East Bedfordshire Model Railway Society

Constructing Model Buildings – a Quick Guide

There are often times that I can't reference what I need in a book (or on the web) as simply and quickly as I'd like, or I'd just need some basic reminders, and so occasionally I'll knock up some support notes as a guide. I've been working on one for model buildings for a little while, even though I've made some models in the past without this! However, it may yet prove useful, and I hope it might persuade some of you to have a go.

I've taken the principles here from a handful of books, mainly *Making Model Buildings the Pendon Way* (Wild Swan), along with *Architectural Modelling* by Dave Rowe (also Wild Swan) and *Creating Model Buildings* by Geoff Taylor. I've included page references (in brackets) for the Pendon book, originally and principally for my own benefit, to be able to refer to details.

PREPARATION

- Carry out field work, take/refer to photos and make sketches. (1)
- Consider site of model, & base required so it sits 'in' not 'on' the layout
- Consider level of detail, i.e. more if near to viewer, less if further away, or scale – eg reduced scale at the rear of the layout.
- Scale drawing to confirm dimensions, position of details, folds & joins, access for detailing and lighting. Can use sample brick papers, sample doors & windows as an aid; allow for depth of the underlying structural walls when measuring up.

CONSTRUCTION

- Mark up the structure material with the scale drawing (10) 30 thou sheet for walls, 40 thou for the base, or good quality thick card. Styrene sheet may need laminating to reduce warping – can use Limonene or double-sided tape.
- Cut out all apertures, allow for chimney outline and roof profiles
- Where possible leave excess material in place initially, to ease handling
- Add surface papers or styrene sheets, embossing, textures and build chimney stacks (13)
- Add cills, lintels, gutter supports, ornate wall work as required.
- Prepare any folds and joins (25)

PAINT & FIRST FIX

- Paint walls before any further detailing, first stage of light weathering (20)
- Consider what illumination is required
- Prepare/build windows and doors, consider whether to be open or closed.
- Paint then fit. Add nets and curtains. For smaller scales or reduced detail can consider using a photo of curtains etc behind any glazing. (27, 29)

SECOND FIX ASSEMBLY

- Fit floor bracing and floor, paint black (33). If using card, paint internally with dilute PVA to seal it all
- Add upper floor and bracing, paint black (35)
- Add internal detail as required
- Fix chimneys (40)
- Add doorsteps
- Finish any decorative woodwork on frontage
- Build the roof – Thatch (43) Tiles (57) Slates (62) Corrugated (83)

FINAL FIX

- Barge boards, fascias, chimney cap and pots
- Rainwater goods
- Signs, awnings, aerials & other accoutrements
- Paint colours (91) and final weathering (73)

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Brick sizes

Brick counting is often advocated as a method to estimate dimensions of a building.
But beware! Brick and mortar dimensions do vary, despite 'standard' measures.

	Height	Width	Length	Mortar minimum	Mortar common
Before 1960	80mm	120mm	270mm	5mm	7mm
4mm scale	1.05mm	1.57mm	3.54mm	0.066mm	0.092mm
After 1960	65mm	120mm	215mm		10mm
4mm scale	0.85mm	1.57mm	2.82mm		0.131mm

On that basis, a wall of 20 bricks high by 20 bricks long could be, to scale, either:
5 feet 8 inches high and 18 feet 1.5 inches long, or
4 feet 10.5 inches high and 14 feet 8.5 inches long
So as you can see, there could be considerable differences, the latter being some 14% smaller in height and 19% smaller in length.

Guideline chimney stack dimensions

No of flues	Size, inches	4mm scale
1	18 x 18	6mm x 6mm
2	18 x 31.5	6 x 10.5
3	18 x 45	6 x 15
4	18 x 58.5 or 31.5 x 31.5	6 x 19.5 or 10.5 x 10.5

Typical Victorian sash windows

Width 4', height 5' to 6'	In 4mm	16mm x 20mm to 24mm
Width 5', height 6' to 7'		20mm x 24mm to 28mm

Typical door lining sizes

27 x 78 inches	In 4mm	9mm x 26mm
30 x 78		10mm x 26mm
32 x 80		10.67mm x 26.67mm
34 x 82		11.33mm x 27.33mm
36 x 84		12mm x 28mm

Roof pitches

Make sure you pitch your roof right for the materials you want to represent! Apparently very few pitches are at 45 degrees.

Lead – up to 5 degrees
Iron/asbestos – from 5 degrees
Slate – 22.5 to 35 degrees, but up to 85 degrees
Pantile – 35 to 40 degrees
Pantile, Double Roman – 30 to 35 degrees
Thatch – 40 to 50 degrees
Stone slate – 50 degrees

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Slates

There's many sizes of slate, suitable for many pitches of roof – here's a useful table I found on the web:

Minimum Recommended Lap for Different Roof Pitches in mm																
			Normal Exposure								Severe Exposure						
Type	Slate Size		Minimum Roof Pitch								Minimum Roof Pitch						
	mm	in.	20°	22½°	25°	30°	35°	40°	45°	85°	22½°	25°	30°	35°	40°	45°	85°
Princesses	610x355	24x14	115	105	90	75	75	65	65	*	125	105	90	75	75	65	*
Duchesses	610x305	24x12	*	115	90	75	75	65	65	*	*	*	110	90	80	70	*
Small Duchesses	560x305	22x12	115	105	75	75	75	65	65	*	120	105	90	75	75	65	*
Marchioness	560x280	22x11	*	110	90	75	75	65	65	*	*	110	105	85	75	65	*
Wide Countess	510x305	20x12	115	105	90	75	75	65	65	*	*	100	85	75	75	65	*
Countess	510x255	20x10	*	110	90	75	75	75	65	50	*	115	100	90	75	65	65
	460x305	18x12	115	105	90	75	75	65	65	50	*	110	85	75	75	65	65
Wide Viscountess	460x255	18x10	*	110	90	75	75	65	65	50	*	115	100	85	75	65	65
Viscountesses	460x230	18x9	*	*	100	75	75	65	65	50	*	*	*	105	85	65	65
	405x305	16x12	*	*		75	75	65	65	50	*	*	90	80	75	65	65
Wide Ladies	405x255	16x10	*	*		75	75	65	65	50	*	*	100	95	75	65	65
Broad Ladies	405x230	16x9	*	*		75	75	65	65	50	*	*	100	100	85	65	65
Ladies	405x205	16x8	*	*		75	75	65	65	50	*	*	105	100	90	65	65
Headers	355x255	14x10	*	*		75	75	65	65	50	*	*	80	75	75	65	65
Small Ladies	355x205	14x8	*	*		75	75	65	65	50	*	*	90	85	75	65	65
Narrow Ladies	355x180	14x7	*	*		75	75	65	65	50	*	*	95	90	80	65	65

However, this doesn't account for all sizes – there's also Empress (26" by 16"), Wide Header (14" by 12"), Small Header (13" by 10"), Double (12" by 6") and Single (10" by 5")

Roofing slates are about ¼ inch thick, give or take 1/16th, and in 4mm this is 0.04mm, or 1.5 thou.

Tiles

King Henry IV set the dimensions of a roof tile, which remained the standard until 1999. These are 265mm long and 165mm wide, about ½ inch thick, in 4mm 3.48mm by 2.17mm, 0.08mm thick (3 thou)

Material sizes

Here's a useful table to compare millimetre scale to thousandths of an inch; many styrene sheets and strips are sold in measurements of thousandths of an inch.

		4mm scale measure	
Thou' of one inch	Millimetres	Inches	Millimetres
5	0.13	0.38	9.7
10	0.25	0.76	19.4
15	0.38	1.14	29
20	0.51	1.52	38.7
25	0.64	1.91	48.4
30	0.76	2.29	58.1
35	0.89	2.67	67.7
40	1.02	3.05	77.4
45	1.14	3.43	87.1
50	1.27	3.81	96.8
55	1.4	4.19	106.5
60	1.52	4.57	116.1
65	1.65	4.95	125.8
70	1.78	5.33	135.5
75	1.91	5.72	145.2
80	2.03	6.1	154.8

		4mm scale measure	
Thou' of one inch	Millimetres	Inches	Millimetres
85	2.16	6.48	164.5
90	2.29	6.86	174.2
95	2.41	7.24	183.9
100	2.54	7.62	193.5
105	2.67	8	203.2
110	2.79	8.38	212.9
115	2.92	8.76	222.6
120	3.05	9.14	232.3
125	3.18	9.53	241.9
130	3.3	9.91	251.6
135	3.43	10.29	261.3
140	3.56	10.67	271
145	3.68	11.05	280.6
150	3.81	11.43	290.3
155	3.94	11.81	300

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Suppliers

As you'd expect, there's a range of suppliers for model makers, and here's a selection for you to consider – I'm sure it's not a definitive list. Some are definitely better than others! Home print firms often supply wall finishes as well as complete 'kits'

Supplier	Product types	Products
3D Printing Corner	Resin print	Many interior details
3dk.ca	Home print	Textured sheets and kits
4D Model Shop	Various	Lots of materials
Ambis	Etches, sheets	Windows & corrugated sheets
Ancorton Models	Laser & 3D	Building kits
Brassmasters	Etches	Windows
Dexter's Cove Models	Laser & 3D print	Kits, windows, doors, chimneys and more
Dornaplas	Plastic	Doors, windows, guttering, building kits and more
Evergreen	Plastic	Styrene sheets and sections
Fine Scale Buildings Ltd	Home print	Building kits
In the greenwood laser	Laser	Building kits
Kingsway Models	Card	Building kits
Knightwing	Plastic	Building kits & detail items
KS Laser Design	Laser	Kits
LCut Creative	Laser	Kits, windows, a good range
Metcalfe	Card	Kits
Model Scenery Supplies		Self-adhesive building papers
Modelbuildings.org	Home print	Building kits
ModelU	3D print	Chimneys, rainwater goods
P&D Marsh	Laser	Building kits
Peco – building kits	Plastic	Building kits
Peedie Models	Resin, brass	Building kits, doors & windows
RailModel.co.uk	Laser	Building kits, kits and parts
Railwayscenics	Card, home print	Building kits and sheet materials
Ratio	Plastic, brass	Windows, building kits
Redutex		Self-adhesive wall and roof sheets
Roger Smith Model Railways	Card	Building kits
Scalescenes.com	Home print	Building kits and walling sheets
Scenerybuilder.com	Home print	Building kits and walling sheets
Severn Models	Brass	Building kits
Shapeways	3D supplier	All manner of detailing items
Skytrex		Building parts
Slaters	Plastic	Styrene sheet & strip
SmartModels	Plastic	Building sections
Smartmodels.co.uk	Laser, 3D and home print	Building kits, walling sheets, chimneys, ridge tiles, windows
South Eastern Finecast	Plastic	Embossed sheets
Stoneybridge structures	Laser	Building kits, windows
Superquick	Card	Building kits and walling papers
Ten Commandments	Plaster	Cast model building sections
TimberTracks	Laser kits, cast items	Rainwater goods, chimneys, building kits
Timecast	Acrylic	Building kits
Townstreet	Stone cast	Building models
Wills	Plastic	Building kits, windows, walls, rainwater goods
Wordsworthcardkits	Home print	Building kits and walling sheets
York Model Making	Laser	Windows, doors, tiles, slates, building kits & more