

STEADMANS
ROOFING & CLADDING

Mezzanine Design Guide



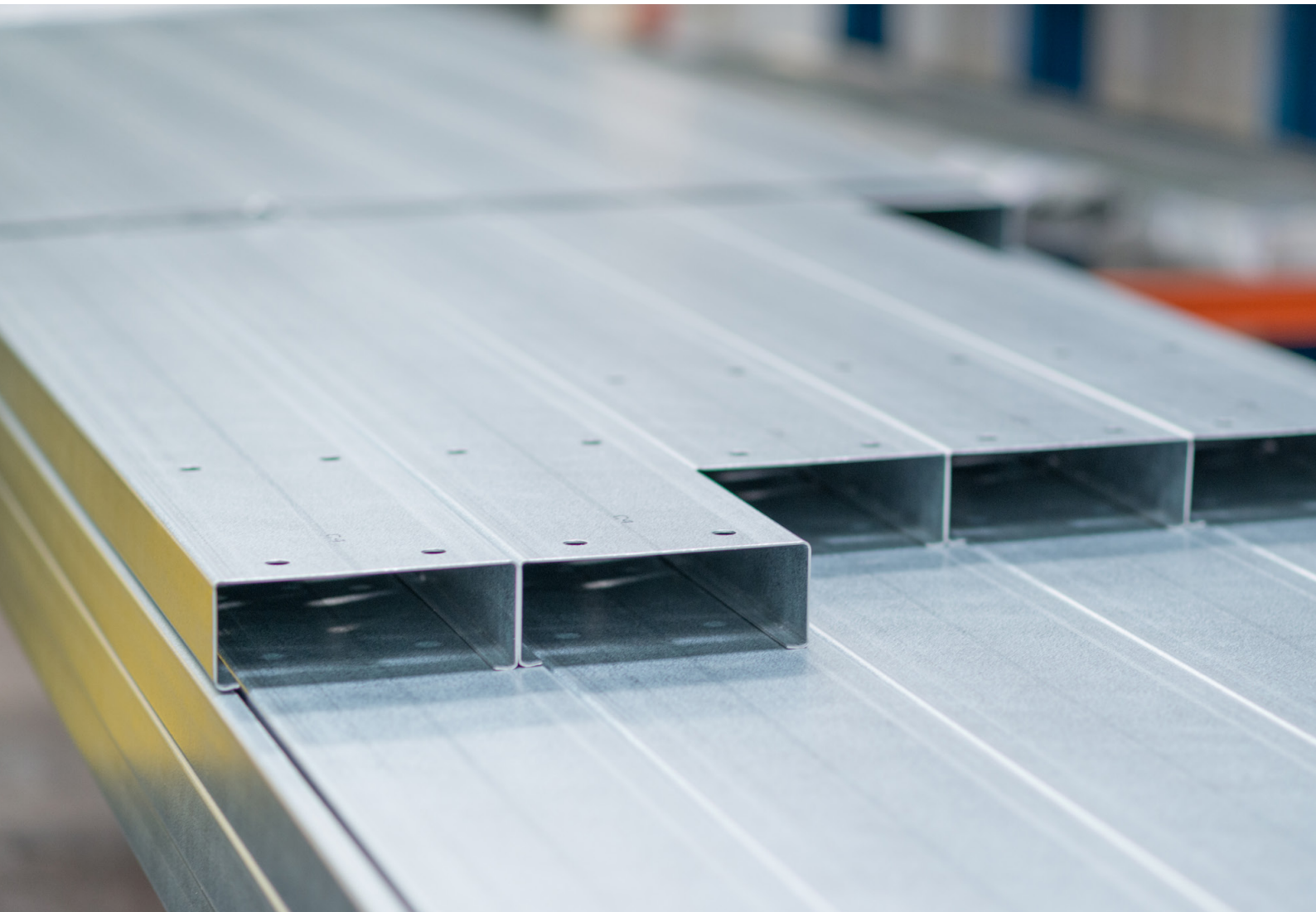
INTRODUCTION

Steadmans MC Mezzanine Sections

Steadmans MC floor beams are lipped cee section profiles manufactured from pre-galvanised S450 grade steel, with a minimum yield strength of 450N/mm.

The sections are designed to BS EN 1993-1-3:2006 using a combination of rational analysis and component testing. Mezzanine Sections are manufactured in a process certified as meeting the requirements of ISO 9001:2015, which covers all aspects of our operations.

We have a full range of accessories to complement our mezzanine beams, along with design assistance and electronic detailing sheets.

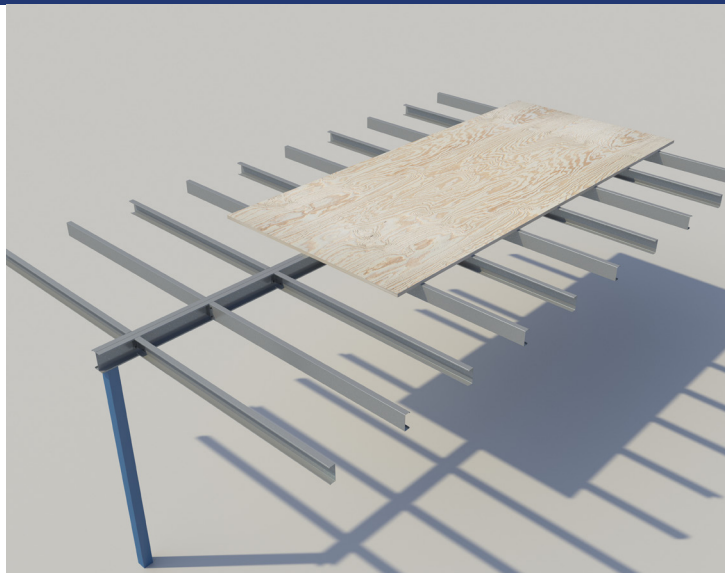




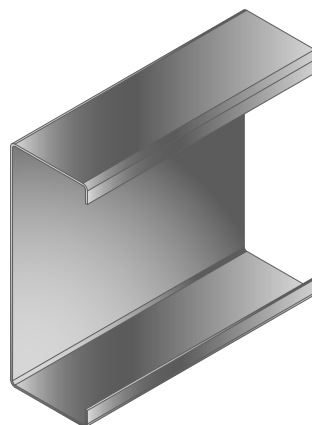
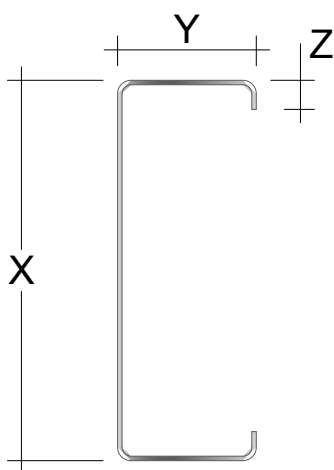
MEZZANINE SECTIONS

Steadmans MC floor beams are generally supported from hot rolled sections.

The decking above the cee sections helps spread the loads of the floor evenly and varies in thickness depending on the loads.



MC Section Range	Gauge / mm
140	1.4, 1.5, 1.6, 1.8, 2.0
170	1.4, 1.5, 1.6, 1.8, 2.0, 2.5
200	1.4, 1.5, 1.6, 1.8, 2.0, 2.5
240	1.5, 1.6, 1.8, 2.0, 2.5, 3.0
300	2.0, 2.5, 3.0



Depth (x) / mm	Flange (y) / mm	Lip (z) / mm
140	62	13
170	62	13
200	70	15
240	74	17
300	95	19

MC SECTION PROPERTIES

Section	Weight	Area (cm ²)	Z _{xe} (cm ³)	Z _{yy} (cm ³)	I _{xx} (cm ⁴)	I _{yy} (cm ⁴)	r _x (mm)	r _y (mm)	P _o (N/mm ²)	x _{na} (mm)	y _{na} (mm)	Mc (kNm)
MC140x62x1.4	3.05	3.81	13.30	3.81	119.31	19.2	55.9	22.4	396.9	18.9	70	5.98
MC140x62x1.5	3.26	4.09	14.87	4.17	127.68	20.5	55.9	22.4	404.6	18.9	70	6.69
MC140x62x1.6	3.48	4.36	16.44	4.53	136.01	21.8	55.8	22.3	411.2	18.9	70	7.40
MC140x62x1.8	3.92	4.91	19.56	5.23	152.49	24.3	55.7	22.2	422.3	18.9	70	8.80
MC140x62x2.0	4.35	5.45	22.55	5.91	168.77	26.7	55.6	22.2	431.1	18.9	70	10.15
MC170x62x1.4	3.37	4.22	16.57	3.67	187.10	20.4	66.6	22.0	373.0	17.1	85	7.46
MC170x62x1.5	3.61	4.53	18.56	4.04	200.30	21.8	66.5	21.9	382.3	17.1	85	8.35
MC170x62x1.6	3.86	4.83	20.54	4.41	213.43	23.2	66.5	21.9	390.4	17.1	85	9.24
MC170x62x1.8	4.34	5.44	24.46	5.13	239.46	25.8	66.4	21.8	403.8	17.1	85	11.01
MC170x62x2.0	4.82	6.04	28.25	5.82	265.19	28.5	66.3	21.7	414.5	17.2	85	12.71
MC170x62x2.5	6.01	7.53	37.11	7.47	328.21	34.8	66.0	21.5	433.6	17.2	85	16.70
MC200x70x1.4	3.91	4.90	20.48	4.45	299.22	30.3	78.1	24.9	349.1	19.0	100	9.21
MC200x70x1.5	4.20	5.26	23.09	4.93	320.46	32.4	78.1	24.8	360.0	19.0	100	10.39
MC200x70x1.6	4.48	5.61	25.75	5.42	341.59	34.4	78.0	24.8	369.5	19.0	100	11.59
MC200x70x1.8	5.04	6.32	31.10	6.37	383.55	38.5	77.9	24.7	385.3	19.0	100	14.00
MC200x70x2.0	5.60	7.02	36.38	7.30	425.09	42.5	77.8	24.6	397.9	19.0	100	16.37
MC200x70x2.5	6.99	8.76	48.89	9.52	527.16	52.0	77.6	24.4	420.4	19.1	100	22.00
MC240x74x1.5	4.80	6.02	28.61	5.31	514.83	40.9	92.5	26.1	330.3	19.0	120	12.88
MC240x74x1.6	5.13	6.42	32.08	5.87	548.95	43.5	92.5	26.0	341.7	19.1	120	14.44
MC240x74x1.8	5.77	7.23	39.11	6.99	616.75	48.7	92.4	25.9	360.7	19.1	120	17.60
MC240x74x2.0	6.42	8.04	46.10	8.09	683.97	53.7	92.3	25.9	375.8	19.1	120	20.74
MC240x74x2.5	8.02	10.04	62.87	10.73	849.50	65.9	92.0	25.6	402.8	19.1	120	28.29
MC240x74x3.0	9.60	12.02	78.67	13.22	1011.45	77.6	91.7	25.4	420.6	19.2	120	35.40
MC300x95x2.0	8.08	10.11	62.99	11.49	1359.10	110.2	115.9	33.0	342.6	24.1	150	28.34
MC300x95x2.5	10.10	12.65	90.72	15.84	1691.63	135.9	115.7	32.8	376.3	24.1	150	40.82
MC300x95x3.0	12.10	15.16	117.60	20.00	2918.48	160.6	115.4	32.6	398.6	24.1	150	52.92

Steadmans offer a section sizing service.

To facilitate this service our Technical Team will need to know the following information:

- Support centres
- Proposed beam spacing
- Dead load
- Imposed load
- Deflection limit

Typical Imposed Loads ** Loads kN/m²

Office / Light Industrial / Access	3.0
General Purpose Industrial	5.0
Plantroom / Heavy Duty Industrial	7.5
Storage 1 – Extra Heavy Duty	10.0
Storage 2 – Ultra Heavy Duty	15.0

** Typical Imposed Loads to BS EN 1991-1-1:2002

Please email info@steadmans.co.uk with your project information and we will be able to assess your enquiry.



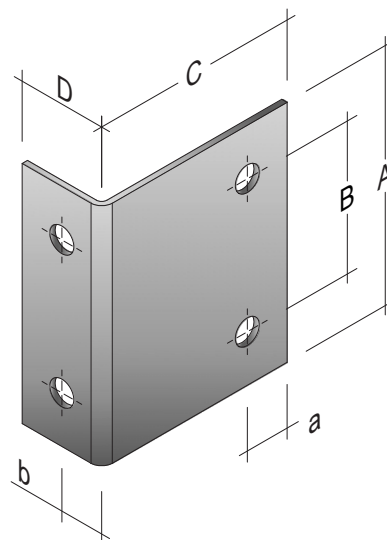
MC INSET CLEATS

Steadman's Mezzanine floor beams are designed using a web cleat system to maximise the use of the available headroom.

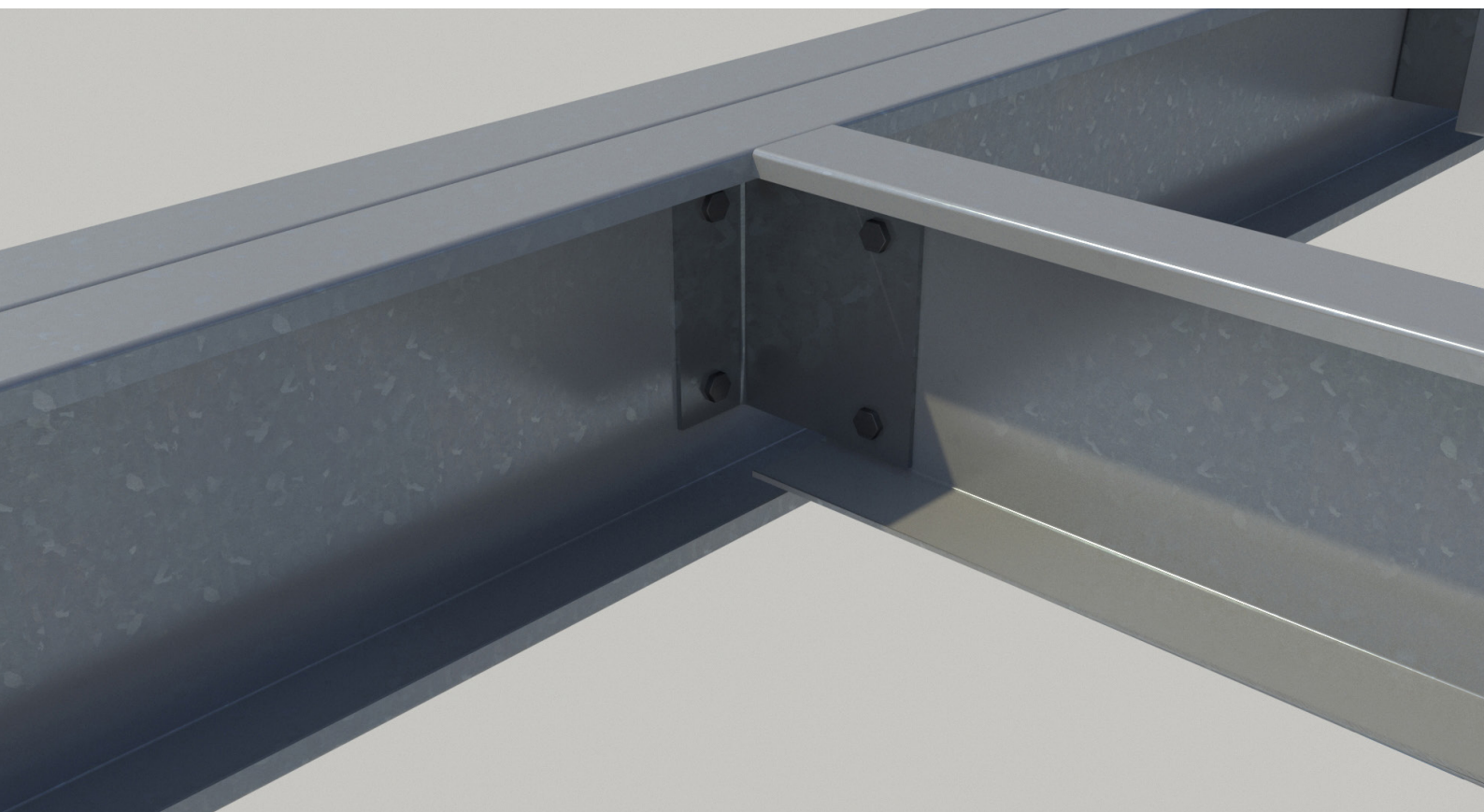
The MC floor beams are fixed into the web of the hot rolled steel sections via galvanised cleats.

Standard mezzanine cleats are manufactured from 4mm pre-hot dipped galvanised steel, S450 GD Z275 material.

All holes are Ø18mm for M16 bolts grade 8.8.
Non-standard cleats are available please contact our Technical Team for further details.



MC Section	A/mm	B/mm	C/mm	D/mm	a/mm	b/mm	Ø hole
140	110	60	140	60	30	30	18mm
170	140	90	140	60	30	30	18mm
200	170	100	140	60	30	30	18mm
240	210	110	155	60	30	30	18mm
300	250	150	165	60	30	30	18mm





RESTRAINTS / STUD TIES

Stud ties are used to restraint the cee sections to prevent the floor beam from twisting. All flooring applications must have stud ties.

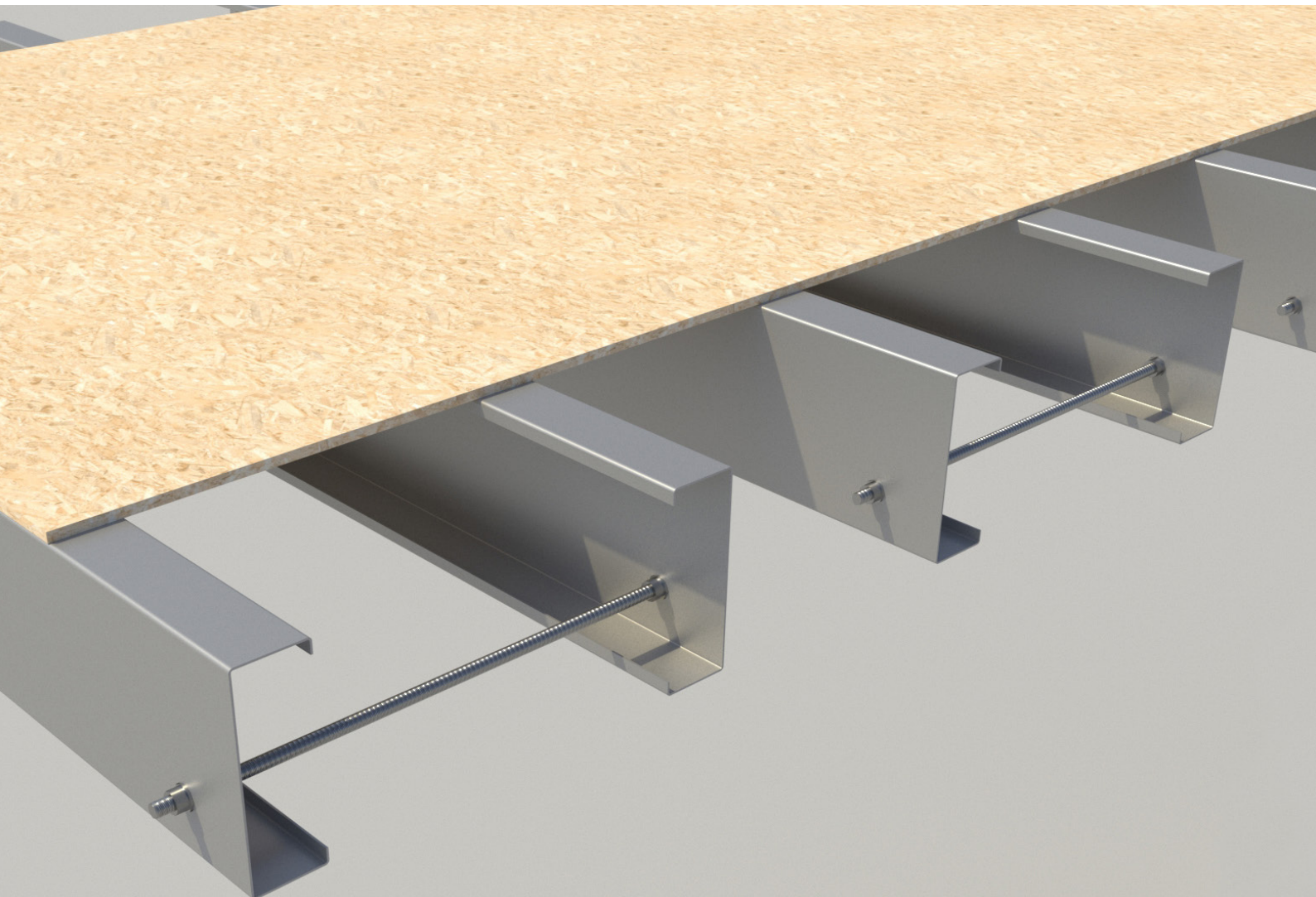
Stud ties are fitted at mid span location of the cee section and are fixed at the lower holes.

Stud ties must be installed before the laying of any decking.

Manufactured from M16 studding and come complete with the necessary nuts and washers. Non-standard lengths available upon request.

Stud Tie Rod Lengths

MC Section depth	400mm centres	600mm centres
140mm	515mm	715mm
170mm	515mm	715mm
200mm	515mm	715mm
240mm	595mm	805mm
300mm	595mm	805mm





STEADMANS SECONDARY STEELWORK

We have a full range of purlins, rails and eaves beams available.

Our Zed section and Cee section range covers 140, 170, 200, 240 & 300mm deep sections which are available in a range of thicknesses. We have two Eaves beam designs:

- Indented eaves beams - 200 & 240mm
- Flat backed eaves beam - 300mm

Our facilities enable us to produce an almost unlimited range of bespoke metal sheeting and forming for our customers including punching and de-coiling, slit and re-coil, flat sheet manufacture and cutting.



CONFORMITY ASSESSMENT



Conformity assessment is mandatory for secondary steelwork systems covered by either a harmonised European Standard or UK Designated Standard.

The entire supply and distribution chain is responsible for ensuring correct conformity assessment of products.

Manufacturers, importers, and distributors must be aware of essential characteristics and specification requirements of the product for the member state they are selling in.

Steadmans can supply certification and a declaration of performance upon client request.



QUALITY ASSURED

We manufacture all of our products to the highest quality standard, operating an accredited Quality Management System in compliance with the requirements of ISO 9001.

Our products are manufactured from the materials from our approved supply chain, using state-of-the-art production facilities which are rigorously controlled through inspection and testing at each production stage. Our products are designed and manufactured in accordance with all related and prevailing standards.



HEALTH & SAFETY

Our Business Delivery is managed efficiently and responsibly through the practise of our accredited Occupational Health and Safety Management System in compliance with the requirements of ISO 45001.

Through our Management System we promote a safe and healthy working environment by proving a framework that allows our organisation to identify and control its health and safety risks, reduce the potential for accidents, ensure legislative compliance and improve overall performance.



ENVIRONMENT

We operate in a responsible manner with regards to our environmental through the procedures and processes described in our Environmental Management System certified as meeting the requirements of ISO 14001.

We strive to be a sustainable manufacturer with minimal detrimental impact.

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If in any doubt please contact info@steadmans.co.uk

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