2.300	2.301	0.410	15000

**TABLE 11B:
Z SECTION
INWARDS**

Z 100 10					Z 100 12					Z 100 15					Z 100 19					Span
0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	
1.124	1.124	1.124	1.124	0.237	1.387	1.387	1.387	1.387	0.288	1.776	1.776	1.776	1.776	0.365	2.441	2.467	2.467	2.467	0.467	3000
1.124	1.124	1.124	1.124	0.701	1.328	1.387	1.387	1.387	0.852	1.605	1.776	1.776	1.776	1.079	2.075	2.467	2.467	2.467	1.383	4500
0.639	0.632	0.632	0.632	0.111	0.746	0.780	0.780	0.780	0.135	0.897	0.999	0.999	0.999	0.171	1.142	1.366	1.388	1.388	0.219	6000

Z 150 12					Z 150 15					Z 150 19					Z 150 24					Z 200 15					Span
0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	
3000	2.382	2.382	2.382	0.826	3.127	3.127	3.126	3.126	1.070	4.406	4.406	4.406	4.406	1.370	6.212	6.212	6.212	6.212	1.733	4.144	4.144	4.144	4.145	2.245	3000
4500	2.319	2.319	2.318	2.443	2.913	3.126	3.127	3.126	3.166	3.781	4.406	4.406	4.406	4.053	4.855	6.212	6.212	6.212	5.246	3.808	3.808	3.808	3.808	6.643	4500
6000	1.324	1.340	1.340	0.387	1.583	1.759	1.759	1.759	0.502	2.032	2.479	2.479	2.479	0.642	2.493	3.348	3.495	3.495	0.831	2.272	2.365	2.365	2.365	1.053	6000
																				1.139	1.198	1.196	1.196	0.281	8000

Z 200 19					Z 200 24					Z 250 19					Z 250 24					Z 300 24					Span
0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	
3000	6.420	6.420	6.420	3.018	9.353	9.353	9.354	9.353	3.893	7.455	7.455	7.454	7.455	5.005	11.897	11.897	11.898	11.897	6.595	13.733	13.732	13.732	13.734	11.304	3000
4500	5.711	6.420	6.420	8.931	7.589	9.353	9.354	9.353	11.519	6.719	6.719	6.719	6.718	14.808	9.790	11.366	11.365	11.367	19.513	12.176	12.177	12.176	12.176	33.444	4500
6000	2.940	3.612	3.611	1.415	3.727	5.262	5.262	5.262	1.825	3.821	4.554	4.554	4.554	2.346	4.688	6.693	6.692	6.694	3.091	6.858	9.211	9.211	9.212	5.299	6000
8000	1.455	1.829	1.826	0.377	1.808	2.560	2.661	2.662	0.487	1.882	2.306	2.303	2.304	0.626	2.261	3.389	3.384	3.386	0.824	3.171	4.665	4.657	4.659	1.413	8000
10000																				1.797	2.850	2.844	2.843	0.623	10000
12000																				1.155	1.846	1.926	1.925	0.336	12000
15000																				0.684	1.096	1.207	1.207	0.164	15000

Z 300 30					Z 350 24					Z 350 30					Z 400 24					Z 400 30					Span
0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	
3000	21.978	21.978	21.977	21.978	14.613	13.615	13.613	13.614	13.618	18.378	23.517	23.515	23.513	23.525	23.625	12.672	12.672	12.671	12.674	22.136	<				

C & Z SECTION CANTILEVER 3000 INWARDS LOADING

Data is available for spans 2,000 to 20,000, please contact your local Metroll branch.

Bolt capacity exceeded. M12 bolts for 100 - 250 series, M16 bolts for 300 series or greater.

BOLD Grade 8.8 bolts required.

3/SB For Safebridge® system use data for 3 rows of bridging.

**TABLE 12B:
C SECTION
INWARDS**

C 100 10					C 100 12					C 100 15					C 100 19					Span
0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	
0.499	0.499	0.499	0.499	0.499	0.606	0.606	0.606	0.606	0.089	0.762	0.775	0.777	0.778	0.101	1.048	1.069	1.072	1.075	0.131	3000
0.499	0.499	0.499	0.499	0.700	0.586	0.606	0.606	0.606	0.085	0.736	0.773	0.775	0.777	0.108	1.002	1.065	1.069	1.072	0.139	4500
0.491	0.499	0.499	0.499	0.132	0.566	0.606	0.606	0.606	0.159	0.704	0.773	0.774	0.775	0.203	0.928	1.062	1.067	1.070	0.261	6000

C 150 12					C 150 15					C 150 19					C 150 24					C 200 15					Span
0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	
3000	1.029	1.029	1.029	0.229	1.357	1.357	1.357	1.357	0.297	1.920	1.920	1.920	1.920	0.380	2.724	2.723	2.723	2.723	0.493	1.895	1.895	1.895	1.895	0.625	3000
4500	1.029	1.029	1.029	0.244	1.357	1.357	1.357	1.357	0.317	1.877	1.920	1.920	1.920	0.406	2.564	2.723	2.723	2.723	0.525	1.895	1.895	1.895	1.895	0.667	4500
6000	1.029	1.029	1.029	0.457	1.284	1.357	1.357	1.357	0.594	1.675	1.920	1.920	1.920	0.761	2.175	2.723	2.723	2.723	0.985	1.892	1.895	1.895	1.895	1.250	6000
																				1.261	1.447	1.445	1.444	0.708	8000

C 200 19					C 200 24					C 250 19					C 250 24					C 300 24					Span
0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	
3000	2.882	2.882	2.882	0.839	4.121	4.121	4.121	4.121	1.078	3.635	3.635	3.635	3.635	1.392	5.240	5.240	5.240	5.241	1.825	7.324	7.324	7.324	7.324	3.143	3000
4500	2.882	2.882	2.882	0.895	4.072	4.121	4.121	4.121	1.150	3.635	3.635	3.635	3.635	1.485	5.241	5.241	5.241	5.240	1.947	7.207	7.207	7.207	7.208	3.356	4500
6000	2.882	2.882	2.882	1.678	3.407	4.121	4.121	4.121	2.155	3.404	3.635	3.635	3.635	2.783	4.385	5.241	5.241	5.241	3.651	6.361	6.865	6.865	6.864	6.287	6000
8000	1.574	2.200	2.197	0.950	1.883	3.007	3.141	3.140	1.221	2.001	2.774	2.771	2.769	1.577	2.325	4.000	3.995	3.993	2.068	3.357	5.591	5.582	5.580	3.561	8000
10000																				1.858	3.167	3.186	3.184	0.911	10000
12000																				1.175	1.985	2.083	2.084	0.419	12000
15000																				0.636	1.150	1.272	1.271	0.185	15000

C 300 30					C 350 24					C 350 30					C 400 24					C 400 30					Span	
0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150		
2000	10.451	10.451	10.451	4.062	7.946	7.946	7.945	7.945	5.105	12.689	12.688	12.688	12.689	6.562	7.816	7.815	7.816	7.815	6.149	12.911	12.911	12.909	12.912	7.880	2000	
4500	10.451	10.451	10.452	4.333	7.659	7.658	7.658	7.657	5.445	12.420	12.419	12.419	12.419	7.000	7.460	7.460	7.459	7.458	6.559	12.484	12.484	12.483	12.483	8.405	4500	
6000	8.481	10.452	10.452	8.124	7.112	7.112	7.111	7.111	10.210	11.391	11.792	11.792	11.792	13.125	6.810	6.810	6.810	6.809	12.298	11.610	11.662	11.662	11.661	15.759	6000	
8000	3.820	7.774	7.967	7.963	4.641	6.322	6.322	6.322	5.783	5.589	9.686	9.672	9.668	7.435	4.592	5.924	5.924	5.924	6.966	5.040	10.450	10.450	10.450	8.927	8000	
10000	2.076	4.207	4.547	4.544	1.177	2.465	4.023	4.034	4.031	1.479	2.909	5.517	5.520	5.517	1.902	2.519	4.280	4.408	4.405	1.782	2.729	6.002	6.034	6.030	2.284	10000
12000	1.298	2.627	2.958	2.974	0.542	1.517	2.544	2.637	2.638	0.681	1.771	3.428	3.609	3.611	0.875	1.583	2.705	2.882	2.883	0.820	1.701	3.682	3.945	3.947	1.051	12000
15000	0.751	1.491	1.718	1.814	0.239	0.866	1.483	1.610	1.610	0.300	0.996	1.910	2.204	2.203	0.386	0.920	1.582	1.743	1.759	0.362	0.981	2.053	2.409	2.408	0.464	15000

**TABLE 13B:
Z SECTION
INWARDS**

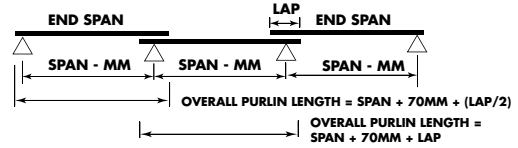
Z 100 10					Z 100 12					Z 100 15					Z 100 19					Span
0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	
0.499	0.499	0.499	0.499	0.066	0.616	0.616	0.616	0.616	0.080	0.762	0.775	0.777	0.778	0.101	1.039	1.060	1.063	1.066	0.130	3000
0.499	0.499	0.499	0.499	0.070	0.593	0.616	0.616	0.616	0.085	0.736	0.773	0.775	0.777	0.108	0.994	1.057	1.060	1.063	0.138	4500
0.491	0.499	0.499	0.499	0.132	0.572	0.616	0.616	0.616	0.160	0.704	0.773	0.774	0.775	0.203	0.922	1.053	1.058	1.061	0.260	6000

Z 150 12					Z 150 15					Z 150 19					Z 150 24					Z 200 15					Span
0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	
3000	1.059	1.059	1.059	0.229	1.390	1.390	1.390	1.390	0.297	1.958	1.958	1.958	1.958	0.380	2.761	2.761	2.761	2.761	0.493	1.868	1.868	1.868	1.868	0.624	3000
4500	1.059	1.059	1.059	0.245	1.390	1.390	1.390	1.390	0.317	1.899	1.958	1.958	1.958	0.406	2.579	2.761	2.761	2.761	0.525	1.868	1.868	1.868	1.868	0.665	4500
6000	1.058	1.059	1.059	0.459	1.299	1.390	1.390	1.390	0.595	1.701	1.958	1.958	1.958	0.761	2.209	2.761	2.761	2.761	0.985	1.868	1.868	1.868	1.868	1.247	6000
																				1.250	1.426	1.424	1.424	0.707	8000

Z 200 19					Z 200 24					Z 250 19					Z 250 24					Z 300 24					Span
0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	
3000	2.853	2.853	2.853	0.838	4.157	4.157	4.157	4.157	1.082	3.598	3.598	3.598	3.598	1.390	5.288	5.287	5.288	5.288	1.832	7.277	7.277	7.277	7.277	3.140	3000
4500	2.853	2.853	2.853	0.894	4.100	4.157	4.157	4.157	1.154	3.598	3.598	3.598	3.598	1.483	5.288	5.288	5.288	5.288	1.954	7.177	7.177	7.176	7.177	3.349	4500
6000	2.572	2.853	2.853	1.677	3.428	4.157	4.157	4.157	2.163	3.390	3.598	3.598	3.598	2.781	4.412	5.288	5.287	5.288	3.664	6.333	6.838	6.838	6.839	6.280	6000
8000	1.562	2.178	2.175	0.950	1.890	3.027	3.169	3.167	1.225	1.987	2.746	2.743	2.741	1.575	2.333	4.036	4.031	4.029	2.075	3.336	5.555	5.547	5.545	3.557	8000
10000																				1.858	3.153	3.166	3.164	0.910	10000
12000																				1.175	1.977	2.070	2.071	0.419	12000
15000																				0.687	1.145	1.264	1.263	0.185	15000

Z 300 30					Z 350 24					Z 350 30					Z 400 24					Z 400 30					Span
0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	0	1	2	3/SB	L/150	
2000	10.404	10.404	10.404	4.059	7.946	7.946	7.945	7.945	5.105	12.689	12.688	12.688	12.689	6.562	7.816	7.815	7.816	7.815	6.149	12.911	12.911	12.909	12.912	7.880	2000
4500	10.404	10.404	10.404	4.330	7.659	7.658	7.658	7.657	5.445	12.420	12.419	12.419	12.419	7.000	7.460	7.460	7.459	7.458	6.559	12.484	12.484	12.483	12.483	8.405	4500

TABLE 14A: Z SECTION MIXED 3 SPANS LAPPED OUTWARDS LOADING



Z 100 10 / Z 100 15				Z 100 12 / Z 100 19				Z 150 12 / Z 150 19				Z 150 15 / Z 150 24				Span
0	1	2	3/SB	0	1	2	3/SB	0	1	2	3/SB	0	1	2	3/SB	
10.284	10.282	10.282	10.28	14.327	14.326	14.327	14.326	18.540	18.539	18.539	18.539	30.876	30.876	30.877	30.877	2000
6.394	6.393	6.394	6.394	8.195	8.194	8.194	8.194	11.854	11.853	11.850	11.848	20.479	20.477	20.476	20.466	2500
4.025	4.104	4.104	4.104	4.860	5.093	5.093	5.093	8.290	8.288	8.290	8.290	13.518	13.516	13.519	13.518	3000
2.537	2.799	2.799	2.799	3.119	3.473	3.472	3.473	6.111	6.111	6.111	6.110	9.511	9.512	9.512	9.511	3500
1.676	2.031	2.031	2.031	2.113	2.520	2.520	2.520	4.673	4.673	4.673	4.673	6.577	6.944	6.944	6.944	4000
1.136	1.542	1.542	1.542	1.485	1.908	1.912	1.912	3.617	3.676	3.676	3.676	4.623	5.123	5.123	5.123	4500
0.791	1.190	1.210	1.210	1.073	1.443	1.500	1.500	2.586	2.958	2.958	2.958	3.365	3.936	3.936	3.936	5000
0.572	0.909	0.975	0.975	0.795	1.116	1.209	1.209	1.885	2.374	2.374	2.374	2.510	3.120	3.119	3.119	5500
0.428	0.703	0.802	0.802	0.605	0.878	0.995	0.995	1.392	1.928	1.928	1.928	1.914	2.534	2.533	2.533	6000
	0.578	0.743	0.748	0.493	0.747	0.899	0.928	1.052	1.588	1.597	1.597	1.483	2.048	2.099	2.099	6500
	0.447	0.602	0.630		0.594	0.735	0.781	0.814	1.300	1.345	1.345	1.167	1.671	1.767	1.767	7000
		0.492	0.538		0.478	0.608	0.667	0.642	1.073	1.148	1.148	0.936	1.379	1.508	1.508	7500
			0.406			0.507	0.566	0.517	0.882	0.991	0.991	0.757	1.149	1.302	1.302	8000
						0.427	0.482	0.425	0.729	0.865	0.865	0.619	0.964	1.136	1.136	8500
							0.414		0.604	0.761	0.761	0.513	0.813	0.985	1.000	9000
									0.513	0.701	0.726	0.441	0.717	0.903	0.954	9500
									0.609	0.646	0.646		0.609	0.783	0.848	10000
									0.527	0.578			0.520	0.683	0.759	10500
									0.456	0.520			0.598	0.673	11000	
										0.464			0.525	0.598	11500	
													0.463	0.534	12000	
													0.433	0.517	12500	
														0.461	13000	
														0.412	13500	

Bolt capacity exceeded. M12 bolts for 100 - 250 series, M16 bolts for 300 series or greater.

BOLD Grade 8.8 bolts required.

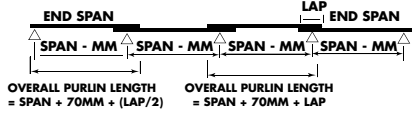
3/SB For Safebridge® system use data for 3 rows of bridging.

	Z 200 15 / Z 200 24				Z 250 19 / Z 250 24				Z 300 24 / Z 300 30				Z 350 24 / Z 350 30				Z 400 24 / Z 400 30				Span
	0	1	2	3/SB	0	1	2	3/SB	0	1	2	3/SB	0	1	2	3/SB	0	1	2	3/SB	
2000	27.123	27.123	27.124	27.122	41.486	41.485	41.488	41.486	71.727	71.726	71.726	71.727	63.326	63.327	63.326	63.326	55.901	55.899	55.901	55.900	2000
2500	17.750	17.749	17.746	17.737	29.043	29.040	29.030	29.022	50.117	50.110	50.097	50.097	43.747	43.743	43.723	43.700	38.433	38.431	38.416	38.401	2500
3000	12.723	12.720	12.723	12.723	21.094	21.091	21.094	21.093	36.796	36.790	36.796	36.798	32.706	32.700	32.706	32.706	28.935	28.930	28.936	28.936	3000
3500	9.597	9.596	9.597	9.596	16.128	16.128	16.126	16.126	28.460	28.461	28.458	28.458	25.814	25.812	25.814	25.808	23.031	23.031	23.028	23.026	3500
4000	7.489	7.489	7.489	7.488	12.750	12.751	12.750	12.750	22.754	22.754	22.754	22.756	21.085	21.085	21.086	21.085	18.986	18.986	18.987	18.987	4000
4500	5.991	5.991	5.991	5.991	10.324	10.325	10.324	10.324	18.623	18.623	18.622	18.622	17.629	17.629	17.629	17.629	16.035	16.035	16.034	16.034	4500
5000	4.891	4.891	4.890	4.890	8.517	8.516	8.515	8.515	15.513	15.513	15.510	15.509	14.996	14.996	14.996	14.988	13.780	13.780	13.778	13.778	5000
5500	4.059	4.057	4.059	4.059	7.075	7.129	7.133	7.133	13.107	13.103	13.107	13.107	12.925	12.911	12.924	12.925	12.003	11.988	12.003	12.003	5500
6000	3.273	3.415	3.415	3.414	5.335	6.052	6.048	6.047	11.206	11.206	11.198	11.193	11.257	11.258	11.246	11.240	10.563	10.563	10.550	10.544	6000
6500	2.608	2.829	2.829	2.829	4.063	5.191	5.191	5.191	9.679	9.678	9.678	9.678	9.892	9.891	9.891	9.891	9.376	9.375	9.375	9.376	6500
7000	2.061	2.382	2.381	2.381	3.135	4.449	4.449	4.449	8.090	8.433	8.431	8.430	8.755	8.754	8.751	8.749	8.380	8.380	8.376	8.375	7000
7500	1.639	2.033	2.033	2.033	2.466	3.800	3.800	3.800	6.544	7.405	7.407	7.407	7.799	7.797	7.800	7.800	7.536	7.533	7.536	7.536	7500
8000	1.311	1.755	1.755	1.755	1.941	3.255	3.283	3.283	5.320	6.550	6.550	6.551	6.988	6.989	6.987	6.987	6.812	6.812	6.810	6.810	8000
8500	1.063	1.531	1.531	1.531	1.555	2.727	2.865	2.865	4.373	5.789	5.789	5.790	6.293	6.293	6.293	6.294	6.186	6.186	6.186	6.186	8500
9000	0.873	1.344	1.347	1.347	1.266	2.291	2.522	2.522	3.615	5.096	5.096	5.096	5.693	5.693	5.694	5.694	5.192	5.640	5.640	5.640	9000
9500	0.746	1.234	1.286	1.286	1.068	2.006	2.403	2.403	3.087	4.829	4.856	4.856	5.304	5.478	5.478	5.477	4.284	5.443	5.443	5.442	9500
10000	0.629	1.070	1.143	1.143	0.882	1.687	2.137	2.137	2.569	4.180	4.319	4.319	4.562	4.985	4.985	4.985	3.512	4.987	4.987	4.988	10000
10500	0.536	0.925	1.023	1.023	0.736	1.422	1.913	1.914	2.145	3.634	3.867	3.867	3.860	4.552	4.553	4.553	2.909	4.584	4.586	4.585	10500
11000	0.460	0.797	0.921	0.921	0.620	1.207	1.695	1.723	1.799	3.171	3.482	3.482	3.269	4.173	4.171	4.170	2.432	4.229	4.227	4.226	11000
11500		0.688	0.833	0.834	0.527	1.033	1.486	1.560	1.522	2.775	3.152	3.152	2.788	3.837	3.837	3.837	2.051	3.854	3.910	3.910	11500
12000		0.594	0.758	0.758	0.452	0.883	1.306	1.418	1.298	2.433	2.867	2.867	2.395	3.538	3.538	3.537	1.744	3.406	3.625	3.625	12000
12500		0.533	0.747	0.775		0.780	1.215	1.447	1.143	2.261	2.924	2.924	2.158	3.486	3.598	3.597	1.532	3.304	3.682	3.681	12500
13000		0.464	0.669	0.707		0.675	1.065	1.309	0.988	1.982	2.620	2.668	1.874	3.130	3.325	3.325	1.339	2.883	3.420	3.420	13000
13500			0.602	0.648		0.588	0.934	1.172	0.859	1.743	2.352	2.444	1.636	2.818	3.082	3.082	1.143	2.499	3.185	3.184	13500
14000			0.537	0.595		0.515	0.821	1.049	0.751	1.539	2.117	2.248	1.446	2.544	2.858	2.858	0.997	2.165	2.895	2.970	14000
14500			0.480	0.549		0.452	0.725	0.941	0.661	1.359	1.909	2.074	1.286	2.302	2.637	2.637	0.873	1.886	2.624	2.778	14500
15000			0.429	0.503		0.644	0.846	0.584	1.201	1.725	1.920	1.141	2.088	2.424	2.441	0.769	1.651	2.384	2.602	15000	

TABLE 14B: Z SECTION MIXED 3 SPANS LAPPED INWARDS LOADING

	Z 100 10 / Z 100 15				Z 100 12 / Z 100 19				Z 150 12 / Z 150 19				Z 150 15 / Z 150 24				Span
	0	1	2	L/150	0	1	2	L/150	0	1	2	L/150	0	1	2	L/150	
2000	10.284	10.282	10.282	13.044	13.187	14.325	14.326	16.600	18.539	18.539	18.539	25.112	30.876	30.878	30.877	64.533	2000
2500	6.130	6.393	6.394	6.594	7.151	8.194	8.194	8.391	11.854	11.853	11.850	14.379	18.126	20.478	20.475	32.674	2500
3000	3.830	4.104	4.104	3.778	4.465	5.093	5.093	4.807	8.290	8.289	8.289	8.29	11.292	13.516	13.518	18.416	3000
3500	2.801	2.799	2.799	2.360	3.036	3.472	3.473	3.003	6.066	6.111	6.111	6.110	7.393	9.512	9.512	11.658	3500
4000	1.665	2.031	2.031	1.571	2.184	2.519	2.519	2.520	4.284	4.673	4.673	4.673	5.201	6.944	6.944	7.751	4000
4500	1.387	1.542	1.542	1.097	1.632	1.912	1.912	1.396	3.172	3.676	3.676	3.676	3.847	5.123	5.123	5.408	4500
5000	1.058																

**TABLE 15A:
Z SECTION
MIXED 4 SPANS LAPPED
OUTWARDS LOADING**



Z 100 10 / Z 100 15				Z 100 12 / Z 100 19				Z 150 12 / Z 150 19				Z 150 15 / Z 150 24				Span
0	1	2	3/SB	0	1	2	3/SB	0	1	2	3/SB	0	1	2	3/SB	
9.200	9.199	9.199	9.198	12.859	12.858	12.858	12.856	15.872	15.872	15.873	15.873	28.815	28.815	28.814	28.815	2000
5.779	5.778	5.779	5.779	7.417	7.417	7.417	7.417	10.435	10.435	10.432	10.432	18.139	18.136	18.133	18.138	2500
3.731	3.731	3.731	3.731	4.594	4.625	4.625	4.625	7.403	7.401	7.403	7.403	12.108	12.108	12.109	12.109	3000
2.465	2.552	2.552	2.552	2.989	3.164	3.164	3.164	5.502	5.502	5.502	5.501	8.574	8.574	8.574	8.574	3500
1.664	1.857	1.857	1.857	2.056	2.302	2.302	2.302	4.230	4.230	4.230	4.230	6.230	6.287	6.287	6.287	4000
1.159	1.412	1.412	1.412	1.469	1.750	1.750	1.750	3.340	3.340	3.340	3.340	4.429	4.649	4.650	4.649	4500
0.822	1.110	1.110	1.110	1.080	1.369	1.376	1.376	2.556	2.695	2.693	2.693	3.264	3.581	3.581	3.581	5000
0.595	0.880	0.896	0.896	0.811	1.068	1.110	1.110	1.901	2.164	2.164	2.164	2.469	2.844	2.844	2.844	5500
0.444	0.689	0.738	0.738	0.621	0.847	0.915	0.915	1.436	1.761	1.761	1.761	1.905	2.314	2.314	2.314	6000
	0.581	0.685	0.685	0.507	0.733	0.848	0.849	1.096	1.461	1.461	1.461	1.493	1.919	1.919	1.919	6500
	0.458	0.577	0.577	0.404	0.590	0.698	0.716	0.848	1.232	1.232	1.232	1.189	1.594	1.618	1.618	7000
		0.476	0.493		0.480	0.580	0.612	0.669	1.028	1.053	1.053	0.957	1.324	1.383	1.383	7500
			0.427			0.488	0.529	0.537	0.864	0.910	0.910	0.780	1.111	1.196	1.196	8000
						0.413	0.457	0.438	0.725	0.795	0.795	0.646	0.940	1.044	1.044	8500
								0.414	0.608	0.700	0.700	0.537	0.800	0.920	0.920	9000
									0.530	0.664	0.665	0.461	0.714	0.858	0.874	9500
									0.444	0.579	0.592		0.579	0.692	0.778	10000
										0.508	0.530		0.526	0.655	0.697	10500
										0.447	0.478		0.455	0.577	0.628	11000
											0.433			0.510	0.568	11500
											0.414			0.452	0.508	12000
														0.428	0.495	12500
														0.444	0.508	13000
														0.412	0.480	13500

Bolt capacity exceeded. M12 bolts for 100 - 250 series, M16 bolts for 300 series or greater.

BOLD Grade 8.8 bolts required.

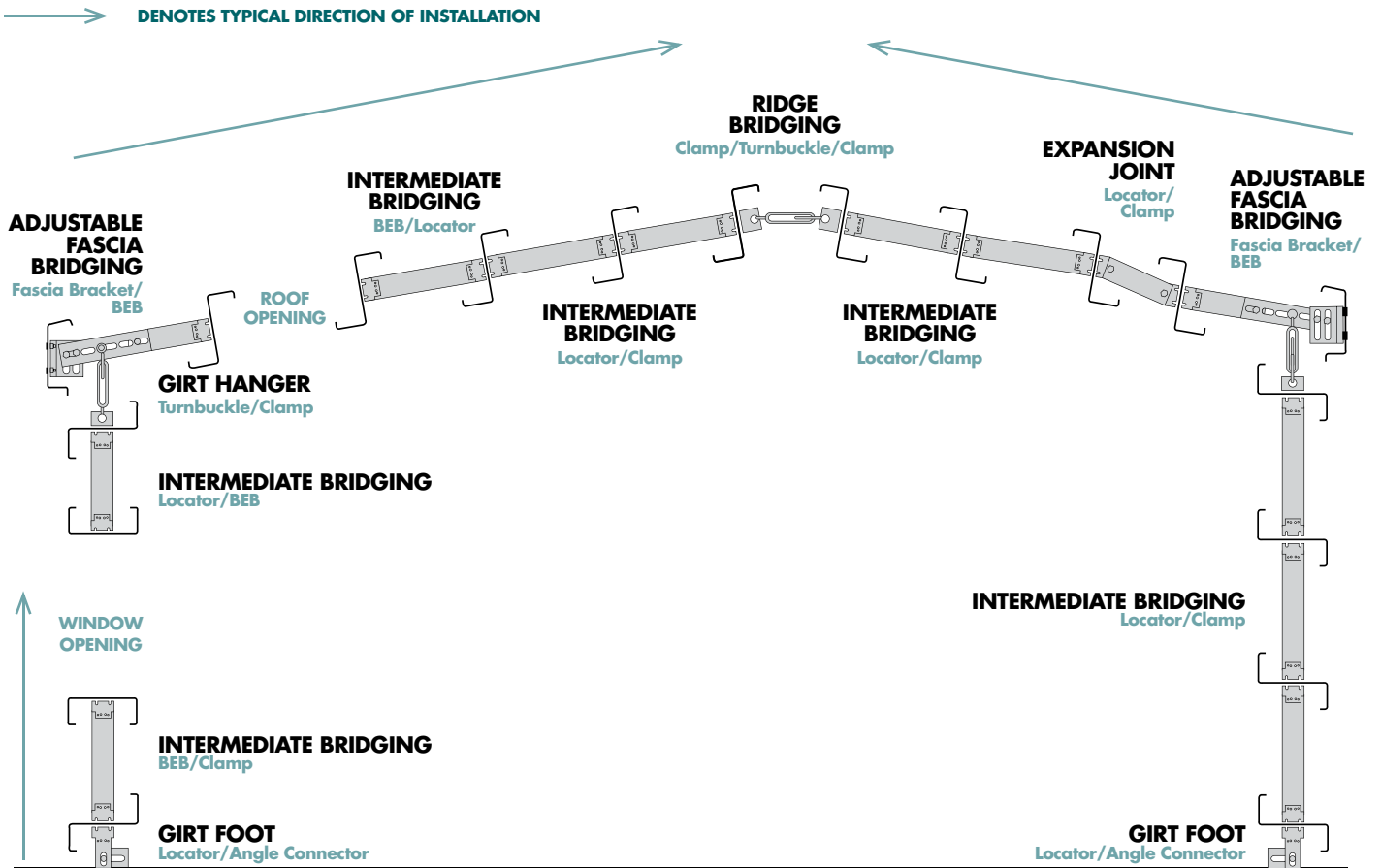
3/SB For Safebridge® system use data for 3 rows of bridging.

	Z 200 15 / Z 200 24				Z 250 19 / Z 250 24				Z 300 24 / Z 300 30				Z 350 24 / Z 350 30				Z 400 24 / Z 400 30				Span
	0	1	2	3/SB	0	1	2	3/SB	0	1	2	3/SB	0	1	2	3/SB	0	1	2	3/SB	
2000	23.168	23.168	23.170	23.171	37.132	37.132	37.135	37.134	63.365	63.368	63.366	63.370	54.335	54.338	54.337	54.339	47.432	47.429	47.433	47.430	2000
2500	15.596	15.592	15.590	15.588	25.334	25.330	25.331	25.323	43.631	43.628	43.615	43.608	37.953	37.955	37.959	37.931	33.304	33.303	33.293	33.274	3500
3000	11.348	11.346	11.348	11.348	18.714	18.711	18.713	18.712	32.586	32.582	32.588	32.588	28.869	28.866	28.869	28.870	25.512	25.507	25.521	25.513	4000
3500	8.637	8.638	8.637	8.637	14.461	14.462	14.459	14.456	25.482	25.482	25.476	25.477	23.045	23.045	23.045	23.040	20.537	20.538	20.535	20.537	4500
4000	6.779	6.779	6.779	6.779	11.513	11.513	11.513	11.514	20.522	20.523	20.524	20.523	18.968	18.967	18.969	18.969	17.064	17.065	17.064	17.064	5000
4500	5.446	5.446	5.446	5.446	9.368	9.368	9.369	9.368	16.884	16.881	16.881	16.883	15.951	15.949	15.951	15.947	14.495	14.495	14.494	14.496	5500
5000	4.459	4.457	4.454	4.452	7.756	7.753	7.746	7.741	14.119	14.110	14.096	14.086	13.626	13.618	13.600	13.583	12.513	12.504	12.487	12.471	6000
5500	3.709	3.707	3.709	3.709	6.514	6.510	6.514	6.514	11.963	11.955	11.964	11.964	11.784	11.771	11.783	11.783	10.936	10.923	10.935	10.936	6500
6000	3.112	3.118	3.118	3.118	5.332	5.338	5.335	5.333	10.252	10.252	10.245	10.241	10.289	10.290	10.280	10.274	9.651	9.651	9.640	9.634	7000
6500	2.504	2.587	2.587	2.587	4.132	4.759	4.759	4.759	8.871	8.871	8.871	8.871	9.060	9.060	9.060	9.060	8.585	8.585	8.585	8.585	7500
7000	2.043	2.181	2.181	2.181	3.232	4.086	4.086	4.086	7.742	7.740	7.739	7.738	8.033	8.032	8.030	8.028	7.688	7.685	7.683	7.681	8000
7500	1.661	1.864	1.864	1.864	2.546	3.493	3.493	3.493	6.446	6.806	6.808	6.807	7.166	7.163	7.167	7.167	6.923	6.919	6.923	6.924	8500
8000	1.351	1.611	1.611	1.611	2.037	3.020	3.020	3.020	5.310	6.027	6.026	6.026	6.429	6.428	6.428	6.428	6.266	6.266	6.265	6.263	9000
8500	1.103	1.407	1.407	1.407	1.641	2.637	2.637	2.637	4.395	5.330	5.330	5.330	5.795	5.795	5.795	5.795	5.696	5.696	5.697	5.696	9500
9000	0.907	1.239	1.239	1.239	1.331	2.256	2.232	2.232	3.660	4.695	4.695	4.695	5.247	5.248	5.247	5.248	5.198	5.199	5.199	5.199	10000
9500	0.775	1.175	1.178	1.178	1.123	2.006	2.207	2.207	3.181	4.461	4.461	4.461	5.029	5.030	5.029	5.028	4.572	4.996	4.995	4.994	10500
10000	0.650	1.025	1.048	1.048	0.936	1.704	1.965	1.965	2.678	3.970	3.970	3.970	4.435	4.580	4.581	4.581	3.746	4.582	4.583	4.583	11000
10500	0.552	0.898	0.939	0.939	0.787	1.454	1.760	1.760	2.248	3.515	3.557	3.557	3.858	4.187	4.187	4.187	3.101	4.216	4.217	4.217	11500
11000	0.474	0.791	0.846	0.846	0.663	1.243	1.586	1.586	1.906	3.086	3.205	3.204	3.364	3.841	3.839	3.838	2.593	3.892	3.890	3.890	12000
11500	0.410	0.693	0.766	0.766	0.563	1.064	1.434	1.436	1.621	2.718	2.902	2.902	2.884	3.534	3.534	3.534	2.186	3.602	3.602	3.602	12500
12000		0.606	0.697	0.697	0.483	0.917	1.276	1.307	1.382	2.401	2.641	2.641	2.480	3.261	3.260	3.260	1.858	3.310	3.341	3.341	13000
12500		0.555	0.708	0.708	0.429	0.824	1.205	1.327	1.223	2.270	2.681	2.681	2.244	3.296	3.296	3.296	1.641	3.181	3.372	3.371	13500
13000		0.482	0.636	0.647		0.711	1.063	1.211	1.056	1.999	2.448	2.448	1.948	2.979	3.049	3.049	1.412	2.854	3.135	3.135	14000
13500		0.422	0.574	0.593		0.617	0.940	1.110	0.918	1.765	2.244	2.244	1.702	2.692	2.827	2.828	1.224	2.570	2.921	2.921	14500
14000			0.519	0.545		0.540	0.834	1.016	0.803	1.567	2.037	2.064	1.494	2.439	2.626	2.626	1.066	2.279	2.727	2.726	15000
14500			0.471	0.503		0.474	0.739	0.920	0.706	1.393	1.845	1.906	1.319	2.216	2.424	2.424	0.934	2.010	2.502	2.552	
15000			0.427	0.466		0.420	0.656	0.832	0.624	1.241	1.674	1.765	1.169	2.018	2.244	2.244	0.822	1.761	2.285	2.391	

**TABLE 15B:
Z SECTION
MIXED 4 SPANS LAPPED
INWARDS LOADING**

	Z 100 10 / Z 100 15				Z 100 12 / Z 100 19				Z 150 12 / Z 150 19				Z 150 15 / Z 150 24				Span			
	0	1	2	3	L/150	0	1	2	3	L/150	0	1	2	3	L/150	0		1	2	3
9.200	9.198	9.200	9.199	14.523	12.244	12.858	12.859	12.857	18.479	15.873	15.872	15.873	15.872	55.969	28.815	28.815	28.815	28.814	72.719	2000
5.718	5.778	5.779	5.779	7.285	6.637	7.417	7.417	7.417	9.266	<										

BRIDGING SYSTEM - OVERVIEW



SAFEBRIDGE® PURLIN BRIDGING INSULATION SYSTEM

Metroll purlins are compatible with the SafeBridge® Purlin Bridging Insulation System. SafeBridge® is an innovative, award winning roofing system that can be adapted to almost any commercial or industrial roof structure. Fully compliant with the current requirements of the BCA Section J, SafeBridge® utilises the existing purlin space to provide energy efficient roof insulation without compromising roof height, wind rating or structural integrity.

KEY BENEFITS

- Can achieve high thermal performance in any climate zone (as defined by the BCA/NCC).
- Code compliant with BCA/NCC Section J.
- Utilises the purlin space without elevating the overall roof or fascia height. No roof spacers required.
- Suitable for both cyclonic and non-cyclonic regions.
- Retains the structural integrity and load points of the roof interior.
- Suits most roof pitches and complex roof designs.
- Available in foil, decorative or acoustic finishes on the internal faced insulation material.
- Creates a safer roof environment for workers during construction.

IMPORTANT DESIGN CONSIDERATIONS

The SafeBridge® system relies upon specific purlin spacing outlined below. Please ensure you consult with Bradford and Metroll early in the design phase to understand the relationship of purlin depth and spacing to R-value and the BMT relative to your ultimate roof design loads.

PURLIN & BRIDGE BAR SPACING

Standard Purlin Spacing	Bridge Bar Spacing
610mm	Maximum 1500mm
910mm	
1210mm	
1360mm	

DESIGNING FOR GREEN STAR & BUILDING CODE COMPLIANCE

Minimum energy efficiency standards for commercial buildings are mandatory in the BCA and NCC. Thermal insulation plays a key role in meeting these requirements and contributes to reductions in energy use which is a critical factor in Green Star accreditation. Choosing the right insulation also offers additional benefits of condensation control, noise dampening and control of heat flow in and out of the building.

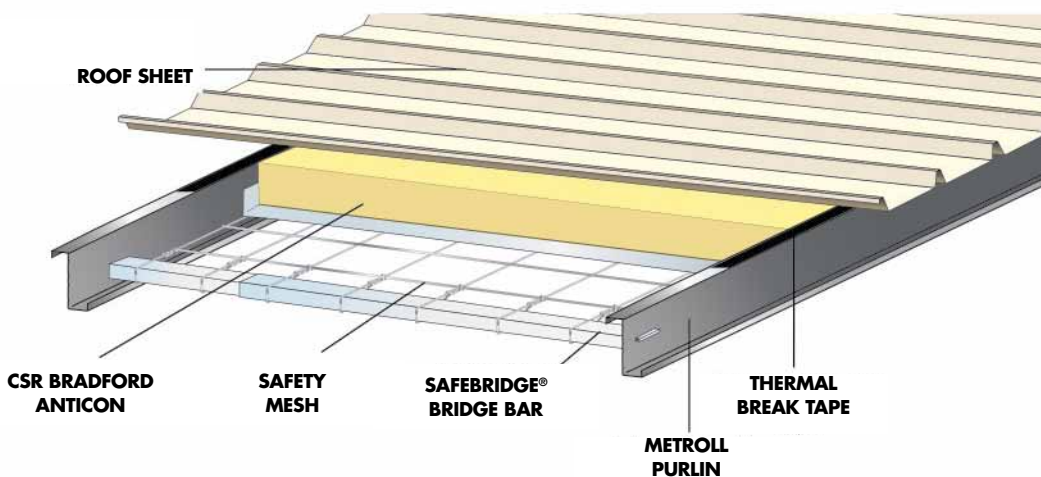
To achieve the BCA/NCC Section J thermal insulation values, the roof system must allow sufficient space under the roof sheeting for insulation to recover its design thickness and achieve its rated insulation value. Failure to provide enough space will result in compression of the insulation and reduce its performance. SafeBridge® use the depth of purlins to provide a cavity for the insulation to recover its thickness, rather than create a space above the purlin using a roof spacer. Safebridge® allows purlin spacing to be set at a predetermined height during the design phase by way of a patented bridging system and key way.

DESIGNING FOR WORKER SAFETY

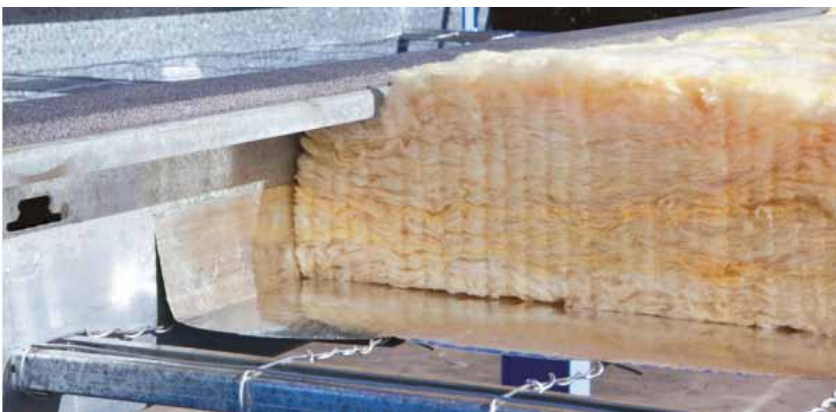
A unique feature of the SafeBridge® system is the application of safety mesh between, rather than over the top of the purlins. This eliminates the need to lap safety mesh and cover the purlins, resulting in immediate material cost savings. This method also facilitates the use of the SafeBridge® Wire Pulley system which saves installation time and also removes workers proximity to the exposed edge of the roof during construction, greatly increasing worker safety.



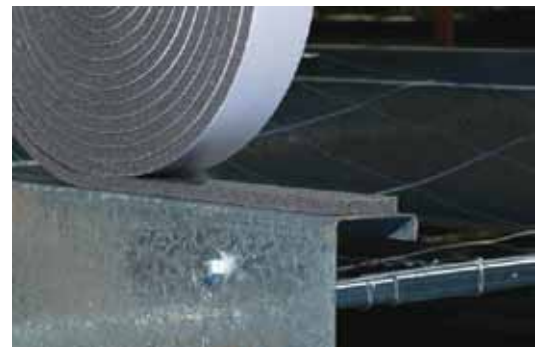
BRIDGE BAR STABILISER
Prevents purlin roll



PURLIN KEYWAY
Simple roofing screw assembly



ANTICON SB Features centre bonded foil lap to protect purlins from condensation



RO.2 THERMAL BREAK TAPE
10mm thick

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