Floors

FLOOR APPLICATIONS

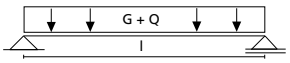
Engineers have long recognised the advantages of an I section in structural elements. Suitable material is only used in those places where it meets the needs, resulting in a slender and economical building element for floors, walls and roofs.

Modern structures require high performance and cost efficient constructions in which shrinkage and movement are a thing of the past. The carefully selected components used in the flange and web create a high quality engineered wood product, designed to reduce movement and other problems associated with solid timber floors.

Thanks to its engineered properties the STEICO*joist* is dimensionally stable, avoiding the need for mid span blocking to be installed and reduces the risk of nail popping in plasterboard caused by timber shrinkage.

Due to its light-weight properties, new floors are easily incorporated into renovation projects where access is limited and handling issues are important.

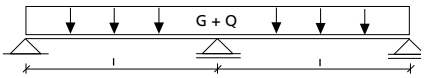
SPAN TABLES FOR STEICO*joist* TO BS 5268



Maximum single spans l in [m],
max. deflection = 12 mm or 0,003 * l

Live load Q=1,5 kN/m²

Type	Depth H [mm]	G=0,75 kN/m² Joist centers [mm]			G=1,25 kN/m² Joist centers [mm]		
		400	480	600	400	480	600
STEICO*joist* SJ 45	200	4.13	3.92	3.60	3.89	3.64	3.34
	220	4.39	4.19	3.92	4.16	3.95	3.64
	240	4.64	4.42	4.16	4.40	4.19	3.92
	300	5.32	5.07	4.78	5.05	4.80	4.52
	360	5.93	5.65	5.33	5.63	5.36	4.66
STEICO*joist* SJ 60	200	4.42	4.21	3.94	4.18	3.98	3.65
	220	4.70	4.47	4.21	4.45	4.23	3.98
	240	4.96	4.72	4.44	4.70	4.47	4.21
	300	5.68	5.41	5.09	5.39	5.13	4.82
	360	6.33	6.03	5.68	6.00	5.71	5.38
	400	6.73	6.41	6.04	6.38	6.08	5.72
STEICO*joist* SJ 90	200	4.84	4.61	4.33	4.58	4.36	3.97
	220	5.15	4.90	4.60	4.87	4.63	4.30
	240	5.44	5.17	4.86	5.15	4.89	4.60
	300	6.23	5.93	5.57	5.90	5.61	5.27
	360	6.94	6.60	6.21	6.57	6.25	5.87
	400	7.37	7.02	6.60	6.98	6.64	6.24



Maximum double spans with mid span support l in [m],
max. deflection = 12 mm or 0,003 * l

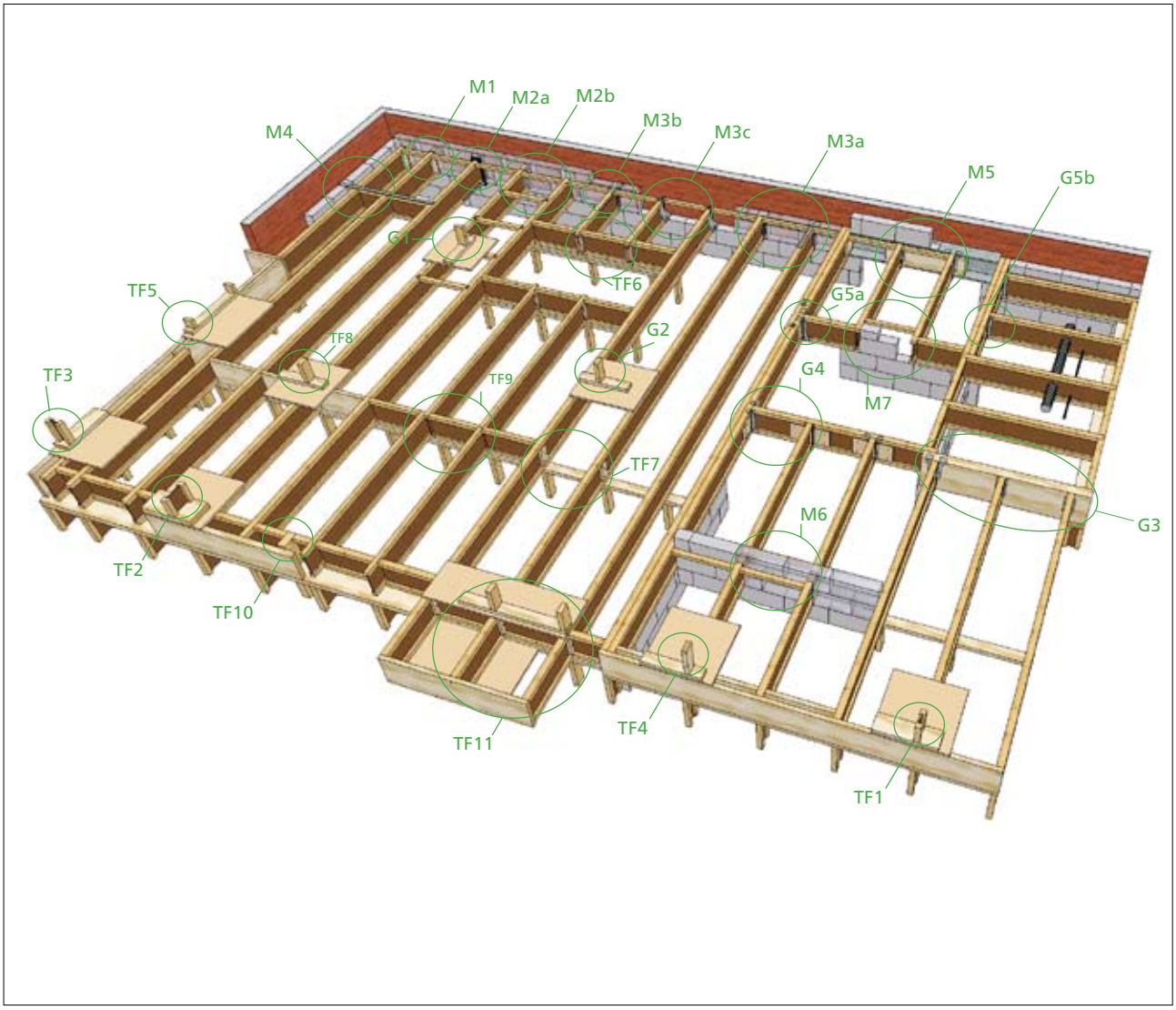
Live load Q=1,5 kN/m²

Type	Depth H [mm]	G=0,75 kN/m² Joist centers [mm]			G=1,25 kN/m² Joist centers [mm]		
		400	480	600	400	480	600
STEICO*joist* SJ 45	200	4.70	4.47	4.21	4.52	4.30	3.61
	220	4.99	4.76	4.48	4.80	4.58	3.68
	240	5.27	5.02	4.50	5.08	4.60	3.68
	300	6.04	5.62	4.50	5.52	4.60	3.68
	360	6.74	5.62	4.50	5.52	4.60	3.68
STEICO*joist* SJ 60	200	5.02	4.78	4.30	4.83	4.39	3.59
	220	5.34	5.08	4.66	5.13	4.76	3.89
	240	5.64	5.37	5.01	5.42	5.12	4.19
	300	6.46	6.15	5.79	6.21	5.92	4.97
	360	7.19	6.85	6.07	6.92	6.21	4.97
	400	7.65	7.29	6.07	7.36	6.21	4.97
STEICO*joist* SJ 90	200	5.51	5.24	4.27	5.15	4.36	3.57
	220	5.86	5.57	4.63	5.58	4.72	3.86
	240	6.18	5.88	4.97	5.95	5.07	4.15
	300	7.08	6.74	5.95	6.81	6.07	4.97
	360	7.89	7.51	6.87	7.58	7.01	5.72
	400	8.38	7.98	7.46	8.06	7.61	6.23

General comments:

- These tables serve as a guide only and do not replace independent structural calculations prepared by a qualified structural engineer.
- Please pay special attention to the bearing conditions.
- Do not use these tables to calculate point or irregular loads.
- Spans indicated are between centres of supports.
- Q = design imposed loads. G= design dead loads. The UKTFA Engineered Wood Products Committee recommends a minimum dead load for single occupancy domestic floors of 0.41 kN/m² plus an allowance of 0.22 kN/2 for non-load-bearing partitions (up to 27 kg/m²), irrespective of whether they are present on the floor. Where partition positions are known, the final design should reflect the worst case of either the blanket UDL (incl partitions) or the dead load plus a minimum line load of 0.64 kN/m at partition locations. Where the calculated dead loads exceed the recommended minimum (ie: compartment floors and multi-boarded partitions), these must be adopted.
- Dead loads (G) include the self weight of the joists.
- Span tables are for floor joists under service class 1 conditions only.

FLOOR CONSTRUCTION DETAILS



NOTES TO THE DETAILS

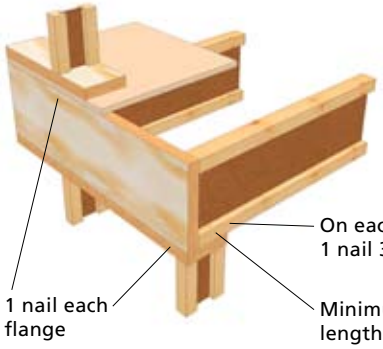
Bearing lengths

- End bearing minimum 45 mm
- Intermediate bearing minimum 90 mm

Fastening

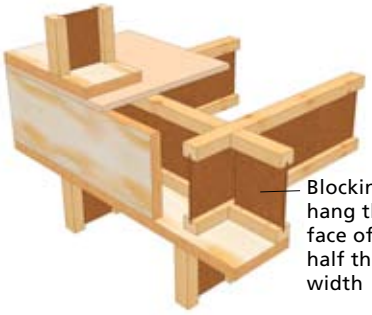
- Where bearing onto an external timber frame wall, STEICO-*joists* must be secured to a Glulam (e.g. Panelam) rim board, a rim joist or other suitable EWP using nails or suitable hangers.
- STEICO*joists* to be nailed to head plates using minimum 2 No. 3.35 * 90 ring shank nails, located a minimum of 38 mm from the end of the joist. Nails may need to be skewed slightly to avoid splitting the bearing plate.
- Where required, compression blocks are to be fixed to each flange using a minimum of one 3.35 dia nail. Ensure the block is cut from graded timber or an EWP to the same depth as the joist.
- The typical details shown are for guidance only and should be used in conjunction with the recommendations and requirements of the UKTFA, British Standards, NHBC, Zurich, Robust Details Ltd, Building regulations and all other statutory bodies.

TF1 Rim Board (e.g. LVL / Glulam)



Minimum nailing for class 1 structures to be 3.00*75 nails at 300 mm centres which should be applied at each interface where lateral loads are to be transferred. Refer to UKTFA "Design Guidance on Disproportionate Collapse" for further information

TF2 Rim board (e.g. LVL / Glulam) with STEICO*joist* blocking

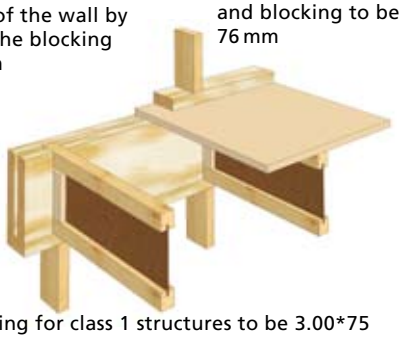


Minimum nailing for class 1 structures to be 3.00*75 nails at 300 mm centres which should be applied at each interface where lateral loads are to be transferred. Refer to UKTFA "Design Guidance on Disproportionate Collapse" for further information

TF3 Joist parallel to external wall

Minimum nailing for class 1 structures to be 3.00*75 nails at 300 mm centres which should be applied at each interface where lateral loads are to be transferred. Refer to UKTFA "Design Guidance on Disproportionate Collapse" for further information

TF4 Joist bearing on party walls

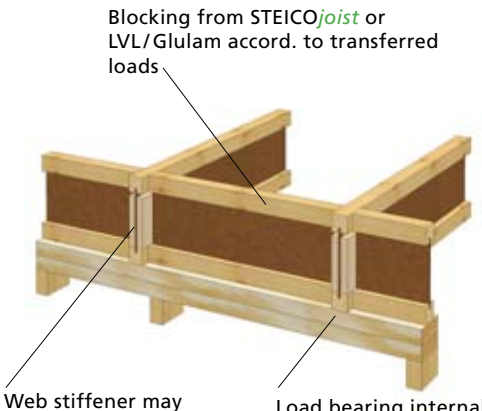


Minimum nailing for class 1 structures to be 3.00*75 nails at 300 mm centres which should be applied at each interface where lateral loads are to be transferred. Refer to UKTFA "Design Guidance on Disproportionate Collapse" for further information

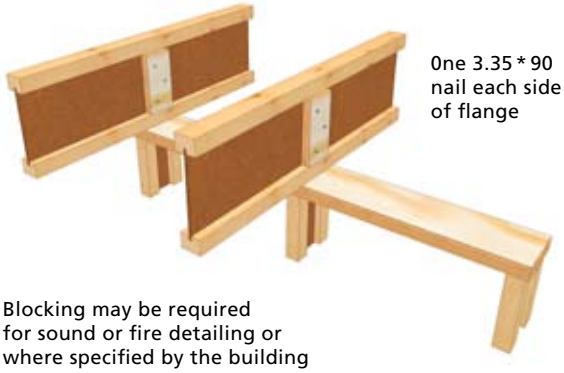
TF5 Joist parallel to party wall

Minimum nailing for class 1 structures to be 3.00*75 nails at 300 mm centres which should be applied at each interface where lateral loads are to be transferred. Refer to UKTFA "Design Guidance on Disproportionate Collapse" for further information

TF6 Joist ending on internal wall



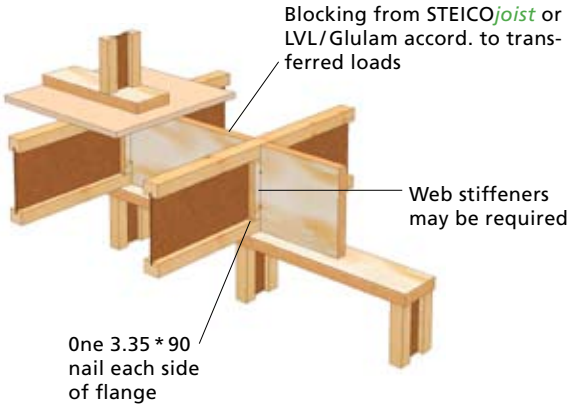
TF7 Intermediate bearing with continuous joists



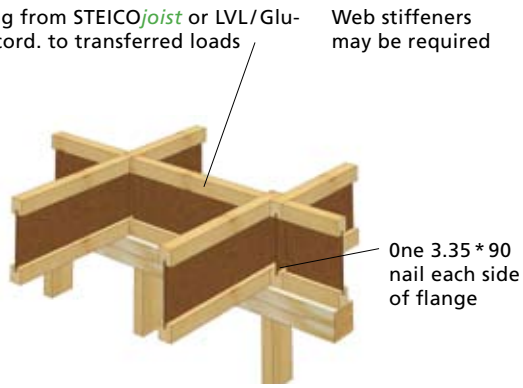
Blocking may be required for sound or fire detailing or where specified by the building designer

Web stiffeners may be required by design

TF8 Intermediate bearing with load bearing wall above

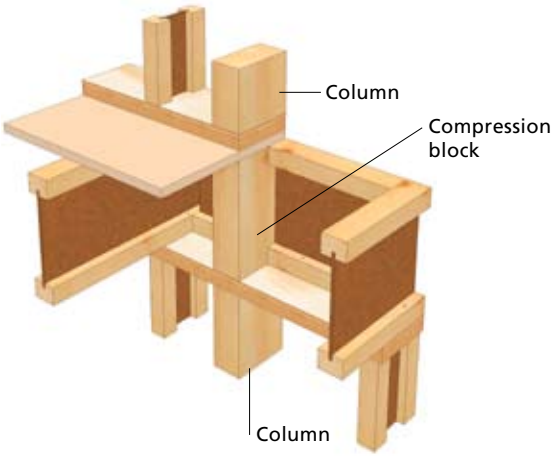


TF9 Discontinuous joists on intermediate bearing

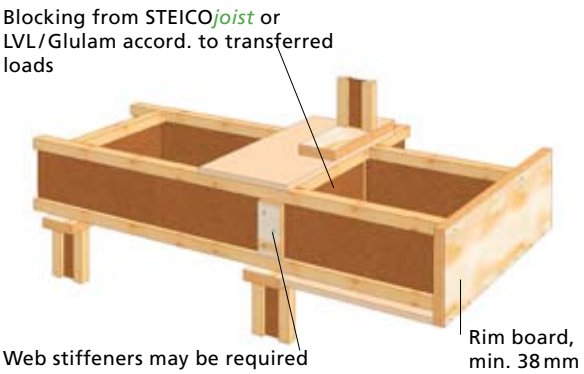


Joists may be butt jointed where there is a minimum of 45 mm bearing available. If this is not possible joists are to be staggered and provided with full bearing.

TF10 Transfer of high point loads



TF11 Cantilever



Please make sure that external parts are protected against weather

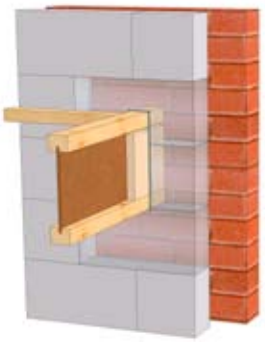
MASONRY DETAILS

M1 Bearing onto blockwork cavity wall

All joists to have a minimum bearing of 90 mm. Ensure all bearings are flat, level an that the joists are vertical.

Minimum 38 * 38 perimeter noggin skew nailed or fixed to joist using propriety clip. noggin to be fixed 25 - 75 mm from face of wall.

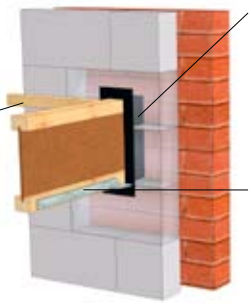
Web stiffeners fitted to end of joists. Junction between wall and joists to be sealed with silicon mastic.



Restraint straps may be required for buildings over 2 storeys or where joists have less than 90 mm of bearing. Please consult hanger manufacturers literature for further information

M2a Bearing onto blockwork cavity wall using proprietary seal

Minimum 38 * 38 perimeter noggin skew nailed or fixed to joist using propriety clip. Noggin to be fixed 25 - 75 mm from face of wall



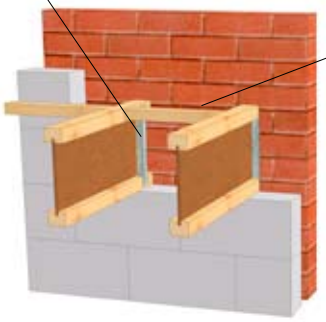
Proprietary end seal

Restraint strap where required

Please refer to manufactureres details for full installation details and restraint strap requirements.

M2b Bearing onto blockwork cavity wall using proprietary end stopper

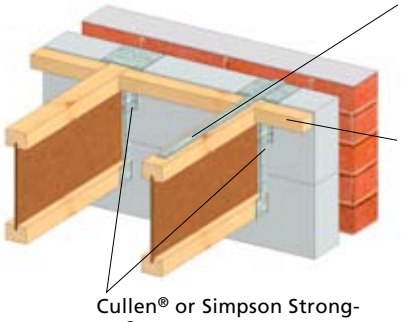
Proprietary end stopper system



Minimum 38 * 38 perimeter noggin skew nailed or fixed to joist using propriety clip. Noggin to be fixed 25 - 75 mm from face of wall

Ensure all bearings are flat, level and that the joists are vertical. Please refer to manufactureres details for full installation details and restraint strap requirements.

M3a Masonry Hanger



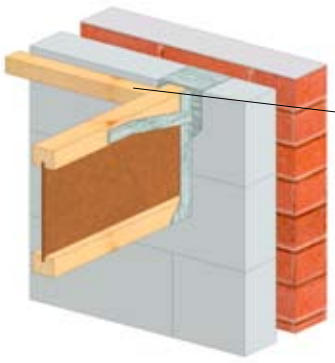
Restraint Straps fitted as manufactureres details

Minimum 38 * 38 perimeter noggin skew nailed or fixed to joist using propriety clip. Noggin to be fixed 25 - 75 mm from face of wall

Cullen® or Simpson Strong-Tie® Masonry hanger

Restraint straps to be fitted at no more than 2 m centres or at spacing specified by the building designer.

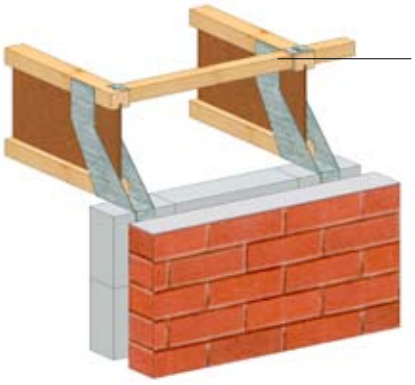
M3b Restraint type hanger (Simpson Strong Tie®)



Minimum 38 * 38 perimeter noggin skew nailed or fixed to joist using proprietry clip. Noggin to be fixed 25 - 75 mm from face of wall

Refer to Simpson® Technical Literature for specification an installation details

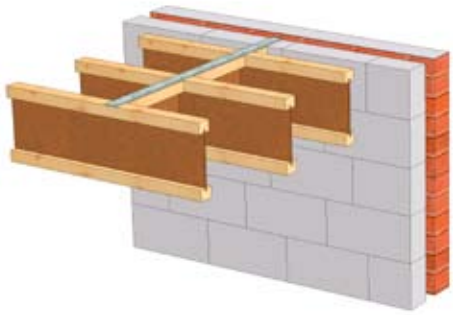
M3c Restraint type hanger (Cullen®)



Minimum 38 * 38 perimeter noggin skew nailed or fixed to joist using proprietry clip. Noggin to be fixed 25 - 75 mm from face of wall

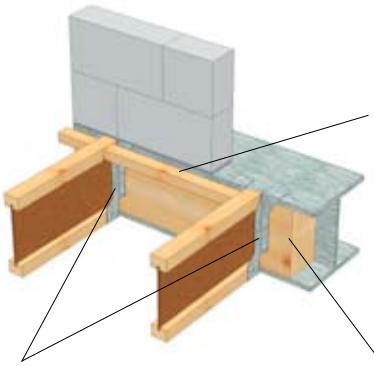
Refer to Cullen® Technical Literature for specification and installation details

M4 Masonry wall restraint



Galvanised masonry restraint strap fixed to minimum 3 joists in accordance with manufacturers recommendations. Blocking may be full depth I-joists or solid timber. Where solid timber is used ensure the size is a minimum of 38 mm x half the joist depth. Do not notch the flanges.

M5 Steel Beam masonry above



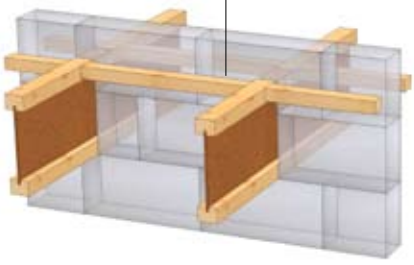
Minimum 38 * 38 perimeter noggin skew nailed or fixed to joist using proprietry clip. noggin to be fixed 25 - 75 mm from face of wall

Masonry Hanger bedded in mortar joint. Refer to manufacturers details.

Timber packer to steel beam designers requirements

M6 Internal wall built around joists

Minimum 38 * 38 perimeter noggin skew nailed or fixed to joist using proprietry clip. Noggin to be fixed 25 - 75 mm from face of wall



Ensure blockwork does not contact the top of the joists

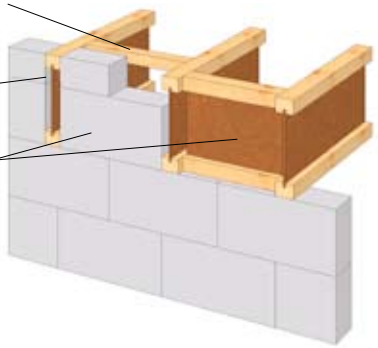
89 mm minimum bearing for continuous joists. Ensure discontinuous joists have a minimum of 45 mm bearing. Joists may be lapped for full bearing.

M7 Joists ending on internal wall

Minimum 38 * 38 perimeter noggin skew nailed or fixed to joist using proprietry clip. Noggin to be fixed 25 - 75 mm from face of wall. Noggin not required where I-Joist blocking is used.

Mortar fill may be required

Blockwork may be built up around I-Joists or blocking pieces used to restrain the end of I-Joists

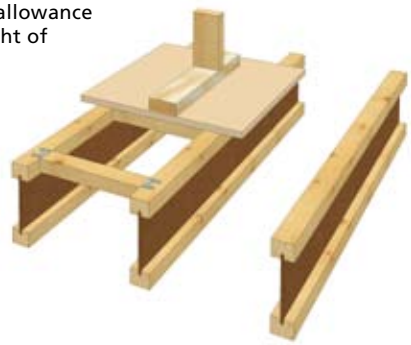


GENERAL DETAILS

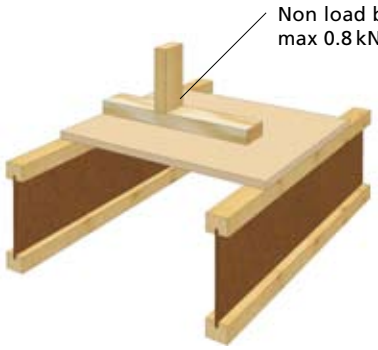
G1 Non load bearing wall parallel to the joists

Maximum weight of non load bearing wall 0.8 kN/m. Designers to ensure joist design includes an allowance for the weight of walls above

Minimum 38 * 75 mm partition noggin fixed to joist using Z-clip



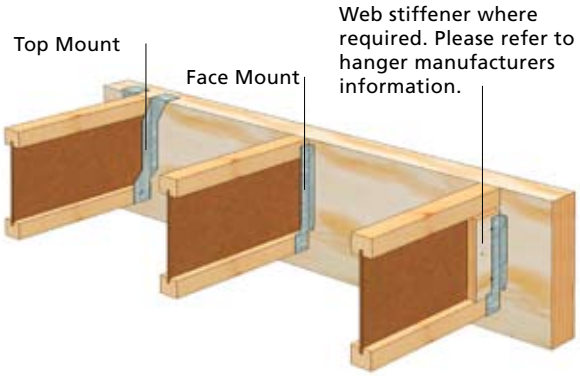
G2 Non load bearing wall across the joists



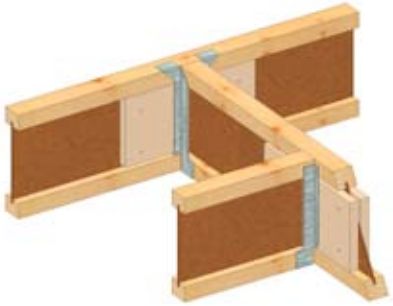
Sole plate of partition wall to be nailed to joists below

The designer is responsible for ensuring the I-Joist design is adequate to support the wall. See span tables.

G3 Different hanger applications



G4 STEICO*joist* to STEICO*joist* connection

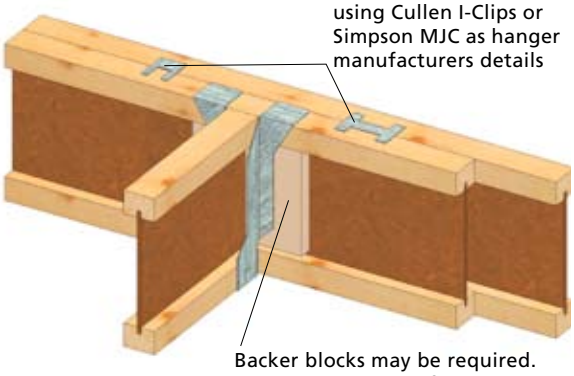


Install Backer blocks on both sides of STEICO*joist*. Attach with 10 no. 3.75 * 75 nails, clenched where possible. Backer block to be a minimum of 250 mm wide.

Install Backer blocks tight to top flange for top mount hangers and tight to bottom flange for face mount hangers.

Please refer to hanger manufacturers literature for alternative hanger options.

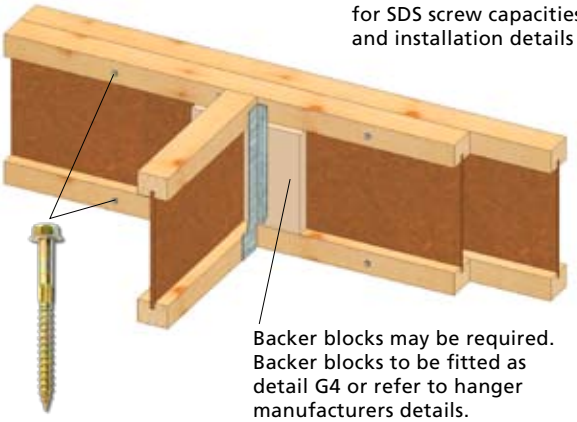
G5a 2-ply I-joist connection



2 ply I-joist connected using Cullen I-Clips or Simpson MJC as hanger manufacturers details

Backer blocks may be required. Backer blocks to be fitted as detail G4 or refer to hanger manufacturers details.

G5b 2-ply I-joist connection



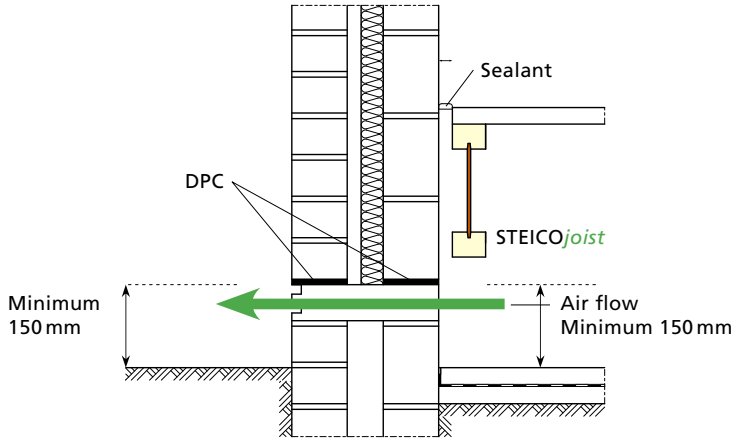
Refer to Simpson Strong-Tie technical literature for SDS screw capacities and installation details

Backer blocks may be required. Backer blocks to be fitted as detail G4 or refer to hanger manufacturers details.

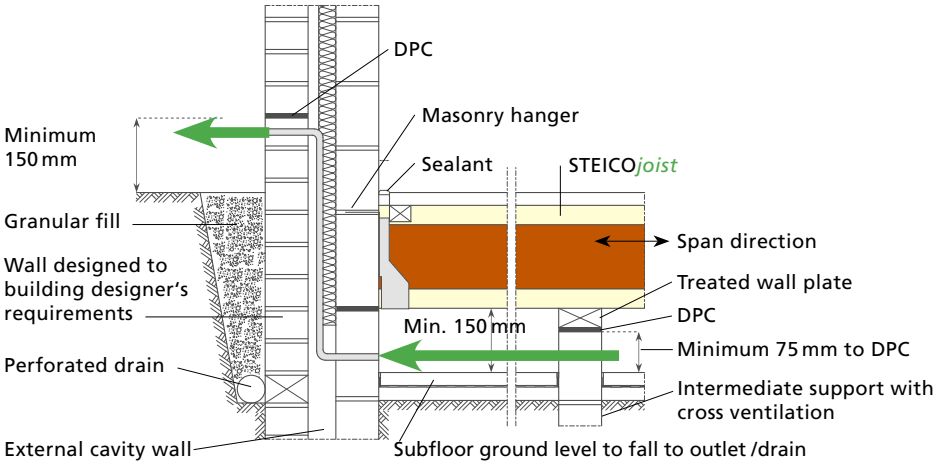
GROUND FLOOR DETAILS

Joists to be designed to service class 2

GF1 STEICO*joist* parallel to wall



GF2 STEICO*joist* bearing on external wall



GF3 STEICO*joist* bearing on external wall