Building Quantities Explained

IVOR H. SEELEY

B.Sc., M.A., Ph.D., F.R.I.C.S.
Chartered Quantity Surveyor
Head of Department of Surveying
and Dean of the School of Environmental Studies
Trent Polytechnic, Nottingham

Third Edition
Contents

List of Figures  x
List of Examples xi
Preface xii
Acknowledgements xiv

1. GENERAL INTRODUCTION

2. GENERAL PRINCIPLES OF TAKING-OFF

3. USE OF MENSURATION IN QUANTITIES

4. MEASUREMENT OF EXCAVATION AND FOUNDATIONS
5. MEASUREMENT OF BRICKWORK, FACEWORK AND BLOCKWORK

Measurement of Brickwork: Measurement Generally; External Walls; Internal Walls, Chimney-breasts and Stacks – Measurement of Incidental Works: Damp-proof Courses; Rough Cutting; Eaves-filling; Projections; Key for Plaster, Brick, Ashphalt, etc.; Building in or Cutting and Pinning – Measurement of Facework: Measurement Generally; Brickwork Built Entirely of Facing Bricks; Plain Bands; Ornamental Bands; Ornamental Bands; Margins; Fair Cutting; Protection – Measurement of Blockwork – Worked Examples.

6. MEASUREMENT OF CHIMNEY-BREASTS AND STACKS, FIREPLACES, VENTS AND RUBBLE WALLING


7. MEASUREMENT OF FLOORS


8. MEASUREMENT OF ROOFS

Pitched Roofs: Carcassing Timbers; Coverings: Eaves and Rainwater Goods – Flat Roof Coverings: Asphalt; Bitumen-felt; Sheet Metal – Worked Examples.

9. MEASUREMENT OF INTERNAL FINISHINGS

Ceiling Finishings – Wall Finishings; Schedule of Internal Finishings; Skirtings and Picture-rails – Floor Finishings – Paintings and Decorations – Worked Example.

10. MEASUREMENT OF WINDOWS


11. MEASUREMENT OF DOORS


12. MEASUREMENT OF STAIRCASES AND FITTINGS

13. MEASUREMENT OF PLUMBING INSTALLATIONS
Order of Measurement - Drawings of Plumbing Installations - Connection to Water Main - Pipework Generally - Water-storage Tanks or Cisterns - Holes for Pipes - Sanitary Appliances - Builder’s Work Connected with Plumbing Installations - Worked Example.

14. MEASUREMENT OF DRAINAGE WORK

15. MEASUREMENT OF EXTERNAL WORKS
Roads, Drives and Paths - Grassed Areas - Planting of Trees and Shrubs - Fencing - Worked Example.

16. BILL PREPARATION PROCESSES
‘Working-up’ - ‘Billing-direct’ - Squaring Dimensions - Abstracting: Transfer of Dimensions; Subdivisions of Abstract; General Rules of Abstracting - Billing: Ruling of Bill of Quantities; Referencing of Items; Entering Items in the Bill; Units of Measurement; General Rules of Billing; Typical examples of Abstract and Bill; Preliminaries Bill; Bills of Reduction and Addenda Bills; Bill Summary; Preambles; Day-work; Specialist Bills - ‘Cut and Shuffle’ - Standard Descriptions - Use of Computers - Other Bill Formats: Elemental Bills; Sectionalised Trade Bills; Operational Bills; Activity Bills; Annotated Bills - General Conclusions.

Appendix I - Abbreviations
Appendix II - Mensuration Formulae
Appendix III - Metric Conversion Table
Appendix IV - Manhole Schedule
Index
Index

Abbreviations 13, 256-61
Abstract 218-222
  general rules 220-2
  sub-divisions 218-20
  transfer of dimensions 218
  typical sheets 228-30
Accuracy in measurement 10, 20
Activity bills 253
Adjustment of soil disposal 39, 47, 48, 56, 71, 72
Annotated bills 253-4
Aprons 118
Arches, brick-on-edge 152
  brick-on-end 147
Architect 1
Architraves 161, 164
  plinth blocks 164
Asphalt, angle fillet 54
  damp-proof course 53, 56
  flat roofs 105, 121-2
  rounded edge 122
  skirting 121-2
  tanking 53, 55, 56
Attendance 182
Ball valve 186
Bands of brickwork 60
  brick-on-end 68
  flush plain 68
  projecting plain 66, 67
Bar reinforcement 42, 89, 99
Basement, excavation 50-3
  working space 52
Bearers 97, 119, 123, 125
  to eaves boarding 114, 190, 193
  to shelving 178
  to tank 188
Bed, concrete 53, 54, 85, 94
  floated 94, 139
  screeded 149, 212
  trowelled 139
Bedding frame 145, 168
Bellmouth-area 29
Bill of quantities, activity 253
  annotated 253-4

contents 216
  descriptions 10
  elemental 8, 251-2
  entering quantities in 223-4
  formats 8-9, 251-4
  general rules 224-6
  method of preparation 7-8
  operational 8-9, 252-3
  preambles 21, 240
  preliminaries 226
  purposes 2-3
  reduction 226-7, 235-8
  referencing of items 223
  ruling 222-3
  sectionalised trade 252
  specialist 242
  summary 239
  typical sheets 231-4
  units of measurement 224
Billing-direct 216-17
Birdsmouth 65
Bitumen-felt roofs 105
Blockwork 61-2, 68
  bonding to brickwork 68
  protection 68
Brickwork, birdsmouth 65
  classifications 57-8
  curved wall 72
  eaves-filling 59
  external walls 50, 63-8
  extra over common brickwork
    for facework 43, 59-60, 66
    73, 82
  facework 43, 59, 65-6
  fair face 56
  fender walls 83
  footings 42-3
  hollow walls 42, 47-8, 57,
    65-6, 67
  honeycombed sleeper wall 91
  in chimney-breasts 76, 79, 81
  in chimney stacks 76, 82
  in piers 70
  internal walls 58
  key for plaster, asphalt, etc. 55,
    59
Brickwork contd
- lining wall 55
- projections 59, 73–5, 79, 81
- protection 68
- rough cutting 54, 58

Carcass 17
- Casements 143
  - build in metal 155
  - bullseye 151
  - fittings 145
  - metal 155
  - painting 146, 155
  - wood 143–5

Cavity walls
- see Hollow walls
- Ceiling finishings 128, 135
- Centre, for circular arch 152, 153
- for semi-circular arch 157

Cesspits 197–8
- Channels 204, 211
- Chimney-breast 79
- Chimney stacks 76, 81
- adjustment to roofs 116–18
- Circle, area of 15

Civil engineering quantities 4
- Closing cavity of hollow wall 148, 170

Code for the Measurement of Building Work in Small Dwellings 2
- Coding of items 249–50
- Cold-water storage tank 181, 188
  - insulation 188

Collars 103, 109
- Component details 173, 175
- Computers, use of 249–51

Concrete, beams
- bed 53, 54, 85, 94
- benching 204
- classifications 40
- covering to pipes 196–7, 201
- edging 212
- filling to base of hollow wall 48
- finishing surface 53, 54, 85, 94
- formwork 54, 85
- foundations 40–2, 53, 72, 79
- lintels 83, 147, 165, 169
- paving slabs 212
- reinforcement 42, 54, 89, 99
- roads 206
- shelving 178
- suspended slabs 89–90, 99, 100

Index

- Connection to sewer 198, 205
- Connection to water main 180, 183
- Contract documents 4
- Coping 75
- Copper nailing 117, 122, 126
- Cost planning 2, 6
- Cramps 145, 168
- Cultivation of soil 213
- Cupboards 173–4
- Curved brickwork 72
- Cut and shuffle 243–7
- Cutting and pinning to brickwork 59
- Cuttings, measurement of volume 31–4
- Cylinder, volume of 15
- Dado rails 132
- Damp-proof courses 43–4, 48, 149
  - curved horizontal 73
  - curved vertical 152
  - gutter in hollow wall 148, 153
  - horizontal 48, 56, 81, 84, 91
  - membrane 94
  - over boot lintel 169
  - tanking to basement 53, 55, 56
- vertical 126
- Daywork 240–2
- Deemed to be included items 10, 19–20
- Descriptions 18–20
- Dimensions, accuracy in 20
  - alterations to 15–16
  - deductions of 14
  - figured 16
  - grouping of 14
  - numbering and titles of sheets 16–17
  - order of 12–13
  - spacing of 12
  - timesing 11, 13
- Dimensions paper 11–12
- Discharge pipe 191, 193
- Disposal of excavated material 31, 37, 39, 51
- Dividing strips 90, 95, 140
- Door 159–61
  - adjustment of openings 161, 165, 169–71
  - architrave 161, 164
  - flush 163
Index

frame sets 160, 168

glazed 160, 167
ironmongery 160, 163, 167
lining sets 160, 163
painting 160, 163, 168
panelled 167
schedule 159

Double course at eaves 111, 116
Double hung sash window 141
Dowel 75, 157, 168

Downpipes 104-5, 115
fittings 115
painting 115

Drain 195-8
accessories 197
building in end of 205
branch 202
clay 196, 201, 202
connection to sewer 196, 205
calving for 196, 199, 201, 202
fittings 196, 203
pitch-fibre 196, 201
protection of 196-7, 201
testing of 198, 205

Drawings 11
Drip 125
to gutter 125

Drives 206

Earthwork, measurement 29-34
support 40, 47, 52-3, 71-2, 79
Eaves-filling 59

Edging 212
Elemental bills 8, 251-2
Embankments, measurement of
volume 31-4

Estimating 4
Excavation, basement 40, 50-3
below groundwater level 38
curved foundation trenches 71
disposal of excavated material 31
foundation trenches 37-8, 45, 52, 79
in rock 38
pipe trench 183
stepped foundations 38
surface treatments 39, 53, 71,

Fabric reinforcement 42, 54, 89
Facework, brickwork built entirely of
facing bricks 43, 49, 74
curved brick wall entirely in
facings 60, 65-6
extra over common brickwork
for facings 43, 59-60, 66
fair cutting 61, 152, 158
margins 61, 73, 75, 82
ornamental bands 60
plain bands 60, 66, 67, 68, 87
protection 61, 68
returns 148, 170

Fair cutting 61, 152, 158
Fair face to brickwork 56
Fascia-boards 104, 113, 122
painting 113, 122

Fencing 207
chain-link 214
close boarded 214-15
Fertilise soil 213
Fillet, tilting 112, 116
Filling to excavations 41, 47, 49, 56, 74

Finishings 17
Fireplace 77, 85
Firrings 119, 123
Fittings 173-4
Flashings 118, 122
stepped 118
with damp-proof course
(combined) 126
Fletcher and Moore 9, 249
Floors, block 95, 139
boarding 88-9, 97
cement 94
construction 87-90
contractor-designed 90
dividing strips 90, 95, 140
finishings 139-40
flooring in openings 88
hollow 87-9
hollow block 90
joists 88, 92, 96
margins 97
order of measurement 87
Floors contd

protection of 90, 93, 95, 97
solid 89–90, 94–5
strip boarding 93
strutting 96
suspended concrete 89–90, 98
thermoplastic tiles 139
trimmers 96
trimming joists 96
Flues 76–7
linings 77, 83
terminals 82
Footings 42–3
Formwork, beams 99
esges of beds 54, 85
esges of roads 206
soffits of slabs 89–90
Foundations, concrete 40–2, 53, 72, 79
excavation 37–8, 45, 52, 71, 79
measurement 45–9
order of taking-off 44
reinforcement 42
Freize 131, 132
border 137
Fresh-air inlet 197

Gates 208, 215
painting 215
General items 36
General provisional sum 22
General rules of measurement 10–11
Girth of buildings 23–6
irregular 25–6
rectangular 23–5
Glass 145
curved cutting 155
float 155
irregular panes 155
pane classification 142, 145
sheet 145, 167
to door 167
Glazing beads 167
Grassed areas 207, 213
Grounds 163
Gullies 202, 203
Gusset ends 117
Gutter 104–5, 114
board 117, 125
cast iron eaves 114
trimming joists 96
Handrail 175
brackets 177
painting 175
Hangers 110
Hardcore, beds 89
filling 84, 94, 209
Head, rainwater 115
Hedges, planting 214
removal 37
Herringbone strutting 96, 119
Hip 103
calculation of length 35
cutting to 112
iron 112
rafter 103
tiles 112
Historical background 1–2
Holderbats 192
Hollow walls 42, 47, 48, 57, 65–6, 67
closing cavity 148, 170
outer skin in facing bricks 43, 49
Institute of Quantity Surveyors 1
Internal finishings 127–33
schedule of 130–1, 134
Ironmongery 145, 160, 163, 167
Irregular figures, measurement of
areas 27–9
buildings 25–6
JCT Form of Contract 4
Joinery fittings 173–4
Joists, ceiling 103, 109
flat roof 119, 123
floor 88, 93
trimming 96, 116
Keeping excavations free of surface
water 49, 56, 74, 205
Kerbs 207
Key to brickwork for plaster, asphalt, etc. 55, 59
Landings 172
Levelling and compacting trench
bottoms 39, 53, 71
Lead slates 188, 189, 192

lead lining 117, 125
painting 114

Index
<table>
<thead>
<tr>
<th>Library of descriptions</th>
<th>249–50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lintels, concrete</td>
<td>83, 147, 165, 169</td>
</tr>
<tr>
<td>stone</td>
<td>156</td>
</tr>
<tr>
<td>Manhole</td>
<td>197–8</td>
</tr>
<tr>
<td>benching</td>
<td>204</td>
</tr>
<tr>
<td>brick walls</td>
<td>198, 204</td>
</tr>
<tr>
<td>channels</td>
<td>204</td>
</tr>
<tr>
<td>concrete base</td>
<td>198, 204</td>
</tr>
<tr>
<td>covers</td>
<td>205</td>
</tr>
<tr>
<td>excavation</td>
<td>197–8, 203</td>
</tr>
<tr>
<td>schedule</td>
<td>197, 266</td>
</tr>
<tr>
<td>Margins, brick</td>
<td>61</td>
</tr>
<tr>
<td>oak</td>
<td>97</td>
</tr>
<tr>
<td>Mat frame</td>
<td>140</td>
</tr>
<tr>
<td>Mensuration formulae</td>
<td>262–3</td>
</tr>
<tr>
<td>use of</td>
<td>23–35</td>
</tr>
<tr>
<td>Metric conversion table</td>
<td>264–5</td>
</tr>
<tr>
<td>Mortice, in brickwork for dowel</td>
<td>75</td>
</tr>
<tr>
<td>in stone for dowel</td>
<td>155, 168</td>
</tr>
<tr>
<td>Newels</td>
<td>173</td>
</tr>
<tr>
<td>Nominated sub-contractors</td>
<td>182</td>
</tr>
<tr>
<td>Openings, adjustment of</td>
<td>17</td>
</tr>
<tr>
<td>Operational bills</td>
<td>8–9, 252–3</td>
</tr>
<tr>
<td>Oversailing courses</td>
<td>81</td>
</tr>
<tr>
<td>Painting, ceilings</td>
<td>132, 135, 177</td>
</tr>
<tr>
<td>cornices</td>
<td>132, 137</td>
</tr>
<tr>
<td>doors</td>
<td>160, 163</td>
</tr>
<tr>
<td>edges of casements</td>
<td>146, 156</td>
</tr>
<tr>
<td>gates</td>
<td>215</td>
</tr>
<tr>
<td>glazed doors</td>
<td>168</td>
</tr>
<tr>
<td>handrails</td>
<td>173, 175</td>
</tr>
<tr>
<td>metal casements</td>
<td>155</td>
</tr>
<tr>
<td>picture rails</td>
<td>138</td>
</tr>
<tr>
<td>pipes</td>
<td>115</td>
</tr>
<tr>
<td>protection</td>
<td>140</td>
</tr>
<tr>
<td>skirtings</td>
<td>138</td>
</tr>
<tr>
<td>staircases</td>
<td>132</td>
</tr>
<tr>
<td>steelwork</td>
<td>147</td>
</tr>
<tr>
<td>strings</td>
<td>173, 175</td>
</tr>
<tr>
<td>treads and risers</td>
<td>173, 178</td>
</tr>
<tr>
<td>walls</td>
<td>132, 137, 148, 153, 170</td>
</tr>
<tr>
<td>windows</td>
<td>142</td>
</tr>
<tr>
<td>wood casements</td>
<td>146</td>
</tr>
<tr>
<td>wood frames</td>
<td>146, 164, 168</td>
</tr>
<tr>
<td>Parge and core flue</td>
<td>76–7</td>
</tr>
<tr>
<td>Partitions, blockwork</td>
<td>61–2, 68</td>
</tr>
<tr>
<td>timber</td>
<td>101</td>
</tr>
<tr>
<td>Paths</td>
<td>206–7</td>
</tr>
<tr>
<td>ash sub-base</td>
<td>206</td>
</tr>
<tr>
<td>paving slabs</td>
<td>206, 207</td>
</tr>
<tr>
<td>Picture rails</td>
<td>132, 138</td>
</tr>
<tr>
<td>painting</td>
<td>138</td>
</tr>
<tr>
<td>Pier cap</td>
<td>75</td>
</tr>
<tr>
<td>Pipe</td>
<td>180–1</td>
</tr>
<tr>
<td>bends</td>
<td>183, 185, 186, 187, 193</td>
</tr>
<tr>
<td>casing</td>
<td>193</td>
</tr>
<tr>
<td>copper</td>
<td>185, 186, 187, 188</td>
</tr>
<tr>
<td>fittings</td>
<td>180, 186, 187, 191, 193</td>
</tr>
<tr>
<td>fixing</td>
<td>180</td>
</tr>
<tr>
<td>holes</td>
<td>181, 186, 187, 188, 190, 191, 192</td>
</tr>
<tr>
<td>insulation</td>
<td>185</td>
</tr>
<tr>
<td>joints</td>
<td>187, 188, 190</td>
</tr>
<tr>
<td>lead service</td>
<td>183, 185</td>
</tr>
<tr>
<td>overflow</td>
<td>188, 190</td>
</tr>
<tr>
<td>painting</td>
<td>115</td>
</tr>
<tr>
<td>protection</td>
<td>194</td>
</tr>
<tr>
<td>soldered joints</td>
<td>183</td>
</tr>
<tr>
<td>testing</td>
<td>194</td>
</tr>
<tr>
<td>trench</td>
<td>183, 199</td>
</tr>
<tr>
<td>waste</td>
<td>191–2</td>
</tr>
<tr>
<td>Plant items</td>
<td>22, 36, 40, 63</td>
</tr>
<tr>
<td>Plaster, concrete soffit</td>
<td>148, 170</td>
</tr>
<tr>
<td>cornices</td>
<td>136</td>
</tr>
<tr>
<td>curved reveal</td>
<td>153</td>
</tr>
<tr>
<td>making good around ventilators</td>
<td>78</td>
</tr>
<tr>
<td>rounded angles</td>
<td>136, 148, 170</td>
</tr>
<tr>
<td>skim coat</td>
<td>135, 177</td>
</tr>
<tr>
<td>to ceilings</td>
<td>135, 177</td>
</tr>
<tr>
<td>to reveals</td>
<td>148, 170</td>
</tr>
<tr>
<td>to walls</td>
<td>136, 148, 170</td>
</tr>
<tr>
<td>Plasterboard</td>
<td>135, 177</td>
</tr>
<tr>
<td>Plates</td>
<td>87–8, 91</td>
</tr>
<tr>
<td>bedding</td>
<td>91, 107, 119</td>
</tr>
<tr>
<td>Plumbing installation</td>
<td>179–94</td>
</tr>
<tr>
<td>builder's work in connection</td>
<td>182</td>
</tr>
<tr>
<td>with</td>
<td>182</td>
</tr>
<tr>
<td>connection to water main</td>
<td>180, 183</td>
</tr>
<tr>
<td>drawings</td>
<td>179–80</td>
</tr>
<tr>
<td>order of measurement</td>
<td>179</td>
</tr>
<tr>
<td>Plugging timber to brickwork</td>
<td>101, 190</td>
</tr>
<tr>
<td>Polishing wood surfaces</td>
<td>95, 139</td>
</tr>
<tr>
<td>Posts</td>
<td>207–8</td>
</tr>
<tr>
<td>gate</td>
<td>215</td>
</tr>
<tr>
<td>holes for</td>
<td>214, 215</td>
</tr>
<tr>
<td>straining</td>
<td>214</td>
</tr>
<tr>
<td>Preambles</td>
<td>21, 240</td>
</tr>
<tr>
<td>Preliminaries bill</td>
<td>6, 226</td>
</tr>
</tbody>
</table>
Prime cost items 21, 181, 189
Prismoidal formula 33–4
Projections to brickwork 59, 73, 75, 79, 81
Protection items 22, 61
brickwork and facework 68
drainage work 205
floor finishings 90, 93, 95, 97, 140
plumbing installation 194
roof coverings 113, 122, 126
stonework 158
wall and ceiling finishings 140
woodwork 101
Provisional sums 21–2, 173, 180, 183, 185, 205
Purlins 103
Quantity surveying functions 6–7
processes 3–4
techniques 7–9
Quantity surveyor, client’s 6–7
contractor’s 6–7
Quarry tile sill 149
Query sheets 20
Rafters 103, 109
calculation of length 34
Rake out joints, for flashings, etc. 118, 121
of brickwork as key for asphalt 55, 59, 121
Reduced level excavation 31–1, 37
Reduction and addenda bills 235–8
Reinforcement, bar 42, 89, 99
fabric 42, 54, 89
Reinstatement of highway 180, 183, 198, 205
Rendering 83, 85
Ridge, board 103, 110
tiles 104, 112
Roads 206–7
hardcore sub-base 206
tarmacadam 206, 209, 210
Roll, for lead 123
bossed ends 125
Roof, area of covering 35
asphalt 105, 121–2
battens 104
bitumen-felt 105
boarding 121, 123
construction 103–4
coverings 104
eaves and rainwater goods 104–5, 113–15
flat 105–6, 119–26
lead 125
pitched 103–5
protection of coverings 113, 122, 126
sheet metal 105–6
slating 104
tiling 104, 111–13
timbers 103–4, 109–10, 116, 119, 123
underfelting 111
Rough cutting 54, 58
Royal Institution of Chartered Surveyors 1, 247, 249
Rubble walling 78, 86
coping 86
fair return 86
levelling for coping 86
protection 86
Sanitary appliances 181, 189, 190
Schedules, doors 159
internal finishings 130–1, 134
manholes 266
use of 20
windows 142
Sectionalised trade bill 252
Segment of circle, area 28–9
Semi-circle, circumference of 15
Septic tank 197–8
Sheet metal roofs 105–6
Shelving 174, 178
bearers 178
cement 178
painting edge of 178
softwood 178
Shrubs 207, 213
Simpson’s rule 32–3
Site, investigations 36
preparation 37
Skirtings 132, 138
painting 138
timber 138
Sloping site excavation 30–1, 38
Soakaways 197–8
Soakers 118
Index

Soffit boarding 104, 113  
painting 114  
Specialist bills 242  
Spot items 36  
Square cutting to roof tiling around opening 117  
Squaring dimensions 11, 217–18  
Staircases 172–3, 175–8  
  handrails 175  
  landings 172  
  newels 173  
  strings 173, 175  
Standard descriptions 247–9  
Standard Method of Measurement of Building Works 4–6  
Standard Phraseology 9, 247–9  
Steel reinforcement 42, 54, 89, 99  
Steelwork 100  
  angles 147  
  erection 100  
Stock items 174, 181  
Stone, jamb 156  
  keystone 157  
  lintel 156  
  mullion 157  
  sill 149, 156  
  threshold 170  
  voussoirs 157  
Stoolings 156, 157  
Stop valve 185, 187  
Strings 173, 175  
Strutting 88  
  herring-bone 96, 119  
Stud partitions 101  
  nogpins 101  
Substructure 42  
Suspended slabs 89–90, 99, 100  
Taking-off 3  
  order of 17  
Temporary spoil heaps 31, 37, 45, 51, 69  
Tendering 254  
Testing, cold water installation 194  
  drains 198, 205  
  sanitary installation 194  
Thermal insulation 62, 111  
Threshold 170  
Timesing 11, 13  
Topsoil excavation 30–1, 37, 45, 51, 69  
Trapezoid, area 27–8  
Traps 190, 191  
Trees, planting 207, 213  
  removal 37  
Triangle, area 15  
Trimming 96, 116  
Turf, preservation and re-use 37  
Unit of billing 3, 224  
Valley 103  
  calculation of length 35  
  rafters 110  
  tiles 112  
Vent pipes 192–3  
Vents 77–8  
Verges 113  
Vertical damp-proof course 126  
Void allowances 10  
Voussoirs 157  
Wall finishings 128–9, 136–7  
  tiling 128, 129  
Wall intersections 39  
Wall plate 107  
Wallpapering 132, 137  
Waste 12, 38  
Waste pipes 191–2  
Water bar 143, 167  
Water service 183, 185  
  copper 185, 186, 187, 188  
  lead 183, 185  
Water storage tanks 181, 188  
Waterproof membrane 206  
Wax polish, block flooring 95, 139  
Window 141–2  
  adjustment of openings 146–9, 151–3  
  bullseye 150–1  
  metal 154–8  
  schedules 142  
  sill 149, 156  
  wood casements 143–9  
Work in special conditions 22  
Work tops 174  
Working space 38, 52  
Working up 3, 216