

TECHNICAL SPECIFICATION



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1 INTRODUCTION

1.1 APPLICATION

Artista® columns by James Hardie are generally used in two kinds of applications: non-load-bearing applications and load-bearing applications.

Artista columns are available in two styles:

1. The Artista® classic column is a straight hollow column with a smooth surface.
2. The Artista® tapered column is tapered from the top of the column to 900mm from the column's base (for the 2750mm long columns) and 1300mm from the column's base (for the 4000mm long columns). This column is also hollow; the walls are thickened to achieve the tapered shape.

James Hardie 195 and 250 diameter Artista classic columns have two square cut ends. The 345 and 425 diameter Artista classic columns are made with one square cut and one rebated end so that columns can be easily joined. See Section 5 for details.

James Hardie has a range of Artista column accessories that can be used as bases, capitals or dress rings. They will fit anywhere on the classic column and on the very top and untapered bottom section of the tapered column.

For column and accessory physical properties, including diameter, mass and stock lengths, etc, see Section 10, Components.

1.2 SCOPE

This manual covers the use of Artista columns and its accessories in non-load-bearing (decorative) or load-bearing applications. Load-bearing columns can be either unfilled columns, to support light roof structures, or reinforced concrete filled columns for use in heavier load-bearing applications.

1.3 SPECIFIC DESIGN AND DETAILING

For use of Artista columns outside the scope of this documentation, the designer, architect or engineer must undertake specific design.

For advice on designs outside the above scope Ask James Hardie™ on 13 11 03.

Make sure your information is up to date

When specifying or installing James Hardie products, ensure you have the current manual. If you're not sure you do, or if you need more information, visit www.jameshardie.com.au or Ask James Hardie™ on 13 11 03.

2 DESIGN

2.1 COMPLIANCE

All design and construction must comply with the appropriate requirements of the current Building Code of Australia (BCA), regulations and standards.

2.2 RESPONSIBILITY

Column design capacities are provided for load-bearing unfilled and steel reinforced concrete filled installations. The capacities provided in the tables have been prepared by consulting engineers, Cardno (NSW) Pty Ltd and are provided as guidance to the structural engineer.

It is the responsibility of the structural engineer to certify the suitability and capacity of the steel reinforced concrete filled columns for any given project.

The specifier or other party responsible for the project must ensure the details in this specification are appropriate for the intended application and that additional detailing is performed for specific design or any areas that fall outside the scope and specifications of this manual.

2.3 DECORATIVE COLUMNS

Artista columns can be used as non-load-bearing for decorative purposes, or with internal load-bearing posts. Here, the column is selected for its finish and any load is supported by the internal load-bearing post. The internal post (either steel or timber) is then designed to support the proposed loading.

NOTE

Before selecting an internal load-bearing post, refer to Clause 2.4 to determine if the columns you want to use can support the proposed load. This can result in substantial material and labour savings.

2.4 UNFILLED COLUMNS – LOAD-BEARING

2.4.1 General

Artista columns can be used in load-bearing applications where the walls of the column supports the structure above. The capacity varies depending on the diameter, the height and if handrails are used. See Clauses 2.4.2 and 2.4.3.

2.4.2 Without handrails

For maximum supported roof area and Ultimate Limit State (ULS) loads for the various column diameters, height and bearing without handrails, refer to Tables 1 and 2 for Artista classic and tapered columns respectively.

2.4.3 With handrails

For maximum supported roof area and ULS loads for the various column diameters, height and bearing with handrails, refer to Tables 3 and 4 for Artista classic and tapered columns respectively.

Using the tables requires repetitive checking. Select a design and check the proposal to see if the system satisfies the load-bearing capacity of the columns. If the proposed design does not satisfy, simply increase the column diameter or the thickness of the supported beam until the proposed design works.

2.4.4 How to use the tables

Step 1 (Column profile and handrail loads):

Determine the column profile and if the columns will support handrails. Select the appropriate table.

Step 2 (Column diameter):

Determine the diameter. This is usually based on roof height.

Step 3 (Column height):

Determine the column height.

Step 4 (Beam parameters):

Determine the beam size to be used and the eccentricity of the beam in relation to the centre of the column.

NOTE

Ensure that the eccentricity of the beam to the column is no greater than a quarter of the column's overall diameter i.e. $OD/4$.

Step 5 (Load parameters):

Determine either the roof area or the ULS load to be supported by the column.

Step 6 (Check):

Ensure that ULS loading or maximum supported roof area read from the table is greater than the calculated load or supported roof area obtained in Step 5.

TABLE 1

ARTISTA CLASSIC COLUMNS - NO HANDRAIL LOADING SUPPORTED ROOF AREAS AND ULS LOADS - EMAX = OD/4 (see Figure 18 Section A-A)													
OD (ID) (mm)	COLUMNS HEIGHT (mm)	B _{MIN} = 35mm			B _{MIN} = 45mm			B _{MIN} = 70mm			B _{MIN} = 90mm		
		Ult. load (kN)	Supported roof area (m ²)		Ult. load (kN)	Supported roof area (m ²)		Ult. load (kN)	Supported roof area (m ²)		Ult. load (kN)	Supported roof area (m ²)	
			Sheet roof	Tiled roof		Sheet roof	Tiled roof		Sheet roof	Tiled roof		Sheet roof	Tiled roof
195 (176)	Up to 3000	6.8	10.1	4.3	6.8	10.1	4.3	6.8	10.1	4.3	6.8	10.1	4.3
	3600	5.2	7.7	3.3	5.2	7.7	3.3	5.2	7.7	3.3	5.2	7.7	3.3
	4000	4.4	6.6	2.8	4.4	6.6	2.8	4.4	6.6	2.8	4.4	6.6	2.8
250 (233)	Up to 3000	10.3	15.3	6.5	10.3	15.3	6.5	10.3	15.3	6.5	10.3	15.3	6.5
	3600	8.8	13.0	5.6	8.8	13.0	5.6	8.8	13.0	5.6	8.8	13.0	5.6
	4000	7.6	11.3	4.8	7.6	11.3	4.8	7.6	11.3	4.8	7.6	11.3	4.8
345 (304)	Up to 4000	27.1	40.2	17.2	32.7	48.5	20.8	32.7	48.5	20.8	32.7	48.5	20.8
	5000	27.1	40.2	17.2	27.4	40.6	17.4	27.4	40.6	17.4	27.4	40.6	17.4
	6000	21.3	31.6	13.5	21.3	31.6	13.5	21.3	31.6	13.5	21.3	31.6	13.5
425 (380)	Up to 6000	29.6	43.9	18.8	38.2	56.6	24.2	39.0	57.7	24.7	39.0	57.7	24.7

TABLE 2

ARTISTA TAPERED COLUMNS - NO HANDRAIL LOADING SUPPORTED ROOF AREAS AND ULS LOADS - EMAX = OD/4 (see Figure 18 Section A-A)													
OD (ID) (mm)	COLUMNS HEIGHT (mm)	B _{MIN} = 35mm			B _{MIN} = 45mm			B _{MIN} = 70mm			B _{MIN} = 90mm		
		Ult. load (kN)	Supported roof area (m ²)		Ult. load (kN)	Supported roof area (m ²)		Ult. load (kN)	Supported roof area (m ²)		Ult. load (kN)	Supported roof area (m ²)	
			Sheet roof	Tiled roof		Sheet roof	Tiled roof		Sheet roof	Tiled roof		Sheet roof	Tiled roof
195/250 (176)	Up to 3000	12.5	18.5	8.0	12.5	18.5	8.0	12.5	18.5	8.0	12.5	18.5	8.0
	3600	10.7	15.8	6.8	10.7	15.8	6.8	10.7	15.8	6.8	10.7	15.8	6.8
	4000	9.6	14.2	6.1	9.6	14.2	6.1	9.6	14.2	6.1	9.6	14.2	6.1
250/345	Up to 4000	11.2	16.6	7.1	14.5	21.5	9.2	17.3	25.6	11.0	17.3	25.6	11.0
345/425 (304)	Up to 4000	27.1	40.2	17.2	35.0	52.0	22.2	52.3	77.5	33.2	52.3	77.5	33.2

TABLE 3

ARTISTA CLASSIC COLUMNS - WITH HANDRAIL LOADING SUPPORTED ROOF AREAS AND ULS LOADS - EMAX = OD/4 (see Figure 18 Section A-A)													
OD (ID) (mm)	COLUMNS HEIGHT (mm)	B _{MIN} = 35mm			B _{MIN} = 45mm			B _{MIN} = 70mm			B _{MIN} = 90mm		
		Ult. load (kN)	Supported roof area (m ²)		Ult. load (kN)	Supported roof area (m ²)		Ult. load (kN)	Supported roof area (m ²)		Ult. load (kN)	Supported roof area (m ²)	
			Sheet roof	Tiled roof		Sheet roof	Tiled roof		Sheet roof	Tiled roof		Sheet roof	Tiled roof
250 (233)	Up to 3000	6.9	10.2	4.4	6.9	10.2	4.4	6.9	10.2	4.4	6.9	10.2	4.4
	3600	5.7	8.5	3.6	5.7	8.5	3.6	5.7	8.5	3.6	5.7	8.5	3.6
	4000	5.1	7.6	3.2	5.1	7.6	3.2	5.1	7.6	3.2	5.1	7.6	3.2
345 (304)	Up to 4000	27.1	40.2	17.2	32.7	48.5	20.8	32.7	48.5	20.8	32.7	48.5	20.8
	5000	25.8	38.2	16.4	25.8	38.2	16.4	25.8	38.2	16.4	25.8	38.2	16.4
	6000	20.3	30.1	12.9	20.3	30.1	12.9	20.3	30.1	12.9	20.3	30.1	12.9
425 (380)	Up to 4000	27.1	40.2	17.2	35.0	51.9	22.2	47.1	69.9	29.9	47.1	69.9	29.9

TABLE 4

**ARTISTA TAPERED COLUMNS - WITH HANDRAIL LOADING
SUPPORTED ROOF AREAS AND ULS LOADS - EMAX = OD/4 (see Figure 18 Section A-A)**

OD (ID) (mm)	COLUMNS HEIGHT (mm)	B _{MIN} = 35mm			B _{MIN} = 45mm			B _{MIN} = 70mm			B _{MIN} = 90mm		
		Ult. load (kN)	Supported roof area (m ²)		Ult. load (kN)	Supported roof area (m ²)		Ult. load (kN)	Supported roof area (m ²)		Ult. load (kN)	Supported roof area (m ²)	
			Sheet roof	Tiled roof		Sheet roof	Tiled roof		Sheet roof	Tiled roof		Sheet roof	Tiled roof
195/250 (176)	Up to 3000	5.0	7.4	3.1	5.0	7.4	3.1	5.0	7.4	3.1	5.0	7.4	3.1
	3600	4.4	6.5	2.8	4.4	6.5	2.8	4.4	6.5	2.8	4.4	6.5	2.8
	4000	4.0	5.9	2.5	4.0	5.9	2.5	4.0	5.9	2.5	4.0	5.9	2.5
250/345 (233)	Up to 4000	8.2	12.1	5.2	8.2	12.1	5.2	8.2	12.1	5.2	8.2	12.1	5.2
250/345 (233)	Up to 4000	27.1	40.2	17.2	35.0	51.9	22.2	47.1	69.9	29.9	47.1	69.9	29.9

NOTES FOR TABLES 1 TO 4

- These tables have been prepared with reference to the relevant provisions of AS 3600 – 2001 'Concrete Structures', AS 3700 – 1998 'Masonry Structures' and AS 1720.1 – 1997 'Timber structures – design methods'.
- Tables 1 to 4 were prepared by consulting engineers Cardno (NSW) Pty Ltd.
- For intermediate column heights use the load capacity or roof area for the greater column height.
- The above tables are based upon the limitations and construction details given in this manual.
- Maximum wind classification is Region A Non-Cyclonic Terrain Category 3 to AS 1170.2 – 2002 or W41 Non-Cyclonic to AS 4055.
- The tables do not take bracing loads into account. The bracing capacity of the columns is assumed to be zero.
- Supported roof areas are based upon the following max. roof masses: tiled roof 100kg/m², sheet roof 25kg/m² plus live load and load factors in accordance with AS1170.0 – 2002 and AS 1170.1 – 2002.
- The tables assume that the tops of the columns are securely laterally restrained in position by the roof framing diaphragm.
- The tables assume that the supported roof beams are of F14 minimum stress grade or S3 strength group timber in accordance with AS 1720.1 – 1997, 'SAA Timber Structures Code'.
- Ends of columns must be cut square.
- These tables do not apply if columns have cut outs. The tables are based upon the installation of the Artista columns in accordance with the typical details referred to in Clause 11.2.
- The installed widths of the neoprene bearing pads beneath the timber beams must be at least 5mm greater than the width of the overlying timber.
- The above tables require that both side walls of the columns are loaded equally as detailed in Figure 18.

2.5 CONCRETE FILLED COLUMNS – LOAD-BEARING

Artista columns must be used as formwork only in steel reinforced concrete filled applications.

The capacities provided in the tables have been prepared and certified by Cardno MBK consulting engineers, and are provided as guidance to the structural engineer. The requirements of AS 3600 'Concrete Structures' and AS/NZS 1170 must be adhered to. This includes the appropriate loading combinations as well as the requirements of this manual.

ULS capacities are provided as follows:

- Table 5 – ULS axial capacities for pinned base footings
- Table 6 – ULS axial capacities for fixed base footings
- Table 7 – ULS uplift capacity
- Table 8 – ULS horizontal capacity for fixed base footings only

TABLE 5

ULS AXIAL COMPRESSION CAPACITIES (kN) FOR PINNED BASE FOOTING (see Figure 27)											
OD (ID) (mm)	COLUMNS HEIGHT (mm)	$B_{MAX} = OD/3$					$B_{MAX} = OD/2 + 50mm$				
		COLUMN REINFORCEMENT					COLUMN REINFORCEMENT				
		One N16	Three N12	Three N16	Four N12	Four N16	One N16	Three N12	Three N16	Four N12	Four N12
195 (176)	Up to 900	66	105	125	115	139	23	37	53	50	64
	1800	23	52	82	75	96	10	22	36	36	49
	2400	13	36	65	61	79	7	18	30	31	44
	3000	8	27	52	48	65	5	15	25	27	39
	3600	5	20	40	39	54	3	12	22	23	34
	4000	4	17	34	34	48	3	11	20	21	31
250 (233)	Up to 900	119	169	206	188	227	44	56	85	84	111
	1800	65	98	152	145	186	31	42	71	69	97
	2400	51	76	125	124	165	26	36	65	63	90
	3000	41	60	105	106	145	22	31	59	57	84
	3600	33	49	90	91	127	19	27	53	52	77
	4000	28	43	81	82	116	17	25	50	49	73
345 (304)	Up to 1800	148	199	262	250	314	56	73	107	102	157
	2400	103	128	191	191	270	47	62	95	90	142
	3000	88	110	167	168	249	42	58	89	84	135
	3600	75	99	152	148	228	38	54	85	78	128
	4000	67	86	134	136	214	35	50	79	74	123
425 (380)	Up to 1800	232	281	362	354	439	77	103	144	134	206
	2400	177	209	274	277	384	68	92	131	121	190
	3000	156	185	248	249	359	63	87	125	115	183
	4000	126	152	207	207	316	56	79	114	104	169

TABLE 6

ULS AXIAL COMPRESSION CAPACITIES (kN) FOR FIXED BASE FOOTING (see Figure 28)											
OD (ID) (mm)	COLUMNS HEIGHT (mm)	$B_{MAX} = OD/3$					$B_{MAX} = OD/2 + 50mm$				
		COLUMN REINFORCEMENT					COLUMN REINFORCEMENT				
		One N16	Three N12	Three N16	Four N12	Four N16	One N16	Three N12	Three N16	Four N12	Four N12
195 (176)	Up to 900	66	105	125	115	139	23	37	53	50	64
	1800	30	62	91	84	106	13	25	39	39	53
	2400	18	45	74	69	90	9	20	33	34	47
	3000	12	34	61	57	76	6	17	28	30	42
	3600	8	26	50	47	64	5	14	25	26	38
	4000	6	22	43	41	58	4	13	22	24	35
250 (233)	Up to 1800	74	112	166	155	195	34	45	75	73	100
	2400	59	88	140	136	177	29	39	69	67	94
	3000	48	71	119	120	160	25	35	63	61	89
	3600	40	59	104	105	143	22	31	58	57	83
	4000	35	52	95	96	133	20	29	55	54	79
345 (304)	Up to 2400	113	141	207	206	281	50	66	98	93	146
	3000	99	123	184	185	264	45	61	93	88	140
	3600	87	108	164	165	247	41	57	88	83	134
	4000	79	99	152	154	235	39	54	85	80	130
425 (380)	Up to 3000	172	202	269	269	378	67	91	130	119	188
	4000	143	171	231	232	342	60	84	120	111	177

NOTES FOR TABLES 5 AND 6

1. These tables have been prepared in accordance with the relevant provisions of AS 3600 – 2001.
2. Only the reinforced concrete component of the columns has been included in the calculations.
3. Interpolate ULS load capacities for intermediate heights.
4. The tables are based on a minimum class of concrete of N25 (25MPa), with 80mm slump and 10mm maximum aggregate size.
5. The tables are based upon an exposure classification of A2 to AS 3600 – 2001. For a more severe exposure classification consult a structural engineer.
6. These tables take into account wind loading to a maximum wind classification of Region A Non-Cyclonic Terrain Category 3 to AS 1170.2 – 2001 or W41 Non-Cyclonic as well as handrail loadings.
7. Column load capacities have been calculated on the basis that the columns are not subject to any other significant transverse loads between ends.
8. Columns with pinned base footings are not suitable for horizontal bracing.
9. Cover to the tie reinforcement is to be 20mm. Single bar reinforcement is to be located centrally in the column.
10. All reinforcement ties or helices are to be 6mm diameter (min) for all columns. Tie spacing is to be 150mm (max) for 195 OD columns. For all other columns adopt 150mm (max) for N12 reinforcement and 200mm (max) for N16 reinforcement.
11. All concrete must be compacted in layers by mechanical vibration to achieve a uniform consistency over the height of the column.
12. For 195 OD columns where 3 and 4 bar reinforcement is used, no concrete pour is to exceed 2400mm at one time, and additional care is required during concrete placement to ensure compaction.
13. The tables assume that the tops of the columns are securely laterally restrained in position by the roof framing diaphragm.
14. These tables relate to the capacity of the column only. The capacity of the framing members to transfer the loads to the columns is the responsibility of the designer.

TABLE 7

ULS UPLIFT CAPACITY (kN)			
FIXING	GRADE	MIN. FIXING LAP/EMBEDMENT (mm)	ULS UPLIFT FORCE PER BAR (kN)
M10	Grade 250	250	12
	4.6/S	250	18
	8.8/S	400	40
M12	Grade 250	300	17
	4.6/S	300	27
	8.8/S	550	58
M16	Grade 250	400	31
	4.6/S	450	50
	8.8/S	900	104
N12	500MPa	400	50
N16	500MPa	650	90

NOTES FOR TABLE 7

1. ULS uplift (tie down) capacities are based on the capacity of the fixings only.
2. ULS uplift capacities assume zero co-existing shear force.
3. Embedded fixings must have a minimum clear cover to the column wall of 50mm, and a minimum spacing of 75mm, and must be installed in accordance with the requirements of AS 3600 – 2001.

TABLE 8

ULS HORIZONTAL REINFORCEMENT CAPACITY (kN) FOR FIXED BASE FOOTING ONLY (see Figure 28)									
OD (ID) (mm)	Column height (mm)	One M12 4.6/S Min	One M16 4.6/S Min	One N12	One N16	Three N12	Three N16	Four N12	Four N16
195 (176)	600	3.0	4.7	3.5	5.0	8.0	10.5	11.5	19.3
	900	2.0	3.1	2.3	3.3	5.3	7.0	7.7	12.9
	1800	1.0	1.6	1.2	1.7	2.7	3.5	3.8	6.4
	2400	0.8	1.2	0.9	1.3	2.0	2.6	2.9	4.8
	3000	0.6	0.9	0.7	1.0	1.6	2.1	2.3	3.9
	3600	0.5	0.8	0.6	0.8	1.3	1.8	1.9	3.2
	4000	0.5	0.7	0.5	0.8	1.2	1.6	1.7	2.9
250 (233)	600	5.0	8.5	6.0	10.0	13.2	25.0	20.8	35.0
	900	3.3	5.7	4.0	6.7	8.8	16.7	13.9	23.3
	1800	1.7	2.8	2.0	3.3	4.4	8.3	6.9	11.7
	2400	1.3	2.1	1.5	2.5	3.3	6.3	5.2	8.8
	3000	1.0	1.7	1.2	2.0	2.6	5.0	4.2	7.0
	3600	0.8	1.4	1.0	1.7	2.2	4.2	3.5	5.8
	4000	0.8	1.3	0.9	1.5	2.0	3.8	3.1	5.3
345 (404)	600	7.3	12.7	8.8	15.5	23.3	37.7	31.0	52.2
	900	4.9	8.4	5.9	10.3	15.6	25.1	20.7	34.8
	1800	2.4	4.2	2.9	5.2	7.8	12.6	10.3	17.4
	2400	1.8	3.2	2.2	3.9	5.8	9.4	7.8	13.0
	3000	1.5	2.5	1.8	3.1	4.7	7.5	6.2	10.4
	3600	1.2	2.1	1.5	2.6	3.9	6.3	5.2	8.7
	4000	1.1	1.9	1.3	2.3	3.5	5.7	4.7	7.8
425 (380)	600	9.7	16.8	11.8	20.8	34.7	53.8	42.3	70.8
	900	6.4	11.2	7.9	13.9	23.1	35.9	28.2	47.2
	1800	3.2	5.6	3.9	6.9	11.6	17.9	14.1	23.6
	2400	2.4	4.2	3.0	5.2	8.7	13.5	10.6	17.7
	3000	1.9	3.4	2.4	4.2	6.9	10.8	8.5	14.2
	3600	1.6	2.8	2.0	3.5	5.8	9.0	7.1	11.8
	4000	1.5	2.5	1.8	3.1	5.2	8.1	6.4	10.6

NOTES FOR TABLE 8

1. Interpolate ULS design load capacities for intermediate heights.
2. The user must ensure that the column deflections at the adopted bracing loads are appropriate for the structure being designed.

3 FRAMING

3.1 GENERAL

All framing and supports used in conjunction with Artista columns must be in accordance with the BCA, standards, regulations and the manufacturer's specifications.

NOTE : Do not concrete encase timber posts.

3.2 STRUCTURAL GRADE

Use only seasoned timber. Unseasoned timber must not be used because it is prone to excessive shrinkage.

Steel framing must have the appropriate structural grade as per the structural engineer's specifications.

3.3 DURABILITY

Framing must be kept as dry as possible at all times.

'Timber used for house construction must have the level of durability appropriate for the relevant climate and expected service life and conditions including exposure to insect attacks or to moisture, which could cause decay.' Reference AS 1684.2 'Residential timber-framed construction'.

The above statement is also applicable for all other types of construction outside the scope of AS 1684.2 for timber framing used with Artista columns. Steel framing must have the appropriate level of durability required to prevent corrosion.

4 INSTALLATION

4.1 GENERAL

Where the column is required to cover a timber or steel post, James Hardie recommends that the column is installed around the internal load-bearing post before erection of the structure above.

Installing the column after the support posts and associated structure have been fixed in place will require the use of split columns.

When installed the Artista columns must not be in contact with the ground nor free to fill up with water, to ensure durability.

4.2 COLUMN FIXING BRACKET

James Hardie has purpose-designed centering brackets that can be used to retrofit Artista columns onto verandahs. The process involves fixing the centering brackets to the floor and roof beam, then jacking the roof up by 30mm, inserting the column and lowering the roof onto the column. For details see Figure 1.

Column fixing brackets (Pryda) can be used with Artista classic columns up to OD 250mm and Artista tapered columns up to OD 345mm.

NOTE

When ordering column fixing brackets (Pryda) for Artista tapered columns, the nominal overall diameter (OD) at the top must be used to select the bracket (see Section 10).

Install the column fixing bracket as follows:

Step 1: Align and fix brackets to floor and under soffit prior to column installation. Provide oversized holes in brackets and oversized washers for ease of alignment. Align top and bottom brackets using a straight edge and tighten fasteners once aligned. See Figures 2 and 3.

Step 2: Prop roof to provide required clearance for column installation. The propping of the roof must be carried out in accordance with the structural engineer's requirements. See Figure 4.

Step 3: Insert neoprene rubber bearing material between beam underside and the top of the column walls. Slowly release propping once column is aligned. See Figure 5.

Step 4: Fix hoop strap, where required, to structural engineer's details. See Figure 6.

4.3 REINFORCED CONCRETE COLUMNS

NOTE

Ensure that columns are dry before pouring concrete otherwise the column wall may crack.

4.3.1 Installation method 1

1. Temporarily raise column upward sufficient for access. Laterally support column as required.
2. Insert fabricated reinforcement cage in column, tying to starter bars at base.
3. Remove temporary supports and lower column to final position. See Figure 7.

4.3.2 Installation method 2

1. Tie reinforcement fully into place.
2. Lift column and lower over reinforcement.

4.3.3 Placing reinforcement

The reinforcement must be installed to the specifications of the structural engineer.

4.3.4 Construction gaps

An appropriate construction gap must be provided between the top of the column and the underside of the concrete slab (or the bottom of the column if the column is pinned) so that loads are not supported on column walls, see Figure 8.

One method of achieving this is to use a self-adhesive EPDM rubber gasket adhered to the top (or bottom) of the column.

4.4 FITTING ACCESSORIES

4.4.1 General

James Hardie Artista column accessories are an attractive, easy to install way of adding detail to your columns. These accessories can be fitted using the epoxy or dowel method described below.

4.4.2 Epoxy method

Apply sufficient masonry compatible epoxy adhesive (for use with cement based products) around the column where the accessory is to be fixed. Place accessory in position and remove excess epoxy from around joint. Support accessory in position using wedges or temporary screws while epoxy cures.

If required, seal any gap between accessory and column with James Hardie joint sealant, a paintable grade polyurethane.

4.4.3 Dowel method

Place the accessory in position and support using wedges. Drill two 7mm holes through accessory and column with masonry drill bit. Do not use hammer drill. Insert 6mm dowels, leaving ends 3mm under external surface.

Fill over dowel holes in accessory ring with a suitable filler, see Figure 9.

4.4.4 Combining accessories

Multiple accessories can be combined at the top or base of a column to develop an individual and distinctive design.

4.4.5 Fitting top accessory to Artista tapered column

If you are fitting an accessory at the top of a Artista tapered column, note that it is not possible to slide the accessory down the column while the column is being installed. Also note that only a single accessory can be fitted to the top of an Artista tapered column.

You will have to either:

- install the column before the roofing or
- split the accessory, and re-fit it after the installation.

5 JOINTING

5.1 GENERAL

If the 345 and 425 diameter Artista classic columns are required to be longer than the maximum stock length of 4m, they can be joined together using James Hardie joiners.

To enable the columns to be joined, one end of the stock length columns is rebated. See Figure 10.

The two types of joiners that are available are the:

1. Rebated joiner – to provide a rebated column finish
2. Flush joiner – to provide a flush finish.

For further details of these joiners refer to Section 10, Components.

8 PRODUCT INFORMATION

5.2 FITTING JOINERS

When using James Hardie joiners fill up the gap with a suitable sandable lightweight epoxy to flush the joint. For more information regarding alignment of the diameters see Figure 11.

NOTE

When using a rebated joiner allow for the extra overall column height.

6 FINISHING

6.1 PREPARATION

Artista columns must be dry before painting.

When applying semi-gloss or gloss finishes it is recommended that the columns be skim-coated with a suitable filler to conceal any minor surface variations.

6.2 SEALANTS

Application and use of sealants must comply with manufacturers' instructions. Sealants, if coated, must be compatible with the paint system.

6.3 PAINTING

To ensure the durability of Artista columns, the columns must be finished with a suitable paint or texture system within 3 months of installation.

James Hardie recommends the application of two coats minimum of a quality acrylic paint to be used in accordance with the paint manufacturer's specifications.

Painting specifications and products depend on the paint company chosen. Refer to your paint manufacturer.

James Hardie does not recommend tiling to Artista columns in an external application.

7 MAINTENANCE

It is the responsibility of the specifier to determine normal maintenance requirements. The extent and nature of maintenance will depend on the geographical location and exposure of the building. As a guide, it is recommended that basic normal maintenance tasks shall include but not be limited to:

- Washing down exterior surfaces every 6-12 months*
- Re-coating exterior protective finishes*
- Cleaning out gutters, blocked pipes and overflows as required.
- Pruning back vegetation which is close to or touching the columns.

*Refer to your paint manufacturer for washing down and recoating requirements related to paint performance.

9.1 GENERAL

Artista columns are a cellulose fibre reinforced cement building product. The basic composition is Portland cement, ground sand, cellulose fibre and water.

Artista columns are manufactured to AS/NZS 2908.2 'Cellulose-Cement Products Part 2: Flat Sheets' (ISO 8336 "Fibre Cement Flat Sheets").

Artista columns are classified Type A, Category 2 in accordance with AS/NZS 2908.2 "Cellulose-Cement Products".

For Material Safety Data Sheets (MSDS) visit www.jameshardie.com.au or Ask James Hardie™ on 13 11 03.

9.2 PRODUCT MASS

Based on equilibrium moisture content the approximate mass of Artista columns is referred to in Section 10.

9.3 DURABILITY

9.3.1 Resistance to moisture/rotting

Artista columns have demonstrated resistance to permanent moisture induced deterioration (rotting) by passing the following tests in accordance with AS/NZS 2908.2:

- Water permeability (Clause 8.2.2)
- Warm water (Clause 8.2.4)
- Heat rain (Clause 6.5)
- Soak dry (Clause 8.2.5)

9.3.2 Resistance to fire

Artista columns are suitable where non-combustible materials are required in accordance with C1.12 of the Building Code of Australia.

Artista columns have been tested by CSIRO and is classified as a Group 1 material in accordance with Specification C1.10a of the BCA.

Artista columns have the following early fire hazard indices (tested to AS 1530 Part 3).

EARLY FIRE HAZARD INDICES (TESTED TO AS 1530) PART 3	
Ignition index	0
Flame spread index	0
Heat evolved index	0
Smoke developed index	0 - 1

9.3.3 Resistance to termite attack

Based on testing completed by CSIRO Division of Forest Products Report Numbers FP349 and FP274 James Hardie fibre cement has demonstrated resistance to termite attack.

9.4 ALPINE REGIONS

In regions subject to freeze/thaw conditions, Artista columns must be painted. In addition, Artista columns must not be in direct contact with snow and/or ice build up for extended periods, e.g. external walls in alpine regions subject to snow drifts over winter.

Tested for resistance to frost in accordance with AS/NZS 2908.2 Clause 8.2.3.

9 SAFE WORKING PRACTICES

WARNING - DO NOT BREATHE DUST AND CUT ONLY IN WELL VENTILATED AREA

James Hardie products contain sand, a source of respirable crystalline silica which is considered by some international authorities to be a cause of cancer from some occupational sources. Breathing excessive amounts of respirable silica dust can also cause a disabling and potentially fatal lung disease called silicosis, and has been linked with other diseases. Some studies suggest smoking may increase these risks. During installation or handling: (1) work in outdoor areas with ample ventilation; (2) minimise dust when cutting by using either 'score and snap' knife, fibre cement shears or, where not feasible, use a HardiBlade® saw blade and dust-reducing circular saw attached to a HEPA vacuum; (3) warn others in the immediate area to avoid breathing dust; (4) wear a properly-fitted, approved dust mask or respirator (e.g. P1 or P2) in accordance with applicable government regulations and manufacturer instructions to further limit respirable silica exposures. During clean-up, use HEPA vacuums or wet cleanup methods - never dry sweep. For further information, refer to our installation instructions and Material Safety Data Sheets available at www.jameshardie.com.au. FAILURE TO ADHERE TO OUR WARNINGS, MATERIAL SAFETY DATA SHEETS, AND INSTALLATION INSTRUCTIONS MAY LEAD TO SERIOUS PERSONAL INJURY OR DEATH.

JAMES HARDIE RECOMMENDED SAFE WORKING PRACTICES

CUTTING OUTDOORS

1. Position cutting station so wind will blow dust away from the user or others in working area.
2. Use a dust reducing circular saw equipped with HardiBlade® saw blade and HEPA vacuum extraction.

DRILLING/OTHER MACHINING

When drilling or machining you should always wear a P1 or P2 dust mask and warn others in the immediate area.

IMPORTANT NOTES

1. NEVER use a power saw indoors.
2. NEVER use a circular saw blade that does not carry the HardiBlade® logo.
3. NEVER dry sweep - Use wet suppression or HEPA vacuum.
4. NEVER use grinders.
5. ALWAYS follow tool manufacturers' safety recommendations.

P1 or P2 respirators should be used in conjunction with above cutting practices to further reduce dust exposures. Additional exposure information is available at www.jameshardie.com.au to help you determine the most appropriate cutting method for your job requirements. If concern still exists about exposure levels or you do not comply with the above practices, you should always consult a qualified industrial hygienist or contact James Hardie for further information.

WORKING INSTRUCTIONS

Refer to recommended safe working practices before starting any sawing or machining.

HardiBlade® saw blade

The HardiBlade® saw blade used with a dust-reducing saw and HEPA vacuum extraction allows for fast, clean cutting of James Hardie fibre cement products.

A dust-reducing saw uses a dust deflector or a dust collector which can be connected to a vacuum system.

NOTES

1. The cut out detail of Figure 33 applies to non load-bearing or reinforced columns only. A cut out in an un-reinforced load-bearing column will invalidate the use of Tables 1 to 4 and must be referred to a professional engineer.
2. You will have to select Artista column accessories to suit the different diameters of the top and base of the tapered column.

Cutting Artista tapered columns to length

If you are cutting a tapered column to suit a particular roof height, and you plan to fit accessories at the top, you must only cut from the base (i.e. the untapered area) of the column. This will ensure that the top and base diameters of the reduced length column remain unchanged so accessories will still fit.

STORAGE AND HANDLING

To avoid damage, all James Hardie building products should be stored with edges and corners of the sheets protected from chipping.

James Hardie building products must be installed in a dry state and protected from rain during transport and storage. The product must be laid flat under cover on a smooth level surface clear of the ground to avoid exposure to water, moisture, etc.

QUALITY

James Hardie conducts stringent quality checks to ensure any product manufactured falls within our quality spectrum. It is the responsibility of the builder to ensure the product meets aesthetic requirements before installation. James Hardie will not be responsible for rectifying obvious aesthetic surface variations following installation.

10 COMPONENTS

ARTISTA COLUMNS

Nominal overall dia (mm)	Nominal internal dia (mm)	Stock lengths (m)	Mass approx.	
			kg/m	kg
195	176	2.75	9.3	25.6
		4.0	9.3	37.2
250	233	2.75	11.7	32.2
		4.0	11.7	46.8
345	304	2.75	32.1	88.3
		4.0	32.1	128.4
425	380	2.75	44	121
		4.0	44	176
Nominal overall dia at base (mm)	Nominal overall dia at top (mm)	Nominal internal dia (mm)	Stock lengths (m)	Column mass approx. (kg)
250	195	176	2.75	82
			4.0	118
345	250	233	2.75	155
			4.0	225
425	345	304	2.75	229
			4.0	333

ARTISTA COLUMN ACCESSORIES

BASES AND CAPITALS OVERALL DIAMETER AND HEIGHTS (mm)

Type		To suit column OD (mm)				Type		To suit column OD (mm)			
		195	250	345	425			195	250	245	425
	Outside dia	265	336	441	525		Outside dia	259	314	407	487
	Height	35	43	50	58		Height	55	55	55	55
	Outside dia	261	350	445	525		Outside dia	259	314	407	487
	Height	54	70	80	100		Height	30	30	30	30
	Outside dia	259	314	407	487		Outside dia	359	431	521	602
	Height	60	60	60	60		Height	95	95	95	95

JOINING SLEEVES OVERALL DIAMETER AND HEIGHTS (mm)

Type		To suit column OD (mm)		Type		To suit column OD (mm)	
		345	425			345	425
	Outside dia	311	389		Outside dia	336	416
	Height	80	80		Height	140	140

ARTISTA COLUMN FIXING BRACKET (PRYDA) TO FIT COLUMNS

	James Hardie code	300041	300073
	195 classic	√	
	250 classic		√
	250 tapered	√	
	345 tapered		√

NOTE: The centring brackets are folded from 1.2mm zincalume strapping 50mm wide to suit the column ID.

COMPONENTS NOT SUPPLIED BY JAMES HARDIE

James Hardie recommends the following products for use in conjunction with its Artista columns. James Hardie does not supply these products and does not provide a warranty for their use. Please contact the component manufacturers for information on their warranties and further information on their products.

Megapoxy P1

Hilti CA125

1 to 1.6mm thick galvanised metal angles

Dynabolts

Non shrink grout

Hoop iron

EPDM gasket

Concrete and steel reinforcement (rapid setting concrete or concrete accelerators must not be used).

Neoprene bearing pad

11 CONSTRUCTION DETAILS

11.1 DECORATIVE COLUMNS

11.1.1 Decorative – unfilled

For typical decorative installation details, see Figure 12. Other methods may be used, provided columns are adequately secured at top and base.

Half columns can be used to provide a decorative finish to walls to match columns. For wall detail see Figure 13.

11.1.2 Decorative – internal load-bearing post

In this application, the column hides an internal steel or timber post and the internal post carries the load. It is the responsibility of the structural engineer to design the supporting timber or steel post.

To install columns around an internal post before roofing, see Figures 14, 15 and 16.

To retrofit columns around an internal post after the roof has been installed see Figure 17.

11.2 UNFILLED COLUMNS – LOAD-BEARING

11.2.1 General

Artista columns can be used in load bearing applications where the walls of the column supports the structure above, refer to Clause 2.4.

For a typical load-bearing unfilled column details, see Figure 18.

11.2.2 Handrail fixing details

For handrail fixing details, see Figure 19.

11.2.3 Fixing unfilled column bases

(a) Without accessory

Pre-drill columns with oversize diameter holes and countersink screws by 4mm. Use countersunk head self-drilling screws and fill over with Hilti CA 125 epoxy, Megapoxy P1 or equivalent.

(b) With accessory

Where fasteners are covered by base/capital accessory, pre-drill columns with oversize diameter holes. Use Type 17 self-embedding head screws.

For fixing bases to floor see Figures 20 and 21.

11.3 STEEL REINFORCED CONCRETE FILLED COLUMNS – LOAD-BEARING

11.3.1 General

The ULS load capacities of James Hardie Artista column are provided in Clause 2.5. It is the responsibility of the structural engineer to certify the suitability and capacity of the steel reinforced concrete filled columns for any given project.

For typical column details, see Figure 22.

11.3.2 Concrete

Concrete used must be in accordance with the structural engineer's specifications and AS 1379 'Specification and supply of concrete'. All concrete must be internally vibrated into place.

The capacities provided in Clause 2.5 are based on a minimum class of concrete of N25 (25MPa), with 80mm slump and 10mm maximum aggregate size.

NOTE

Rapid-setting concrete or concrete set accelerator admixture must not be used.

11.3.3 Cover

Reinforcement cover must be in accordance with the structural engineer's specifications.

The capacities provided in Clause 2.5 are based on cover to the tie reinforcement of 20mm. Single bar reinforcement is to be located centrally in the column.

11.3.4 Reinforcement

Steel reinforcement must be in accordance with the structural engineer's specifications and AS 3600 – 2001.

For typical reinforcement arrangements, see Figures 23 to 26.

11.3.5 Starter bars

Starter bars at the bases of columns must have the same configuration as the column reinforcement. Provide a column starter bar to each column reinforcing bar. Splicing and development lengths for bars must be as per the structural engineer's specifications.

The capacities provided in Clause 2.5 are based on minimum starter bar lap lengths of 400mm and 650mm (min) for N12 and N16 reinforcement respectively.

11.3.6 Ties

Tie reinforcement must be in accordance to the structural engineer's specifications and AS 3600 – 2001.

The capacities provided in Clause 2.5 are based on ties or helices of 6mm diameter (min) for all columns. Tie spacing is to be 150mm (max) for 195 OD columns. For all other columns adopt 150mm (max) for N12 reinforcement and 200mm (max) for N16 reinforcement.

11.3.7 Connections

11.3.7.1 Base connections

For typical details on base connections see Figures 27 and 28.

NOTE

The load capacity provided in Clause 2.5 is dependant on the end fixing condition i.e. pinned or fixed.

11.3.7.2 Top connections

For typical details of top connections, see Figures 29 to 32.

NOTE

The load eccentricity (E) is measured from the column centreline to the centre of the applied load.

All dimensions given are in millimetres, unless shown otherwise.

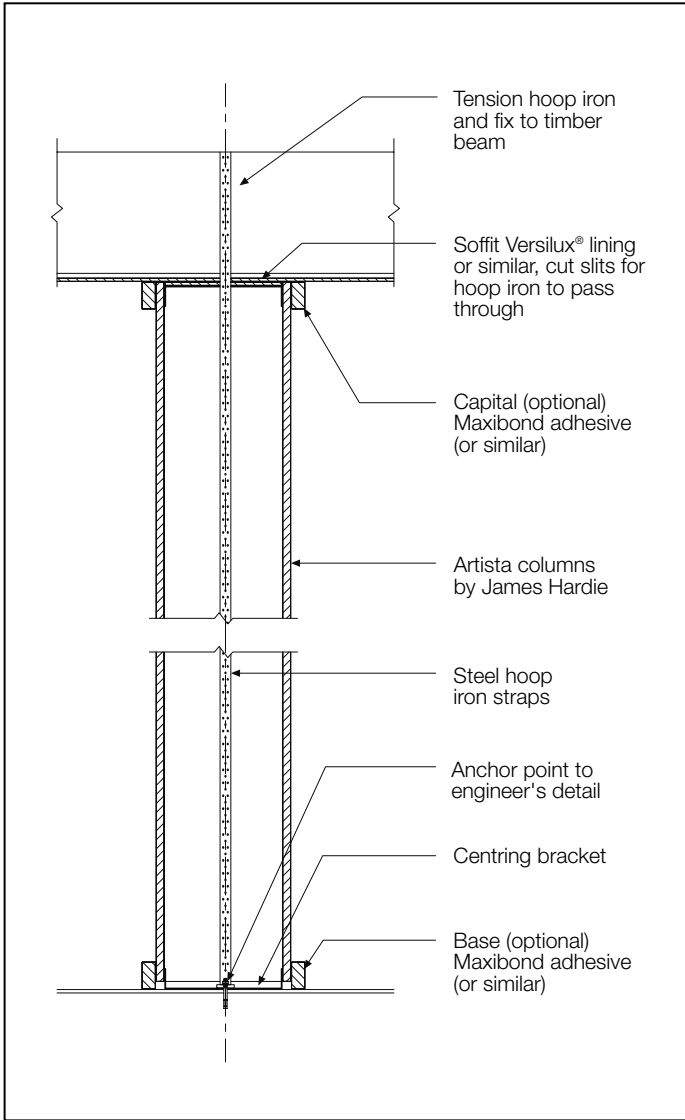


FIGURE 1 PRYDA BRACKET INSTALLATION DETAIL

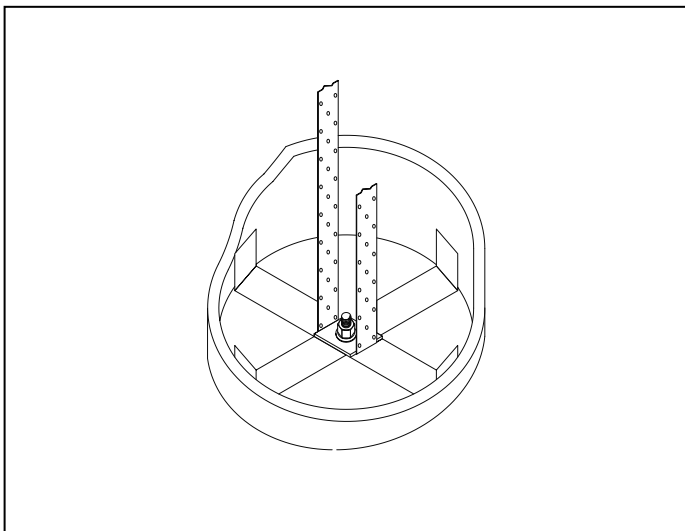


FIGURE 2 STEP 1: CENTRE BRACKET

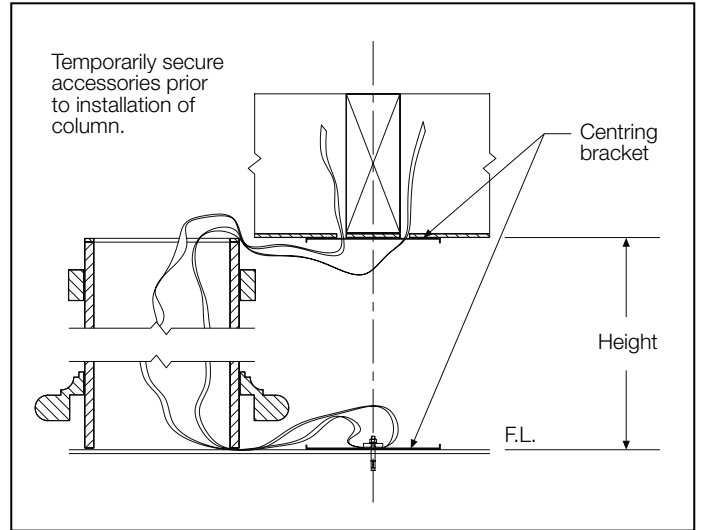


FIGURE 3 STEP 2: HOOP IRON PREPARATION

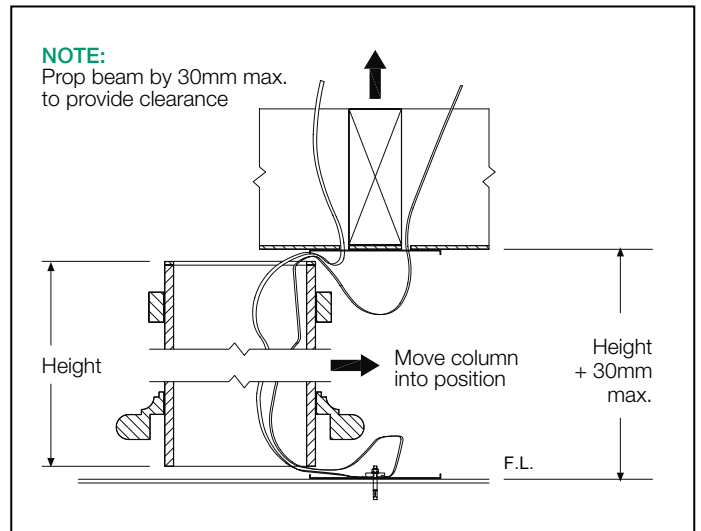


FIGURE 4 STEP 3: PROP AND INSTALL

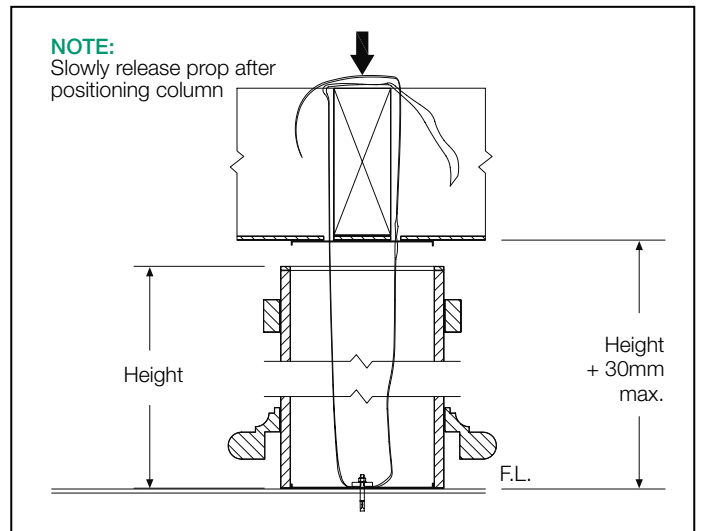


FIGURE 5 PROP REMOVAL

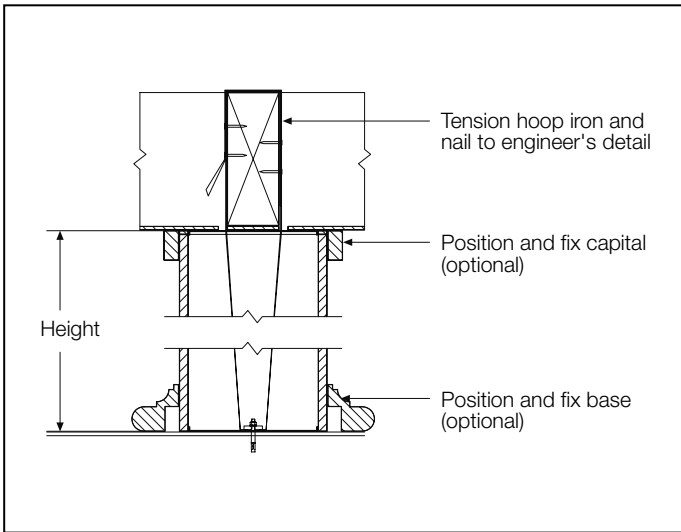


FIGURE 6 STEP 5: FIXING HOOP IRON

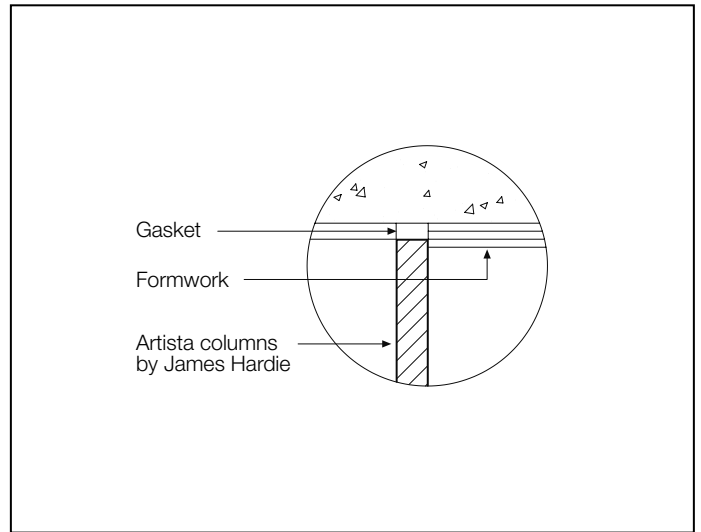


FIGURE 8 CONSTRUCTION GAP

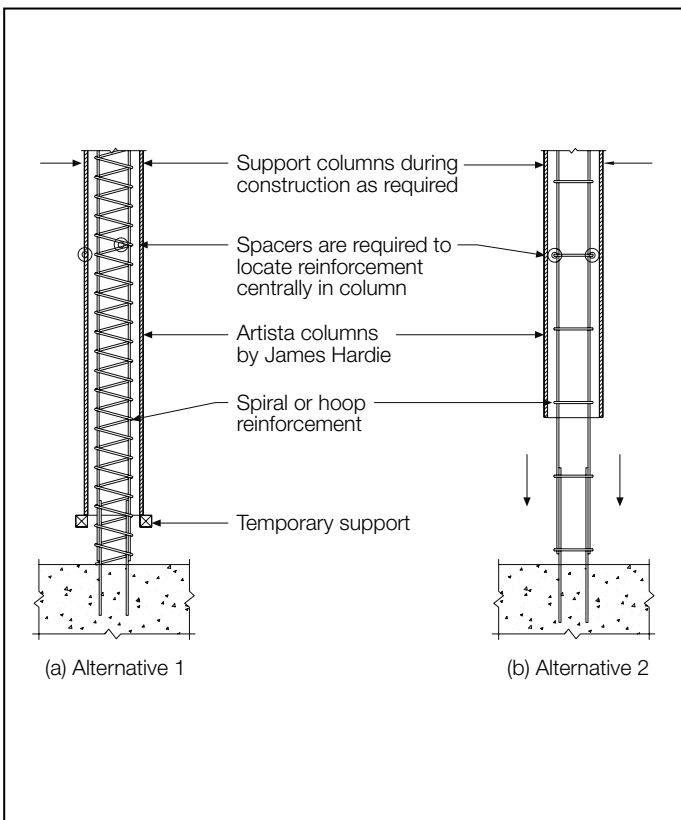


FIGURE 7 REINFORCED COLUMN INSTALLATION DETAIL

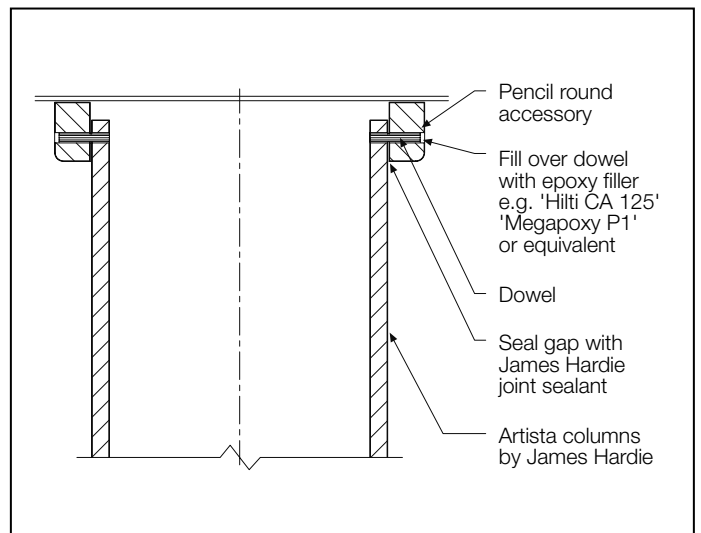


FIGURE 9 ACCESSORY FIXING DETAIL - USING DOWEL

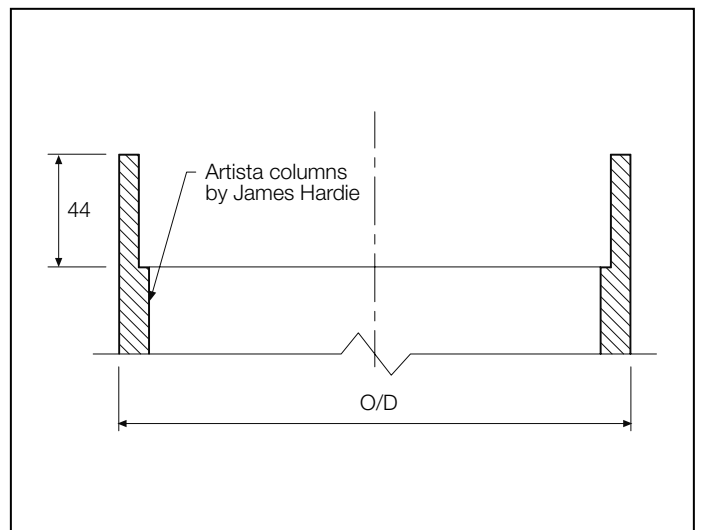


FIGURE 10 DETAIL OF REBATE ENDS (STOCK LENGTH COLUMNS)

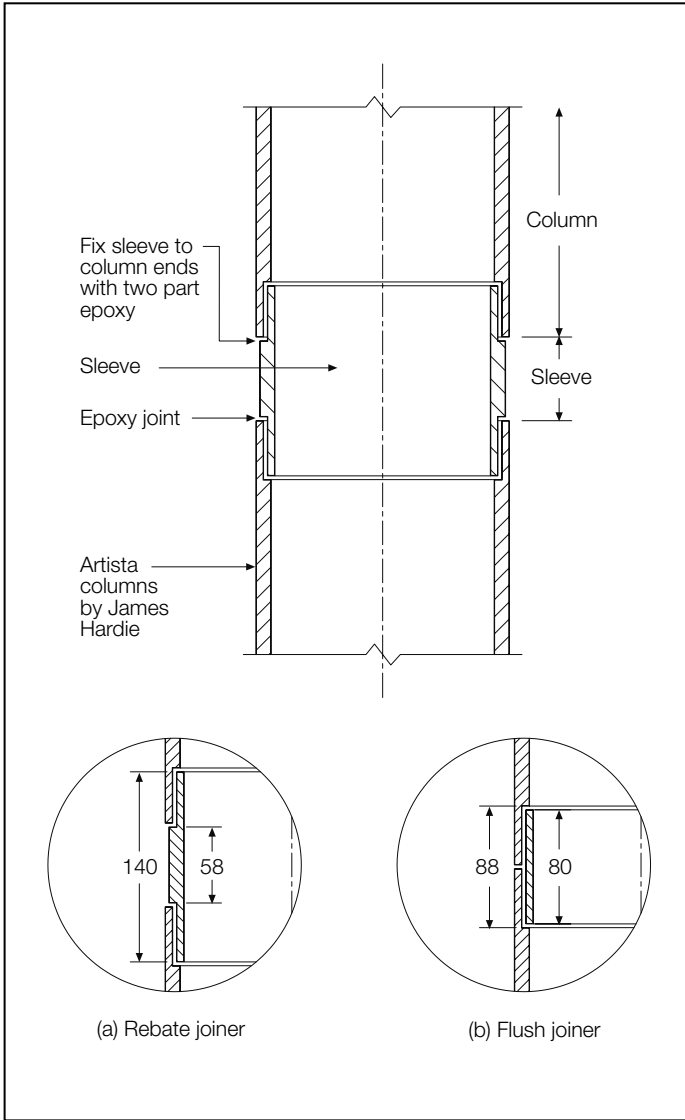


FIGURE 11 JOINERS FOR JAMES HARDIE ARTISTA CLASSIC COLUMNS

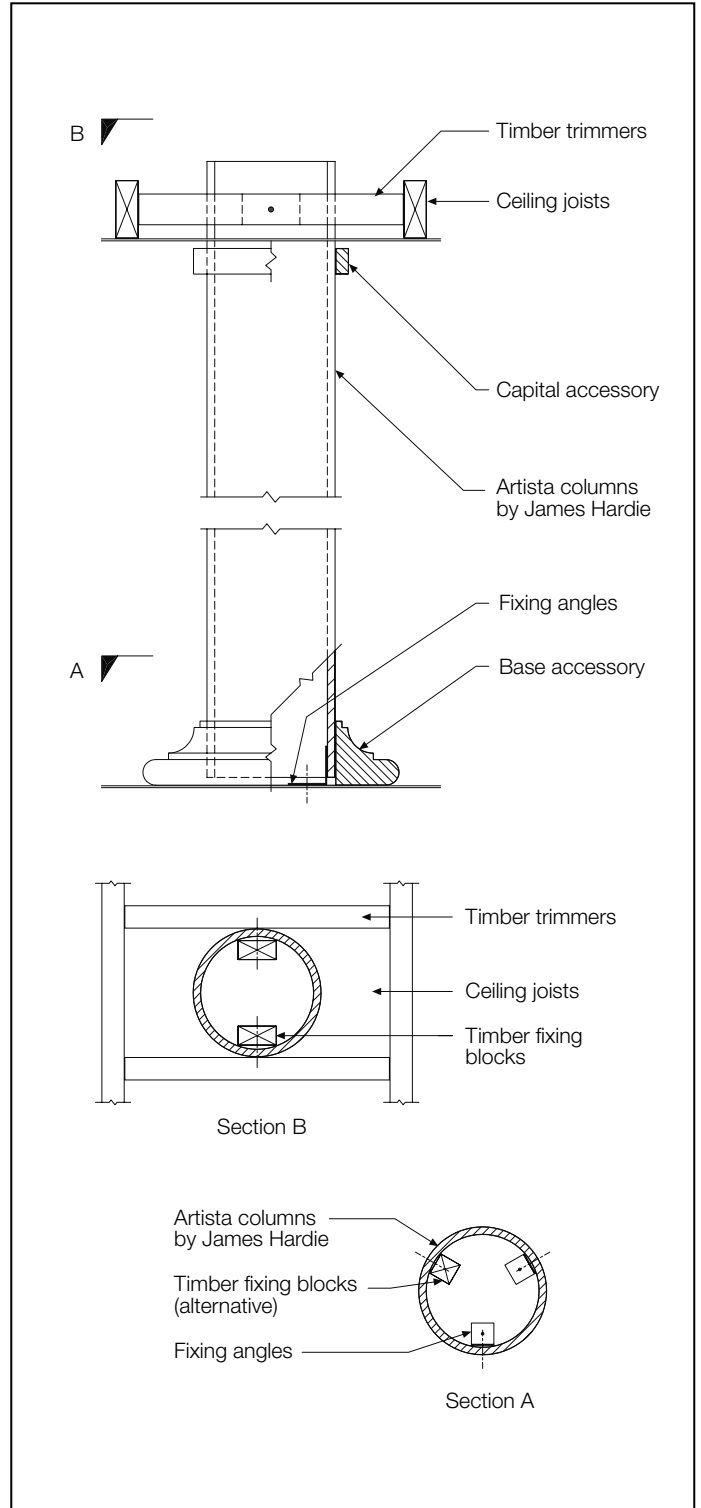


FIGURE 12 TYPICAL DECORATIVE FIXING DETAIL

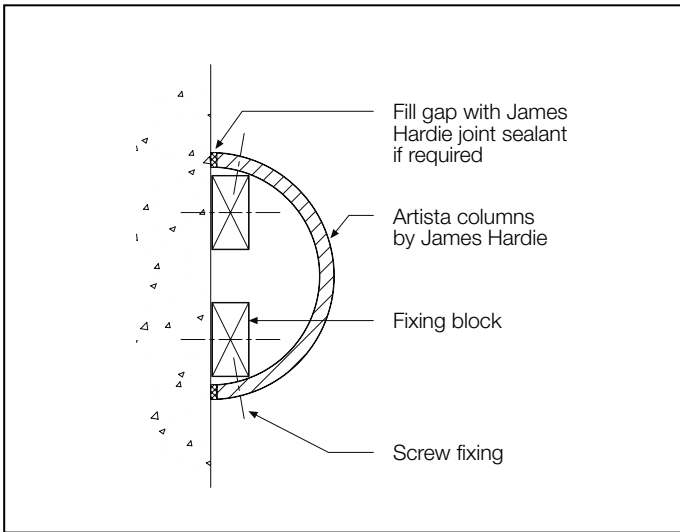


FIGURE 13 DECORATIVE HALF COLUMN TO WALL DETAIL

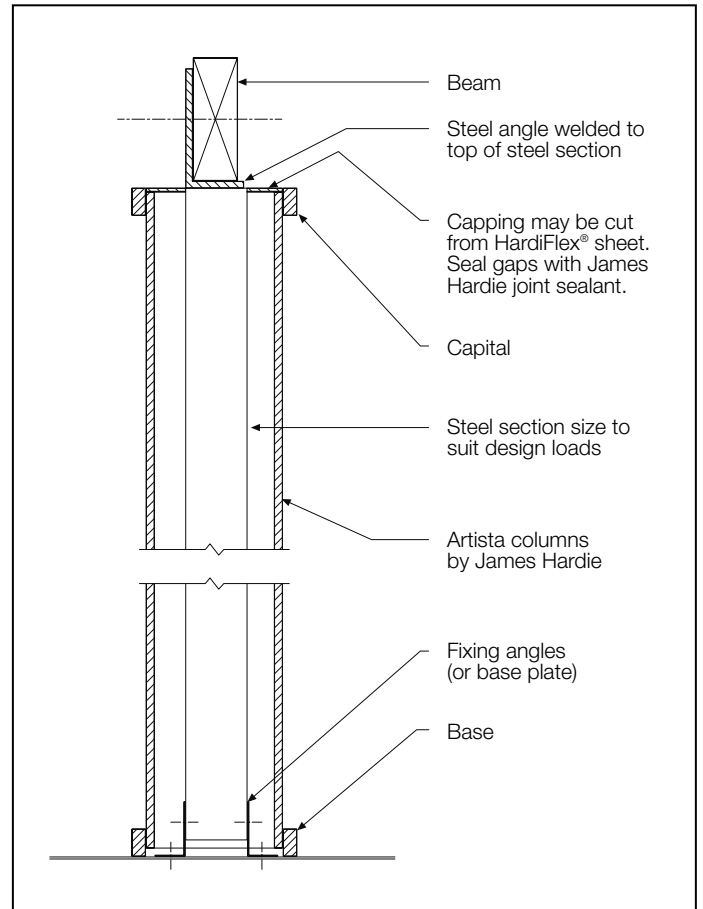


FIGURE 15 STEEL POST FIXING DETAIL

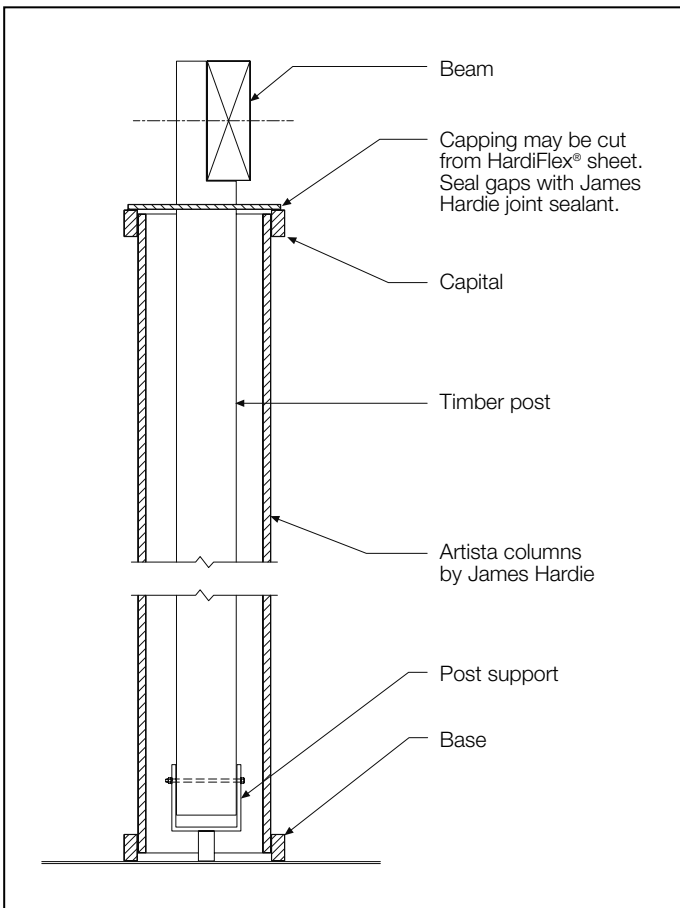


FIGURE 14 TIMBER POST FIXING DETAIL

NOTE

Do not concrete encase timber posts.

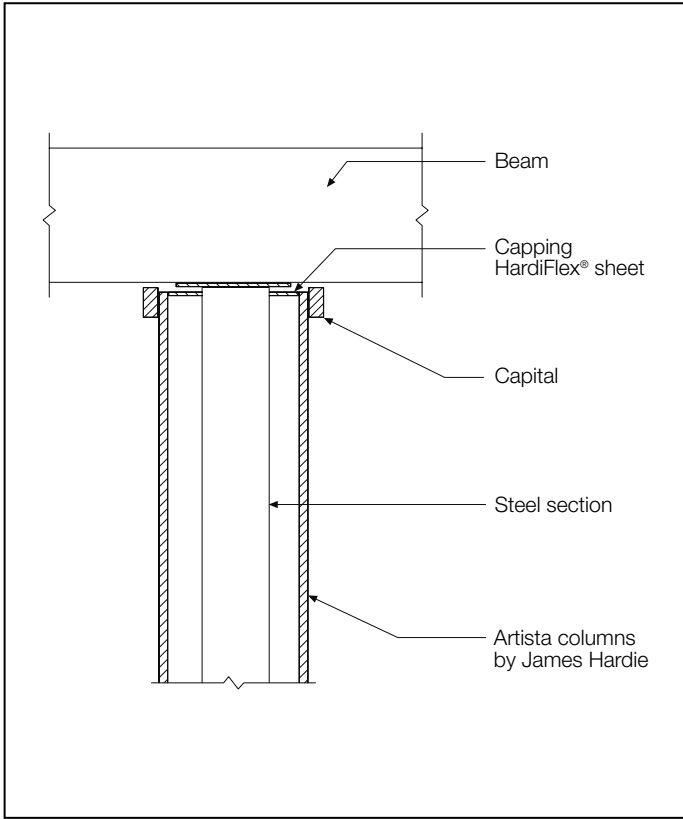


FIGURE 16 ALTERNATIVE STEEL POST FIXING DETAIL

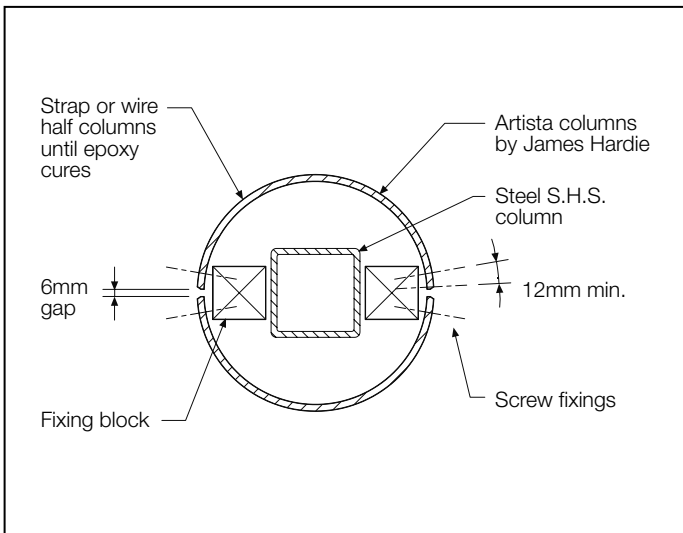


FIGURE 17 JOINING SPLIT COLUMN AROUND AN INTERNAL POST

NOTE
To join columns, use Hilti CA 125, Megapoxy P1 or equivalent epoxy. As the joint may be difficult to conceal, James Hardie recommends the use of high-build texture coating to hide joints.

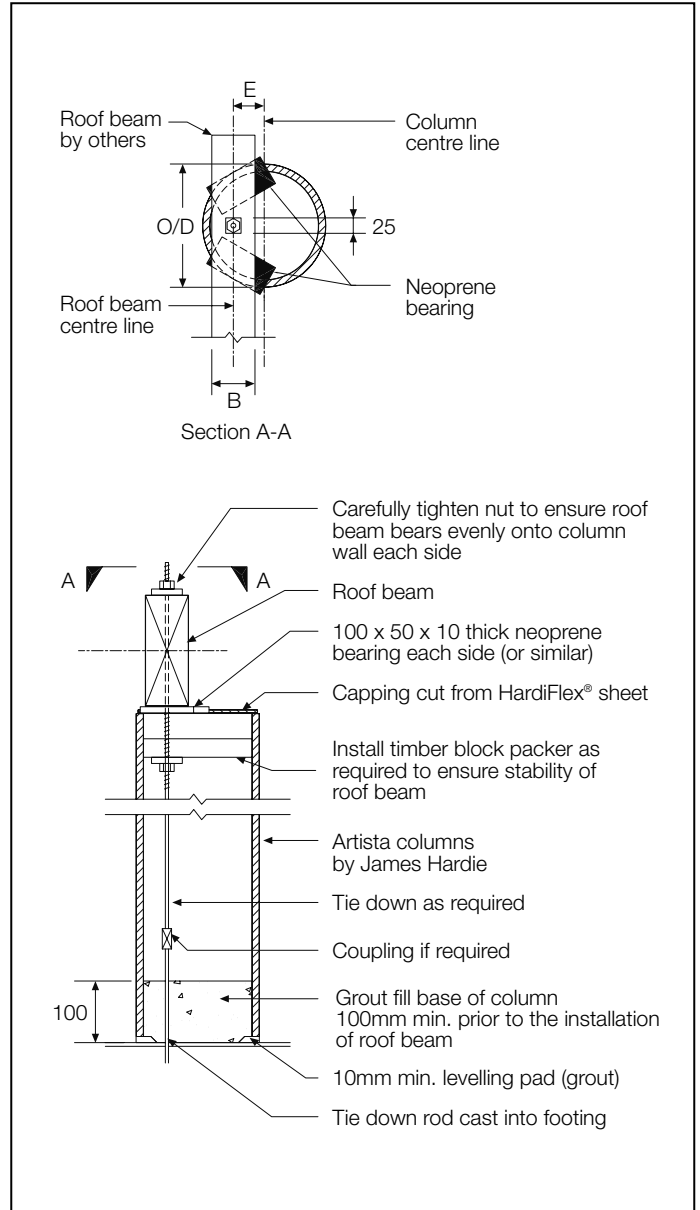


FIGURE 18 UNFILLED COLUMN LOAD-BEARING DETAIL

NOTE
In designs where uplift is not an issue the tie down can be omitted. Consult your structural engineer for requirements.

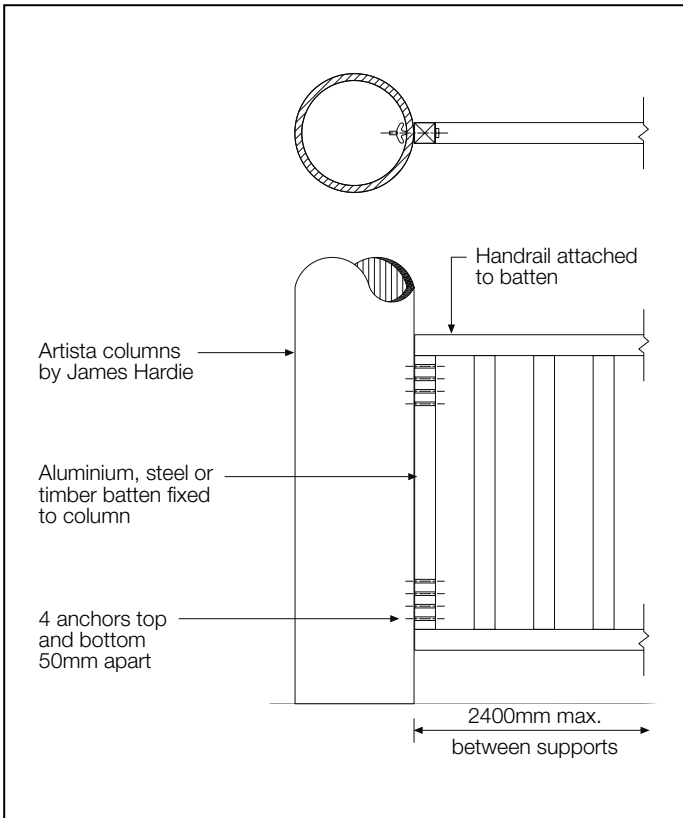


FIGURE 19 HANDRAIL FIXING MEMBER CONNECTION DETAIL

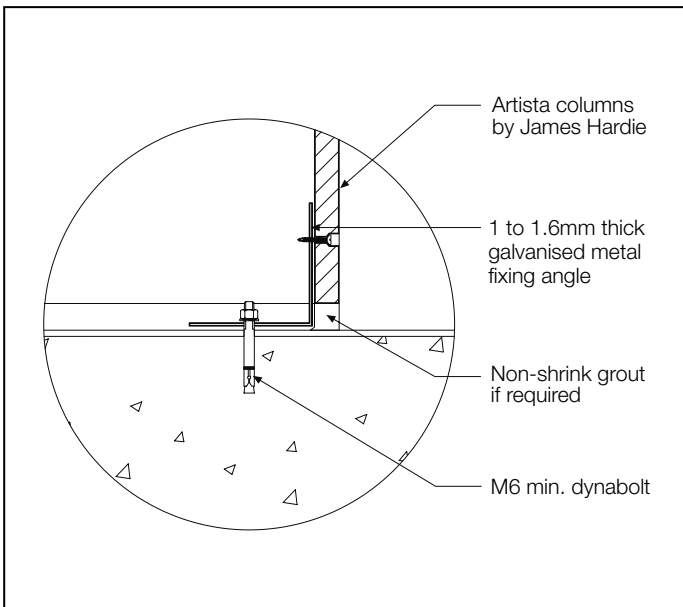


FIGURE 20 TYPICAL BASE FIXING DETAIL 1

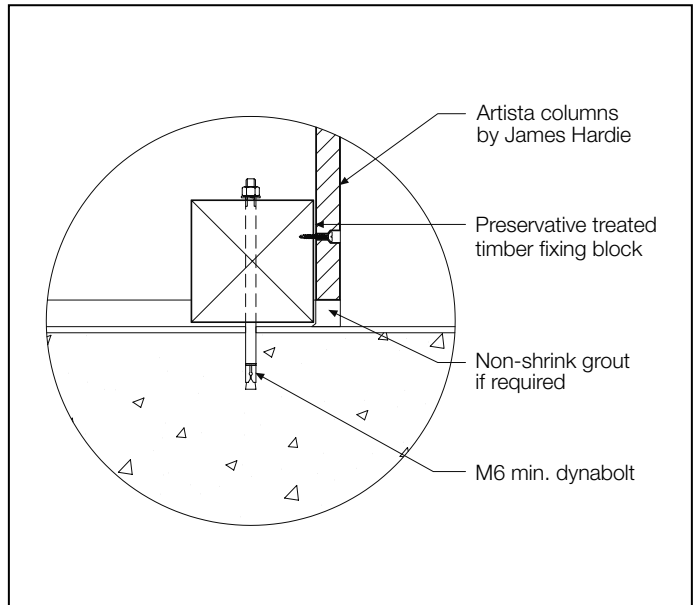


FIGURE 21 TYPICAL BASE FIXING DETAIL 2

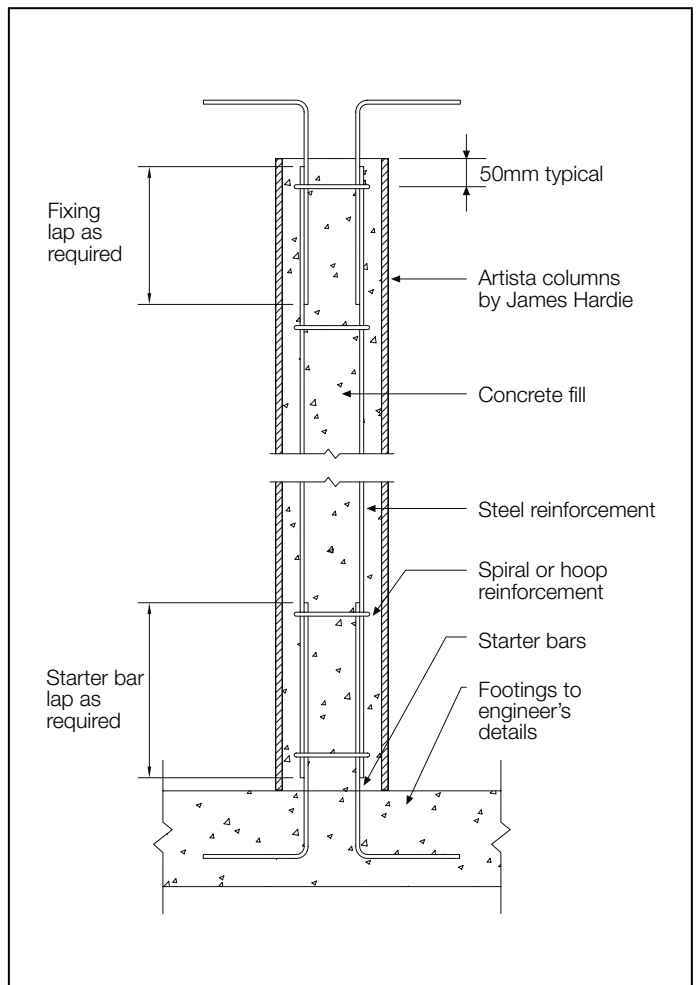


FIGURE 22 TYPICAL COLUMN DETAIL

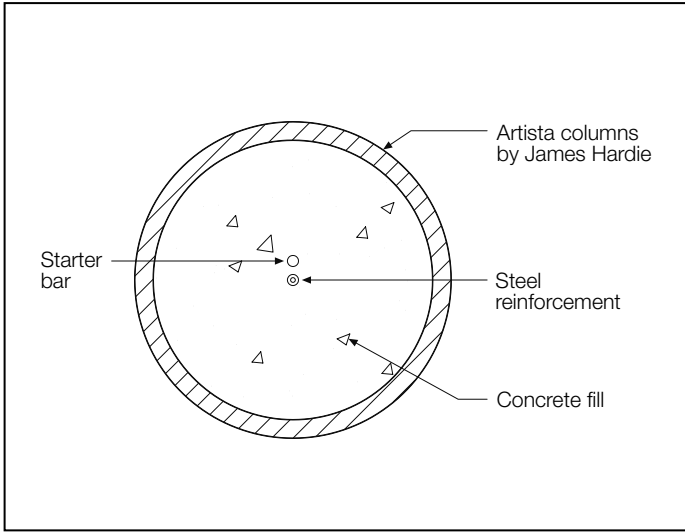


FIGURE 23 SINGLE BAR SECTION

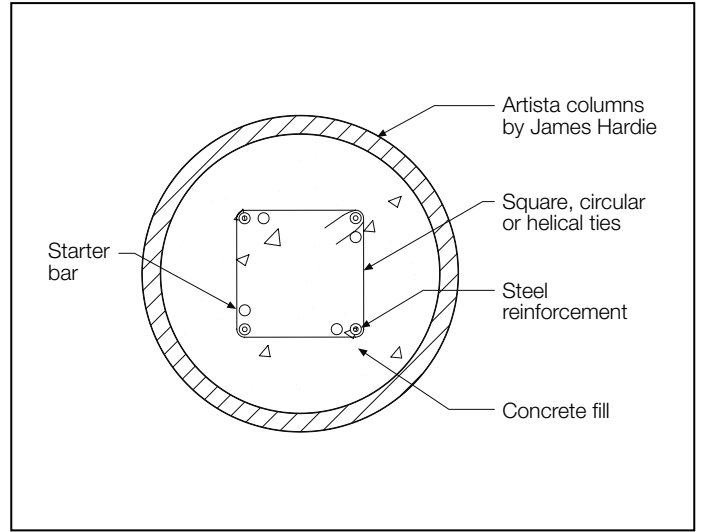


FIGURE 26 FOUR BAR CAGE SECTION

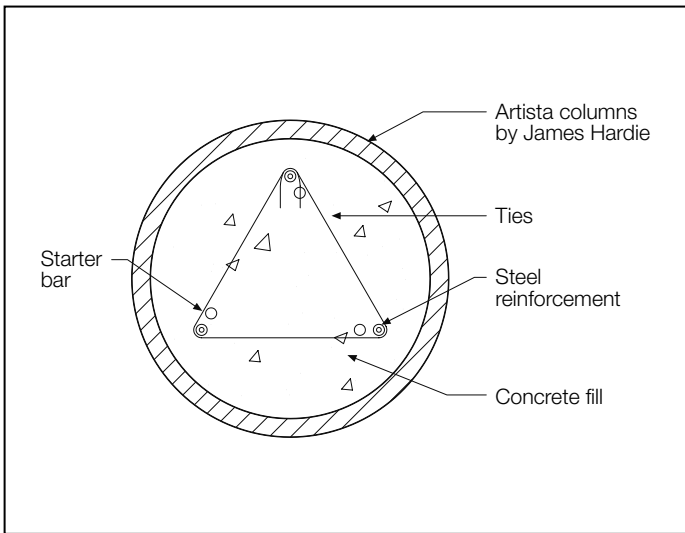


FIGURE 24 THREE BAR SECTION

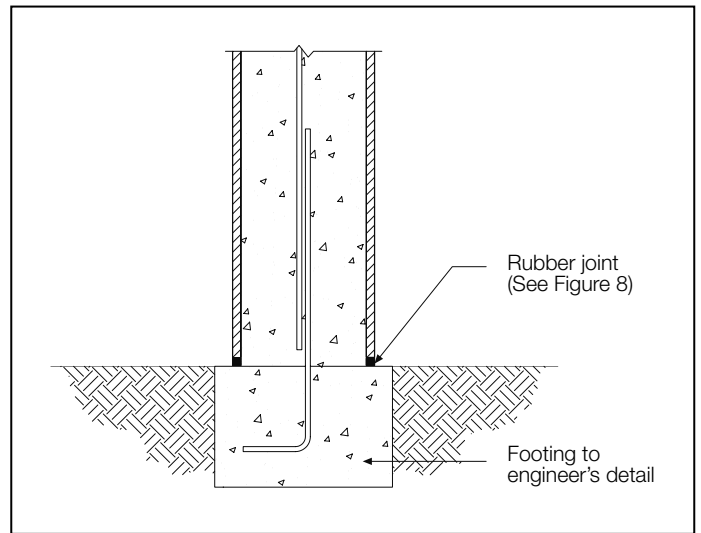


FIGURE 27 TYPICAL PINNED BASE ARRANGEMENT

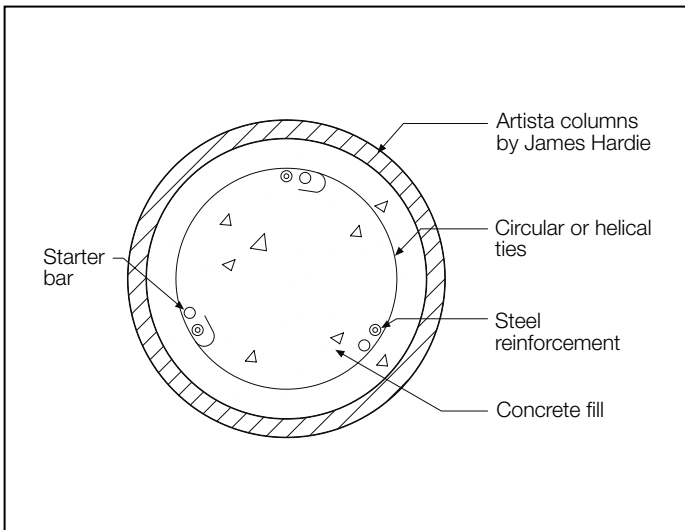


FIGURE 25 ALTERNATIVE THREE BAR SECTION

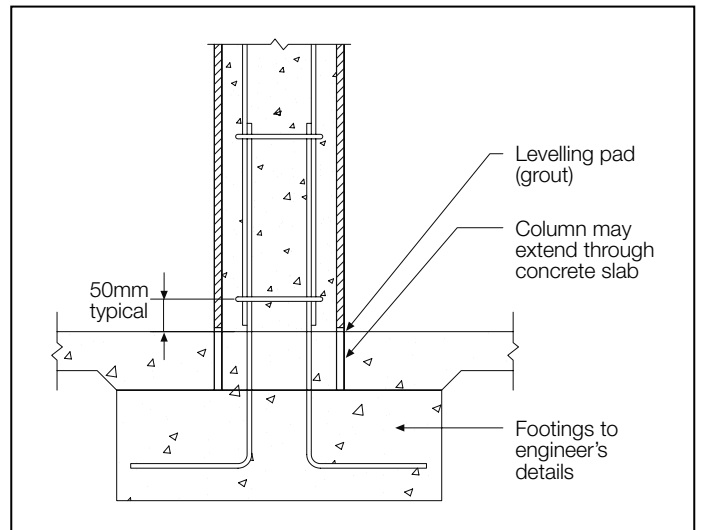


FIGURE 28 TYPICAL FIXED BASE ARRANGEMENT

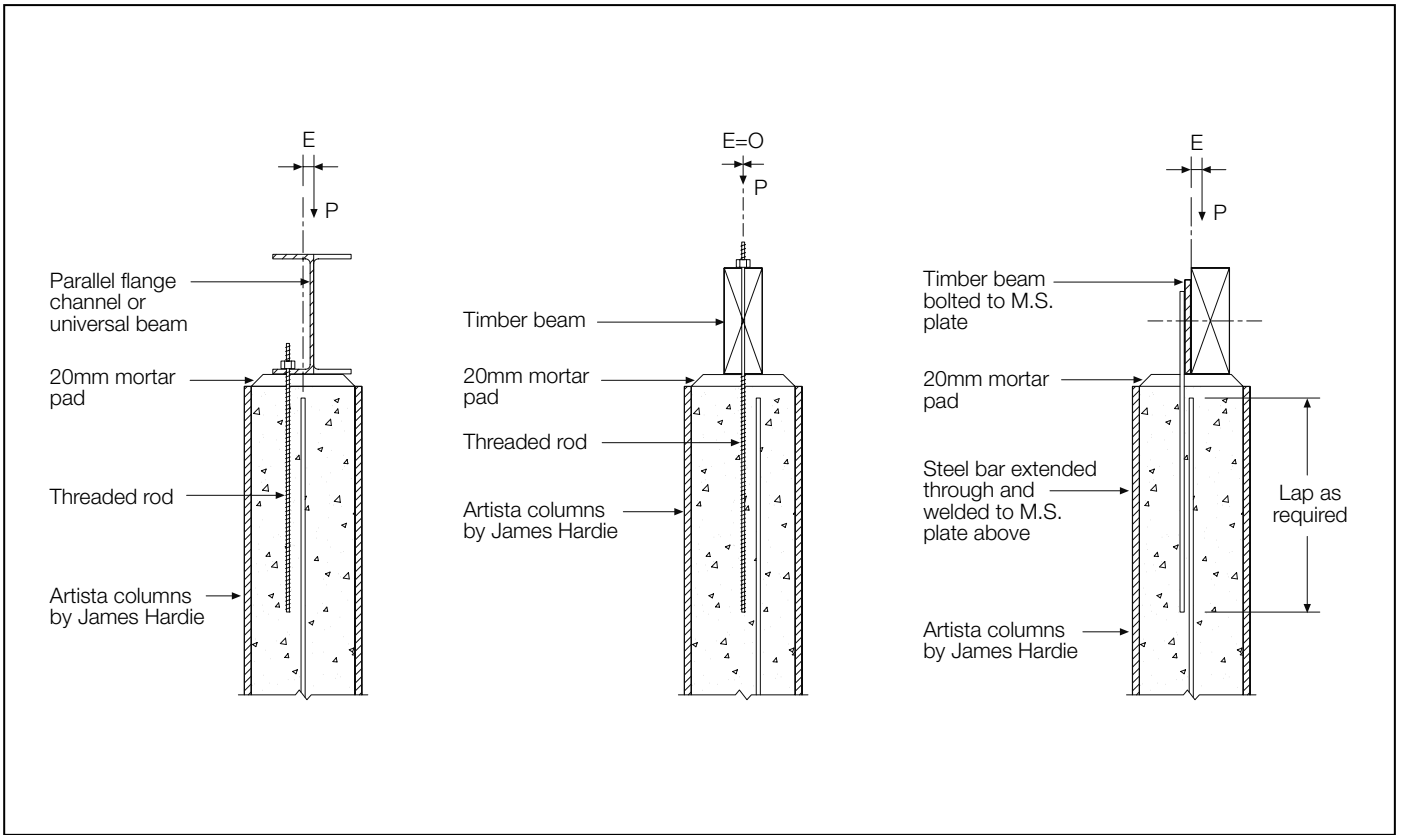


FIGURE 29 TYPICAL TOP CONNECTION DETAILS - $E_{MAX} = OD/3$

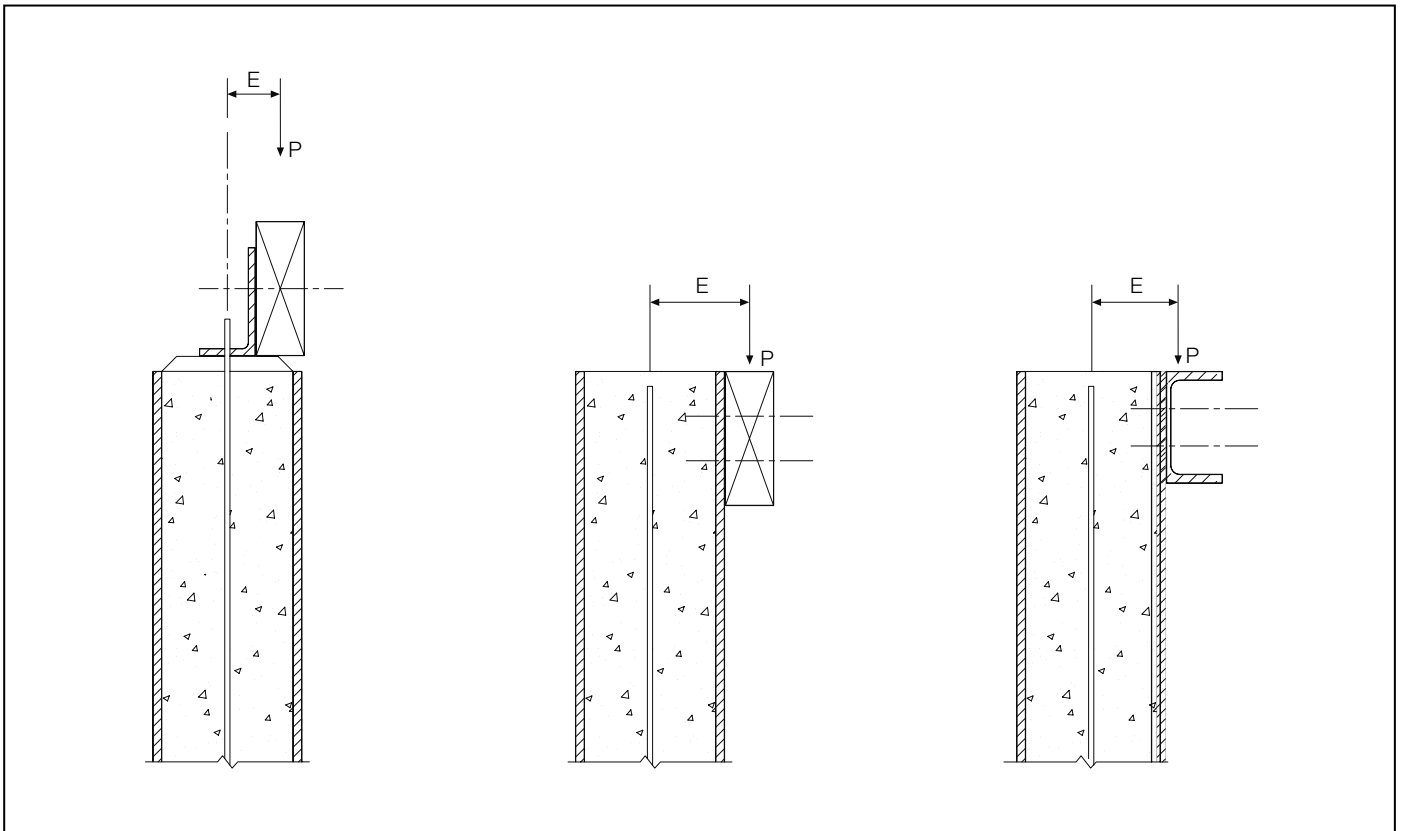


FIGURE 30 TYPICAL TOP CONNECTION DETAILS - $E_{MAX} = OD/2 + 50mm$

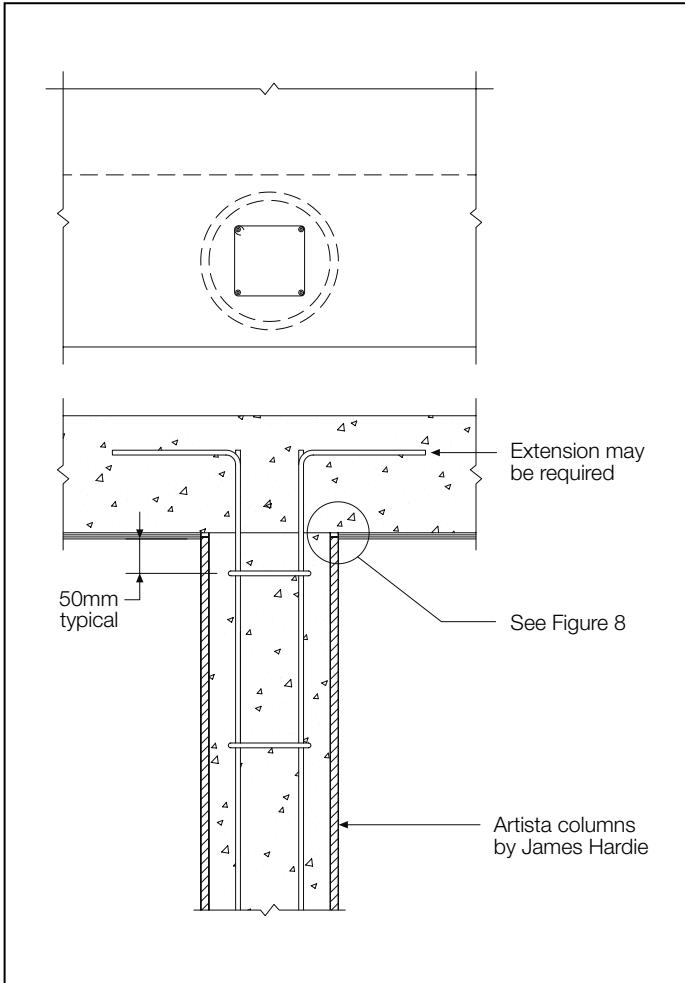


FIGURE 31 COLUMN STOPS AT FLOOR

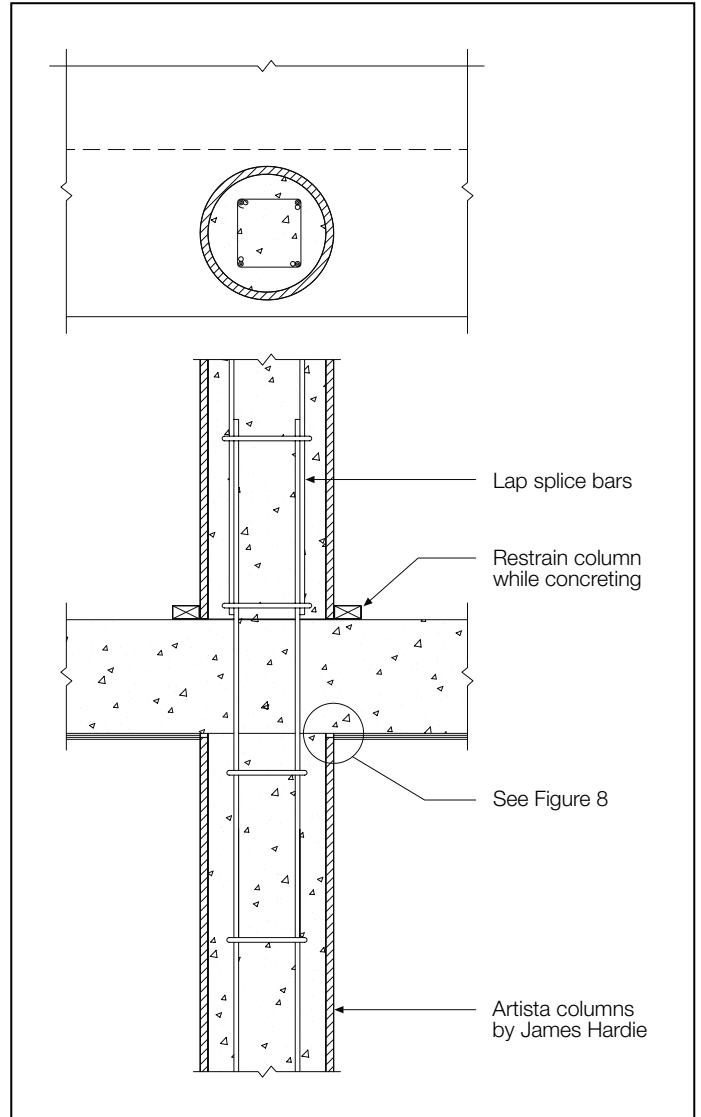


FIGURE 32 COLUMN CONTINUES ABOVE FLOOR

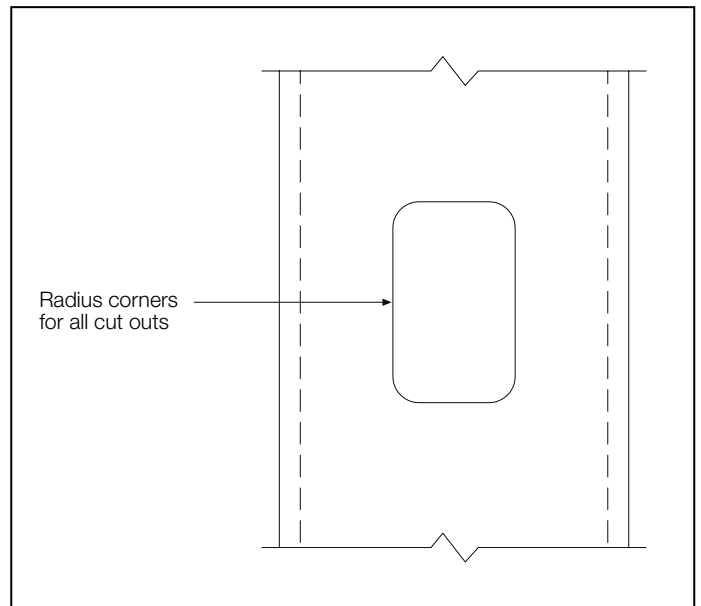


FIGURE 33 CUT OUT DETAIL

12 WARRANTY

James Hardie Australia Pty Limited ("James Hardie") warrants for a period of 10 years from the date of purchase that the Artista® columns (the "Product"), will be free from defects due to defective factory workmanship or materials and, subject to compliance with the conditions below, will be resistant to cracking, rotting, fire and damage from termite attacks to the extent set out in James Hardie's relevant published literature current at the time of installation. James Hardie warrants for a period of 12 months from the date of purchase that the accessories supplied by James Hardie will be free from defects due to defective factory workmanship or materials.

Nothing in this document shall exclude or modify any legal rights a customer may have under the Trade Practices Act or otherwise which cannot be excluded or modified at law.

CONDITIONS OF WARRANTY

The warranty is strictly subject to the following conditions:

- a) James Hardie will not be liable for breach of warranty unless the claimant provides proof of purchase and makes a written claim either within 30 days after the defect would have become reasonably apparent or, if the defect was reasonably apparent prior to installation, then the claim must be made prior to installation;
- b) this warranty is not transferable;
- c) the Product must be installed and maintained strictly in accordance with the relevant James Hardie literature current at the time of installation and must be installed in conjunction with the components or products specified in the literature. Further, all other products, including coating and jointing systems, applied to or used in conjunction with the Product must be applied or installed and maintained strictly in accordance with the relevant manufacturer's instructions and good trade practice;
- d) the project must be designed and constructed in strict compliance with all relevant provisions of the current BCA, regulations and standards;
- e) the claimant's sole remedy for breach of warranty is (at James Hardie's option) that James Hardie will either supply replacement product, rectify the affected product or pay for the cost of the replacement or rectification of the affected product;
- f) James Hardie will not be liable for any losses or damages (whether direct or indirect) including property damage or personal injury, consequential loss, economic loss or loss of profits, arising in contract or negligence or howsoever arising. Without limiting the foregoing James Hardie will not be liable for any claims, damages or defects arising from or in any way attributable to poor workmanship, poor design or detailing, settlement or structural movement and/or movement of materials to which the Product is attached, incorrect design of the structure, acts of God including but not limited to earthquakes, cyclones, floods or other severe weather conditions or unusual climatic conditions, efflorescence or performance of paint/coatings applied to the Product, normal wear and tear, growth of mould, mildew, fungi, bacteria, or any organism on any Product surface or Product (whether on the exposed or unexposed surfaces);
- g) all warranties, conditions, liabilities and obligations other than those specified in this warranty are excluded to the fullest extent allowed by law;
- h) if meeting a claim under this warranty involves re-coating of Products, there may be slight colour differences between the original and replacement Products due to the effects of weathering and variations in materials over time.

DISCLAIMER

The recommendations in James Hardie's literature are based on good building practice, but are not an exhaustive statement of all relevant information and are subject to conditions (c), (d), (f) and (g) above. Further, as the successful performance of the relevant system depends on numerous factors outside the control of James Hardie (eg quality of workmanship and design) James Hardie shall not be liable for the recommendations in that literature and the performance of the relevant system, including its suitability for any purpose or ability to satisfy the relevant provisions of the Building Code of Australia ("BCA"), regulations and standards.

Ask James Hardie™

CUSTOMERLINK® SERVICE CENTRE

Call 13 11 03

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