Ernst and Peter Neufert

Architects' Data

Third Edition

Edited by

Bousmaha Baiche

DipArch, MPhil, PhD School of Architecture, Oxford Brookes University

and

Nicholas Walliman

DipArch, PhD, RIBA

School of Architecture, Oxford Brookes University

Blackwell Science



CONTENTS

About This Book	viii	Suspended floors	93	
Acknowledgements	ix	Flooring	94	
Introduction		Unadian and Vandilation		
Introduction	i	Heating and Ventilation Heating	95	
muodaction		Heating: oil storage tanks	100	
Draughting Guidelines		Solar architecture	101	
Units and symbols	2	Solar energy	104	
Documentation and drawings	4	Ventilation and air conditioning	105	
Construction drawings	7	Cold storage rooms	109	
Construction drawings: CAD	10			
Construction drawings: symbols	12	Thermal and Sound Insulation		
Measurement Basis		Thermal insulation: terminology and mechanisms	111	
	15	Thermal insulation: water vapour diffusion	112	
Man: the universal standard Man: dimensions and space requirements	15 16	Thermal insulation: types of construction	113	
Man: small spaces	18	Thermal insulation: exterior walls and roofs	114	
Man and his housing	19	Sound insulation	117	
Room climate	20	Vibration damping	121	
Building biology	21	Room acoustics	122	
The eye: perception	24	Fire Protection and Means of Escape		
Man and colour	26	Fire detection	125	
Dimensional relationships	27	Fire spread	126	
Basic measurements	31	Smoke and heat extraction systems	127	
Modular system	34	Extinguisher systems	128	
Coordinate system and dimensioning	35	Fire protection: closures and glazing	130	
		Fire protection: glazing	131	
Design		Fire protection: water cooling	132	
Building details: functional use of materials	36	Means of escape from fire	133	
Form: the result of construction	37	Access for firefighters	137	
Form: modern construction techniques and forms	38			
The design of houses: expression of the period	39	Lightning Protection and Aerials		
Design method: working process	40	Protection from lightning	138	Ü
Building design: preparatory work	41	Aerials	140	U
Construction Management		Artificial Lighting and Daylight		
Construction management	43	Lighting: lamps and fittings	141	
		Lighting: provision	143	
Building Components		Lighting: arrangement	144	
The building site: foundations, excavation, trenches	51	Lighting: requirements	147	
Excavations: site and building measurements	52	Daylight	151	
Earthworks and foundations structures	53	Daylight: insolation	164	
Building and site drainage	55	Glass	166	
Damp-proofing and tanking	59	Plastics	174	
Masonry: natural stone	62	Service and the service and th		
Masonry: bricks and blocks	63	Windows and Doors	14-10-	
External walls: low-energy building construction	66	Skylights and dome rooflights	175	
Masonry bonds	67	Windows: sizes	176	
Fireplaces	68 69	Windows: arrangement	177	
Chimneys and flues Ventilation ducting	70	Windows: shading	178	
Services: connections	71	Windows: types and dimensions	179	
Roof structures	72	Loft windows	180	
Roof forms and coverings	75	Windows: construction	181	
Dormers	77	Windows: cleaning	183	
Loft space	78	Doors: internal Doors: sizes and frames	184 185	
Roof slopes and flat roofs	79	Revolving and sliding doors	186	
Flat roofs: warm roof construction	80	Garage/warehouse doors	187	
Flat roofs: cold roof construction	81	Locking systems	188	
Roof gardens	82	Security of buildings and grounds	189	
Roof gardens: roof construction	84	Security of Sentings and grounds	.03	
Roof cultivation	85	Stairs, Escalators and Lifts		
Tensile and inflatable structures	86	Stairs	191	
Cable net structures	87	Ramps and spiral staircases	194	
Suspended and tensioned structures	88	Escalators	195	
Space frames: principles	89	Travelators	196	
Space frames: applications		Travelatora		
	90	Lifts	197	
Multistorey structures				

Hydraulic lifts	200	Access corridors/decks	296
Panoramic glass lifts	201	Stepped housing	297
		Building for disabled people	298
Refurbishment, Maintenance and Change of Use		Barrier-free living	301
Renovation of old buildings	202	Old people's accommodation	302
Maintenance and restoration	207	Laundries	305
Change of use	210	Educational and Research Facilities	
Roads and streets		Schools	307
Road dimensions	212	Further education colleges	314
Road design	213	Colleges and universities	315
Intersections	215	Drawing studios	320
Roadside paths	216	Laboratories	321
Paths and paving	217	Child daycare centres	325
Bicycle parking	218	Playgrounds	326
Bicycle parking and cycle paths	219	Libraries	327
Motorways	220	Museums and art galleries	333
Tramways/urban light railways	221	Museums: examples	334
Traffic layout	222		
Traffic noise	225	Office Buildings	(250)
Securing embankments	226	Principles	336
		Principles of typology	340
Gardens		Calculations: construction	343
Garden enclosures	227	Calculations: building technology	344
Pergolas, paths, steps, retaining walls	229	Calculations: division of space	345
Earthworks	230	Calculations: floor area requirements	346
Gardens: planting methods	231	Calculations: space for furniture	348
Tendril and climbing plants	233	Calculations: archive space	350
Banked and raised beds	234	Calculations: workstations with computers	351 352
Greenhouses	235	Office buildings: examples Banks and building societies	352
Gardens: trees and hedges	236	banks and building societies	359
Garden ponds	237	Arcades	
Gardens; use of rainwater	238	Glazed arcades: typology	363
Garden equipment	239	Glazed arcades: historical examples	364
Garden swimming pools	240	Glazed arcades: applied examples	366
Private swimming pools	242	Transparent roofs and canopies	367
Houses and Residential Buildings		Retail outlets	
Porches, entrance halls and corridors	245	Shops	368
Landings and hallways	246	Food courts	370
- Storage space	247	Department stores and supermarkets	371
Utility rooms	248	Supermarkets/hypermarkets	374
Pantries, larders and storage	250	Supermarkets/11/ps/11/arkets	014
Kitchens	251	Workshops and Industrial Buildings	
Dining rooms	255	Workshops: woodworking	375
Bedrooms	257	Workshops: metalworking	379
Bathrooms	262	Workshops: showrooms and vehicle repairs	381
Carports	268	Vehicle repair shops	382
Holiday homes	269	Vehicle company workshops	384
Sheds/summer houses	270	Workshops: bakery etc.	385
Timber houses	271	Wholesale butchers	387
House orientation	272	Meat processing centre	388
Housing types	273	Industrial buildings: planning	389
Terraced houses	277	Warehouse design	391
 Semi-detached houses 	278	High-bay warehouses	392
Courtyard houses	279	Warehousing technology: planning/logistics	393
Detached houses	280	Warehousing technology: safety regulations	394
Houses with conservatories	281	Warehousing technology: rack systems	395
- Three-level houses	282	Handling	396
Square, cubic and tent-shape forms	283	Industrial buildings: sheds	397
Ecological building	284	Multistorey industrial buildings	398
House types: examples	285	Toilet facilities	399
Houses on slopes	288	Washing facilities	400
Large houses	289	Sanitary installations	401
International examples	290	Changing rooms, lockers	402
Multistorey housing Balconies	292	Power stations	403
Deligotings	295	Hydro-electric power stations	404

Agricultural Buildings		Indoor pitches	499
	405	Indoor pitches	500
Small animal stalls		Athletics facilities	
Poultry farms	408	Conditioning and fitness rooms	504
Pig sheds: fattening	409	Tennis facilities	506
Pig sheds: breeding	411	Miniature golf	508
Stables/horses	412	Golf courses	510
Cattle	414	Sailing: yachts and marinas	512
Cattle: store bulls	415	Sailing: harbours/marinas	514
Buildings for farm vehicles	416	Rowing	518
Farm facilities	417	Water sports	516
Ventilation systems	421	Riding facilities	517
Ventulation bystoms	72.	Ski jumps	519
Public Transport		Ice rinks	520
	422		
Railways: track installations		Roller-skate/skateboarding	522
이 경기를 되고 있다면 하나는 이번 이렇게 하나 하고 있습니다. 그리고 있는데 그리고 있는데 그리고 있다면 하는데 그리고 있다.	424	Cyclecross/BMX	523
Railways: UK structure gauges and clearances	425	Shooting ranges	524
Railway freight yards	427	Indoor sports	526
Railway stations	428	Skittle and bowling alleys	528
Bus stations	430	Indoor swimming pools	529
	-	Open air swimming pools	534
Designing for Vehicles		Indoor/open air swimming pools	535
Vehicle dimensions	432	Sauna	537
	434	Amusement arcades	540
		Amusement arcades	540
	436	0.00 8.72	
Garages and car-parking	439	Healthcare Buildings	344
	440	Group practices and healthcare centres	541
Filling stations	443	Hospitals: general	543
Service stations	445	Hospitals: construction planning	544
		Hospitals: planning conception	545
Airports		Hospitals: forms of building	546
Airports: planning	446	Hospitals: dimensional co-ordination	548
	448	Hospitals: corridors, doors, stairs, lifts	550
		나는 그들은 그 아이들이 얼마나 나를 가는 것이 없는데 그들은 아이들이 아이들이 되었다. 그는 그들은	
	450	Hospitals: surgical department	551
Airports: examples	451	Hospitals: main surgical rooms	552
		Hospitals: post-operative facilities	553
Fire stations		Surgery safety requirements	554
Fire stations	452	Hospitals: demarcation	555
		Hospitals: intensive care area	556
Restaurants		Hospitals: care areas	557
200 LONG TOOL SQUARE A SECOND	455	Hospitals: treatment areas	561
Control of the Contro	456	Hospitals: laboratories; functional diagnosis	564
The state of the s	457	그는 그들이 취임되었다면 이번에 가는 그렇게 되었다. 그렇게 되었다면 얼마나 없는데 없는데 바다 아이스 아름다.	565
		Hospitals: supplementary disciplines	
Control and the Control of the Contr	458	Day clinics; outpatient surgery	566
	459	Hospitals: supplies areas	567
Large kitchens	462	Hospitals: general areas	571
		Hospitals: teaching and research	572
Hotels/Motels		A&E and outpatients department	573
	464	Hospitals: maternity and neonatal care	574
	467	Hospitals: mortuary, pathology, service yard	575
TABLES ASSESSED	and a		
	468	Special hospitals	576
	469	Special care area safety	578
Youth hostels	470		
		Places of Worship	
Zoos and Aquariums		Churches	579
	473	Church organs	581
200000000000000000000000000000000000000	20	Churches: bells, towers	583
Theatres/Cinemas		Synagogues	584
	476	Mosques	585
		Mosques	365
meatres; auditoriums	478	A CONTRACTOR OF THE STATE OF	
Diameter and discount of	481	Cemeteries and Crematoria	63.7
. 이번 2 전복 회사 항상화의 및 전환 전상 전환 전세환 전환 전환	486	Cemeteries and crematoria	586
Cinemas	100	Cemeteries and graveyards	587
Cinemas	488	ournotories and graveyards	
Cinemas Drive-in cinemas Sport and Recreation	100	Bibliography	589
Cinemas Drive-in cinemas Sport and Recreation	100		589 595
Cinemas Drive-in cinemas Sport and Recreation Sports: stadiums	488	Bibliography	

Abattoirs, 387 Cable net structures, 87 renovation, 206 Absorption cooling, 106 sound insulation, 119 CAD (computer-aided Academic libraries, 327-9, 331-2 ventilation, 70, 105 design/draughting), 10-11, 44, 45 Access control systems, 190 hospitals, 560 CADD (computer-aided draughting hotels, 465 Access corridors and decks, 296 and design), 10 Accident and emergency (A&E) related standards, 609 Cafés, 459, 460 departments, 571, 573 Cafeterias, 462, 463, 571 Baths Acoustics, 319, 487, 489 Caissons, 512, 514 domestic, 262, 263, 265, 266, 267 Campers, 269, 432 related publications and industrial buildings, 400 standards, 589, 604-606 Canopies, 86, 367 Bedrooms see also Sound domestic, 257-61 Caravans, 269 Car-parks, 437, 439-42 Administration rooms, hospitals, 571 hotels, 465 Aerials, 140 Beds for flowers and plants, 234, 235 bus stations, 430 After-school care centres, 325 Beds for people cinemas, 487 Agricultural buildings, 405-21 hospitals, 543, 556, 568 motels, 469 cattle sheds, 414-15 hotels, 465 sports stadiums, 489 facilities, 417-20 positioning, 259 swimming pools, 529, 534 for farm vehicles, 416 types and dimensions, 258, 259 tennis courts, 506 pig sheds, 409-11 youth hostels, 470, 471 Carpentry workshops, 375-8 Bedsitting rooms, for nurses, 572 poultry farms, 408 Carports, 268 related publications, 593 Behnisch, Günter, 88 Cars small animal stalls, 405-7 Bells and bell towers, 583 dimensions, 432 stables and horses, 412-13 Bicycle paths, 216, 219 filling stations, 443-4 Bicycles ventilation systems, 421 repair shops and showrooms, 381-4 Agricultural glass, 170 cyclecross/BMX, 523 service stations, 445 Air conditioning, 105-8, 107, 120, 344, dimensions, 432 turning and parking, 436-7, 439 553 parking, 218, 219, 529, 534 Car washes, 443, 444 Airports, 446-51 Bidets, 262 Cash dispensers, 360, 362 related publications, 593 Billiard rooms, 527 Cast glass, 170 Air supported structures, 86 Bills of quantities, 43, 44, 45, 48 Casualty departments, 571, 573 Altars, 579 Bistros, 460 Cathedrals, 580 Amusement arcades, 540 Blast-resistant glass, 168 Cattle sheds and stalls, 414-15, 418 Ceilings Anaesthetics rooms, 552, 554 Blind people, 299 Anti-bandit glass, 168 Blinds, 177, 178, 235, 351 offices, 343, 344 Aprons, theatre, 448, 450 Blocks sound insulation, 119, 123 Aquariums, 473-4 glass, 171, 173 tennis courts, 507 Arcades, glazed, 363-7 Cellars, 59, 63 masonry, 63-5 related publications, 592 BMX, 523 Cemeteries, 586-7 Archery ranges, 525 Boathouses, 515 Central key systems, 188 Archives, 350, 571 Boats, 512-16 Central position, non-modular Art galleries, 333-5 Bobsleigh runs, 520 components, 34 Boilers and boiler rooms, 95, 120 Articles of agreement, 44 Ceramic floor tiles, 94 Artrooms, 309 Bookshelves, libraries, 327, 328, 329 Chairs, office, 348, 349 Athletics stadiums, 489, 500-3 Boundary frequency, 117, 118 see also Seating Attack alarm systems, 189 Boundary reference, 34 Change of use, 210-11 Auditoriums, 478-80, 486 Bowling alleys, 528 related publications, 590 Automatic teller machines (ATMs), Boxing rings, 526 Changing rooms, 402, 461, 484, 530 360, 362 Bracing walls, 63, 64 Chapels, hospitals, 571 Automation, office, 337, 340 Breakfast bars, 256 Check-outs, 368, 370, 373 Awnings, 86, 178, 398 Breakwaters, 514 Child daycare centres, 325-6 Axis-field grid, 9 Brechtel System, 54 Children's homes, 305 Axis spacing, 33 Children's hospitals, 578 Brewery products, cooling, 110 Bricks, 63-5 Chimneys, 68, 69, 139, 140 Babylon, hanging gardens of, 82 Brickwork dimensions, 32 Churches, 579-83 Badminton courts, 526 Buffets, 459 Churchyards, 587 Baggage tables and racks, railway Building biology, 21-3 Cinemas, 106, 107, 486-8 stations, 428 Building societies, 359-62 related publications, 594 Bakeries, 368, 369, 385 Bullet-resistant glass, 168 Circarama, 487 Balconies, 295 Bunkers, hospitals, 570 Cladding, 36, 62 Banked beds, 234, 235 Burglar alarm systems, 189, 190 Clay pigeon shooting, 524, 525 Banked hedges, 236 Buses, dimensions and turning circles, Clean rooms, hospitals, 553 Banks, 359-62 432, 433 Clean room technology, 553 related publications, 592 Bus stations, 430-1 Climate, room, 19, 20 Climbing plants, 231, 232-3 Bar charts, 46, 49 Bus stops, 430 Barns, 417 Butchers' shops, 369, 386, 387-8 Cloakrooms, 12, 308, 485, 492 Barrier-free living, 282, 301 Closed-plan offices, 342 Butter refrigeration, 109 Bathrooms Butt joints, 62, 73 Cobi golf, 509

Cabinets, office, 348, 349, 350

Cabins, ships', 269

domestic, 262-7

disabled people, 301

drainage connection values, 56, 57

Coffins, 586

Cold frames, 235

Cold construction, flat roofs, 81, 84

Curtains, 177, 186, 187, 495, 496 Cold storage rooms, 109-10 travelators, 196 Cold stores, 250, 369 Cyclecross, 523 WCs, industrial buildings, 399 Collar roofs, 72, 73 Cycle paths, 216, 219 zoos, 473 Colleges, 107, 312, 314-20 Cycles, see Bicycles Discharge lamps, 141 libraries, 327-9, 331-2 Cylinder locks, 188 Dishwashers, 252, 253 Colour, 26 Disks and disk drives, CAD, 10 glass, 167 Damp-proofing, 59-61, 202 Dispensaries, 567, 568 light, 146 Daycare centres, 302, 325-6 Diving facilities, 533 rendering, 146, 159, 167 Day clinics, 566 Documentation, 4-6, 31, 44-6, 47, 48 reproduction, lamps, 145 Daylight, 151-65 Domed structures, 86, 175 global radiation, 155 Combination key systems, 188 Doors Commentary boxes, 489 hospitals, 545, 548 disabled people, 184, 298, 301 Common rooms, motels, 469 house orientation, 272 fire/smoke resisting, 130, 135-7 Communications centres, hospitals, 570 insolation, 164-5 frames, 184, 185 Composite walls, 119 libraries, 328, 329 garage, 187 multistorey industrial buildings, 398 glass, 170 Compression cooling systems, 106 office buildings, 338, 339, 346, 351 hospitals, 550, 552, 559 Computer-aided design/draughting internal, 184 (CAD), 10-11, 44, 45 related publications and standards, Computer-aided draughting and 590, 607-608 locking systems, 188 design (CADD), 10 rooflighting, 162-3 related publications and standards, Condensation, 112 Daylight factor, 157, 162 590, 608 Decimal multipliers, 2 renovation, 205 Conditioning rooms, 504-5 Conference rooms, 456, 465 Decks, access, 296 revolving, 186 Confessionals, 579 Delannoy, François Jacques, 364 riding facilities, 517 Conservatories, 281 Demarcation areas, hospitals, 543, 555 sheep sheds, 407 sizes, 184, 185 Construction drawings, 4-14, 43 Denmark, basic measurements, 33 Construction management, 43-50 Dental practices and treatment, 542, 565 sliding, 186 collaboration with client, 41 Department stores, 371-2 sound insulation, 118 communication records, 48 Design issues strongrooms, 362 planning, 43 colour, 24, 26 supermarkets, 373 construction management, 43 preparatory work, 41-2 warehouses, 187, 394 related publications and standards, form, 37-9 workshops, 380, 382 functional use of materials, 36 Dormers, 74, 77 589, 596 supervision, 31, 45-50 houses as expression of period, 39 Dormitories, youth hostels, 470 Contiport system, 462 perception by observers, 24-6 Double glazing, 166-7, 169 Contracts, 44-5, 47 preparatory work, 41 Dovecotes, 405 Convector heaters, 96, 98 related publications and standards, Drach, A.V., 28 Conversions for disabled people, 300 589, 596 Drainage Conveyor belts, 396, 567 working process, 40 building and site, 55-8, 60-1 Cookers, 252, 253 Design method, 40 guttering, 76 pipes, 55-8, 60-1, 71, 76 Cooling, air, 106, 109-10 Desks, offices, 345, 348, 349 Cooling towers, 106 roof gardens, 84, 85 Detached houses, 280 Coordinate systems, modular, 34, 35 D'Humy ramps, car parks, 441 Draughting, see Construction drawings Dialysis stations, 578 Drawing boards, 7, 8, 320 Copper roofs, 76 Corridors, 245 Dictation rooms, 553 Drawings, 4-14, 43-4 access, 296 Digitising tablets/digitisers, 10, 11 Drawing studios, 320 disabled people, 298, 299 Drawing tables, 320 Dimensional co-ordination, hospitals, 548-9 Drinking fountains, 400 fire protection measures, 135, 136, 137 hospitals, 550, 552, 559 Dimensional relationships, 27-30 Drive-in banks, 362 hotels, 465 application of Le Modulor, 30 Drive-in cinemas, 488 offices, 343, 344 Dining rooms and areas, 255-6, 310 Drive-in restaurants, 458 Counters, 349, 362, 368, 369, 371 Disabled people, building for, 298-301 Ducting, ventilation, 70 Couple roofs, 72, 73 barrier-free living, 301 Dust allergies, 98 bicycle parking, 218 Courtyard houses, 275, 276, 279 CPM (critical path method), 46, 50 cash dispensers, 360 Ear, nose and throat (ENT) treatment, 565 Cranes, 33, 396 child daycare centres, 325 Earthworks, 53-4, 230 Crawling boards, 69 conversions, 300 Ebensee system, 226 Creches, 325 doors, 184, 298, 301 Echoes, 122, 123 gardens, 229, 234 Ecological building, houses, 66, 101, 284 Crematoria, 586 Critical path method (CPM), 46, 50 hospitals, 559, 565, 571 Edge position, non-modular Crossbow ranges, 525 hotels, 465 components, 34 Crossroads, 215 houses and apartments, 299 Egg cooling, 110 Crush barriers, 490 libraries, 327, 328 Elderly people's accommodation, Cubicles, 264, 530 lifts, 197, 198, 201, 301 302-4, 305 Cupboards offices, 339 Electrical repair shops, 386 fume, 322, 323 old people's accommodation, 302-4 Electrical services, 71, 96, 322, 344, 570 hospitals, 559 parking spaces, 437 Electromagnetic spectrum, 151 houses, 247, 248, 252, 257, 260-2 primary healthcare centres, 542 Electromagnetism, SI units, 2 ramps, 194, 298, 301 offices, 349 Elevators, see Lifts Curling, 520-1 swimming pools, 530, 531 Embankments, securing, 226, 229

Energy balance of buildings, 101 Floor heating systems, 98, 99 Greenhouses, 235 Energy conscious construction, 66, Flooring, 94 Gropius, W., 477 101, 284 agricultural buildings, 407, 410 Ground compression piles, 53 Entrance halls, 245, 571 bathrooms, domestic, 266 Ground probes, 51 designs, 67, 94 Entrance screens, glass, 170 Ground water, 21, 51, 60-1 Equipment rooms, hospitals, 552 hospitals, 552 Group practices, 541-2 Erasers, 8 mortuaries, 586 Guard rails, 193 Escalators, 195, 196 offices, 343, 344 GUM department store, Moscow, 365 Evaporative cooling, 106 renovation, 204-5, 206 Guttering, 76 Gymnasiums, 504-5, 565 Excavations, 51, 52 shops, 371 Experimental stations, 572 sound insulation, 119, 123 Gymnastics halls and equipment, 492, Extract fan units, 70 sports facilities, 493, 526 493, 494 Extractor hoods, 252 suspended, 92, 93 Extractor systems, 127, 375, 382, 408 WCs, industrial buildings, 399 Half-timbered houses, renovation, 203 Eye treatment, 565 workshops, 380, 382 Hallways, 246 Handrails, 193, 298, 302, 303, 550 Flower shops, 369 Flues, 68, 69 Hanging gardens of Babylon, 82 Farm buildings, see Agricultural buildings Fluorescent lamps, 148, 150 Farm vehicles, 416 Harbours, 514 Fencing, 227-8, 394 Fodder, 419 Hay storage, 419 Figure skating, 521 Fonts, 579 Healthcare buildings, 541-78 Filament lamps, 141 Food courts, retail outlets, 370 see also Hospitals Filing cabinets, 348, 349, 350 Footpaths, 216, 217, 229, 298 Heat extraction systems, 127 Filling stations, 443-4 Foot-washing systems, 400, 530, 539 Heating, 95-104, 106 Filtering, 106 Föppl framework formula, 89 drive-in cinemas, 488 Fire Forging workshops, 380 hospitals, 569 Forklift trucks, 434 detection, 125 related publications and standards, escape, means of, 133-6, 137 Form, 37-9 589, 604 extinguisher systems, 128-9 Foster, Norman, 88 shops, 369 plastics, 174 Foul water stacks, 58 swimming pools, 242 protection, 130-2, 187 Foundations structures, 51, 52, 53-4 Heckmann Ecohouse, 66 related publications and standards, Foyers, theatres, 485 Hedges, 236 590, 606-607 Freezers, 253 Henhouses, 405, 408, 418 safety Freight yards, 427 High-bay warehouses, 391, 392-5 car-parks, 442 French drain, 60, 61 High-pressure air conditioning hospitals, 566, 570 Front facing, 62 systems, 108 hotels, 465 Frosted glass, 150 Holiday homes, 269-70 libraries, 328 Fruit refrigeration, 109 Hopkins, Michael, 88 office buildings, 339, 353 Fruit shops, 369 Horizontoscopes, 153 Fume cupboards, 322, 323 Horse boxes, 415 railways, 424 roof gardens, 85 Functional diagnosis facilities, 564 Horse stables/stalls, 413 transparent roofs and canopies, Functional use of materials, 36 Hospitals, 543-78 Function rooms, 456 A&E and outpatients departments, 573 367 warehouses, 394 Furnace rooms, 586 care areas, 557-60 youth hostels, 470 Further education colleges, see Colleges construction planning, 544 smoke and heat extraction, 127 corridors, doors, stairs and lifts, 550 spread, 126 Game cooling and refrigeration, 110 day clinics and outpatient surgery, 566 Fire alarm systems, 125, 189 Game shops, 369 demarcation, 543, 555 Fire appliances, 137, 433 Garages, 187, 301, 436-9, 440 dimensional co-ordination, 548-9 Fire extinguisher systems Garden equipment, 239 forms of building, 546-7 Gardens, 229-38, 240-1, 417 general areas, 571 CO₂ systems, 129 foam systems, 129 related publications, 591 intensive care area, 556 halon systems, 129 laboratories and functional see also Roof gardens powder systems, 129 Gas-fired heating systems, 95, 97 diagnosis, 564 laundry facilities, 305, 306 sprinkler systems, 128 Gas heaters, 68, 97 Fireplaces, 68, 69 'Gastronorm' system, 460 maternity and neonatal care, 574 Fire-resistant glass, 130-1, 169, 172, 173 General practice premises, 541-2 mortuary, pathology and service Fire stations, 452-4 Germany, 33, 75, 424 yard, 575 First aid rooms, 489, 495 Glare, 146, 159, 160 planning conception, 545 Fishmongers' shops, 369 Glass, 130-1, 150, 166-73, 201 post-operative facilities, 553 Fish refrigeration, 109 related publications, 594 Glazed arcades, 363-7 Fitness rooms, 504-5 Glaziers' workshops, 377, 378 special, 576-7 Fixed filter drainage, 60 Global radiation, 155 special care area safety, 578 Flat roofs, 79-81 Goat sheds, 406 supplementary disciplines, 565 cold construction, 81, 84 Golden section, 20, 30 supplies areas, 567-70 cultivation, 82-5 theatres, 479 surgical department, 551, 552, 554 teaching and research, 572 warm construction, 80 Golf courses, 508-11 Flats, 92, 93, 292-7 Goods protection systems, 189 treatment areas, 561-3 related publications and standards, Goods sheds, 427 Hostels, 470-2 Grass turf, 226, 230 591, 608 Hotels, 464-72 kitchens, 459, 466, 467 Floodlights, 147 Gravestones and graveyards, 587 Floor area requirements, offices, 337, Greek alphabet, 3 laundry facilities, 305, 306 345-50 Greengrocers' shops, 369 related publications, 594

Hotels (cont.) ventilation and air conditioning, 108 Lockers, 402, 428, 530, 559 swimming pools, 242, 243 youth hostels, 470 Locking systems, 188, 218, 394 Houses Kiwariho method, 33 Loft space, 78, 180, 193 bathrooms, 56, 57, 262-7 Krainer walls, 226 Log cabins, 270 Krupp-Montal® space frame, 91 bedrooms, 257-61 Loggias, 295 carports, 268 Lorries, see Trucks with conservatories, 281 Laboratories Luggage lockers, railway stations, 428 dining rooms/areas, 255-6 hospital, 564 Luggage rooms, youth hostels, 470, 471 language, 308 Luminous flux, 141, 147 dividing walls, 119 related publications, 592 ecological building, 66, 284 as expression of period, 39 photographic, 309 Maintenance and restoration, 207-9 kitchens, 251-4 schools and colleges, 308, 321-4 related publications, 590 see also Refurbishment of old landings and hallways, 246 Laminated glass, 131, 168 multistorey, 92, 292-7 Lamps, 141-2 buildings Landing bridges, 449 Management, construction, 43-50 orientation, 272 Manufacturer's information and pantries and larders, 250 Landings, 192, 246 porches, entrance halls and Language laboratories, 308 specifications, 45 Marinas, 512-14 Larders, 250 corridors, 245 related publications and standards, Laundry facilities, 248, 305-6, 467, 469, 568 Martin, Pugh, 360 Laying nests, 405 Masonry, 62-7 591, 608 on slopes, 272, 274, 283, 288 Le Corbusier, 30, 82 Master key systems, 188 stone, 37 Lecterns, 579, 580 Maternity care, 574 storage space, 247, 250 Lecture theatres, 107, 315-19, 543 Mathematical symbols, 3 symbols, 12 Lettering, 8 Measurement basis, 15-19, 27-35 timber, 37, 271, 284 Letting of contracts, 44-5 building biology, 21-23 types, 37, 273-80, 282-3, 285-7, Libraries, 310, 311, 327-32, 572 excavations, site and building 288-91, 297 related publications, 592 measurements, 52 human scale, 1, 15-18 utility rooms, 248-9 Lifts, 197-201 Human scale, 1, 15-19 disabled people, 201, 299, 301 related publications and standards, Humidifying devices, 106 emergency systems, 190 589, 595 Humidity, 19, 20, 22, 105, 112, 242, room climate, 19-20 garages, 439 328, 329 hospitals, 550 units, 2-3, 6, 9 Hydraulic lifts, 200 old people, 302 Meat cooling and refrigeration, 109, 110 Hydro-electric power stations, 404 related publications and standards, Meat processing centres, 388 Hypermarkets, 372, 374 590, 608 Media centres, schools, 310, 311 skyscrapers, 354 Mentally ill people, care of, 578 Ice hockey, 521 sound insulation, 121 MERO space frame, 28, 90 Ice rinks, 520-1 Metalworking workshops, 379-80 Lighting Illuminance, see Daylight; Lighting arrangement, 144-6 Meteorological features, 154 Impact sound insulation, 119 art galleries, 333 Metra-potential method (MPM), 46, 50 Imperial system, 31 billiard rooms, 527 Metric system, 31 conversion factors, 611-12 density, 141 Microfiche stations, 329 Industrial buildings, 389-404 drawing studios, 320 Military cemeteries/memorials, 587 related publications, 593 hospitals, 552, 554, 557 Miniature golf, 508-9 Inflatable structures, 86 houses, 256, 257, 265 Mirrors, 257, 399 Information technology, 337, 351 intensity, 141 Mirror-type glasses, 169 Insolation, 164-5 lamps and fittings, 141-2 Modular system, 34, 35 see also Daylight lecture theatres, 319 application of Le Modulor, 30 Intensive care areas, 556, 558 libraries, 329 Moisture, SI units, 2 Interim Certificates, 48 metalworking workshops, 380 Monitoring system, 190 Internal medicine treatment area, 562 museums, 333 Mortar, 62 Intersections, road, 215, 220 natural, see Daylight Mortuaries, 575, 586 Isometry, 8 offices, 346, 348, 351 Mosaic floors, 94 Isophonic maps, 225 provision, 143 Mosques, 585 redirection, 160 Motels, 469 Japan, 33, 159 related publications and standards, Motorcycle dimensions, 432 Joiners' workshops, 375-8 590, 607 Motorways, 220 Judo, 526 requirements, 147-50 Mountain slopes, house orientation, 272 Junctions, road, 215, 220 Multistorey structures small animal stalls, 406 tennis courts, 506 arcades, glazed, 363, 364 KEBA joints, 91 theatres, 479 car parks, 440, 441, 442 Kerbstones, 217 warehouses, 394 housing, 92, 248, 266, 282, 292-7 Kindergartens, 325 industrial buildings, 398 woodworking workshops, 375 Kitchens Lightning protection, 138-9, 140 office buildings, 352, 353-4, 358 disabled people, 299, 301 Light shelves, 160 stairs, 192 hospitals, 568, 569, 570 Light transmittance, 167 woodworking workshops, 375 hotels, 461, 467 Lignotrend, 66 Museums, 333-5 houses, 251-4 Line diagrams, 46, 49 related publications, 592 large-scale catering, 462-3 Line types and thicknesses, 9 Music, 122, 123, 309 related standards, 609 Linked housing, 275, 276

Living rooms, 12, 118

Loading bays, 434-5

Natural stone, 22, 62, 94, 228, 229

Natural ventilation, 105

restaurants, 457, 459-61

schools, 310

Nave, 580 freight yards, 427 Perspective grids, 8 Neonatal care, 574 PERT (programme evaluation and related publications and standards Nesting boxes, 405 593, 609 review technique), 46 Networks, 46, 49-50 Petrol stations, 443-4 restaurant cars, 457 Night storage heating, 96 Pharmacies, hospitals, 553, 560, 567, 568 stations, 428-9 Noise, see Sound Photographic work and laboratories, 309 track installations, 422-3 Non-modular zone, 34 Photometric distance principle, 146 UK structure gauges and Northlight roofs, 75 Physiological perception field, 479 clearances, 425-6 Nursery schools, 325 Physiotherapy department, 565 urban light railways, 221, 223 Nurses, 553, 560 Pigeons, 405 Rainfall, 58, 238 Raised beds, 234 Nursing homes, old people, 302-4, 305 Pig sheds, 409-11, 418 Pile foundations, 53, 54 Ramps, 191, 194 Obstetrics, 561, 574 bus stations, 430 Piscator, E., 477 Offers, 44 Pistol shooting, 524 car parks, 441, 442 Office buildings, 336-62 disabled people, 194, 298, 301 Planning, construction, 43 drive-in cinemas, 488 archives, 350 Planting methods and plants, 231-2 banks and buildings societies, 359-62 Plant rooms, 107 garden, 229 building technology, 344 Plan views, 6 loading, 434 construction calculations, 343-51 old people, 303 Plaster rooms, 552 examples, 352-8 shops, 371 Plastics, 174 Platforms floor area requirement, 345-50 Reading rooms, 327 furniture, 348-9 bus stations, 430 Record books, 31 principles, 336-9 railway stations, 424, 427, 429 Recovery rooms, 553, 556 related publications and standards, Playgrounds, 326, 469, 474, 488 Redirection of light, 160 592, 608 Plotters, 10, 11 Reflections sanitary facilities, 401 Plunge pools, 539 light, 146, 159 typology, 340-2 Pneumatic roofing, 86 sound, 120, 122, 123-4 Ponds, garden, 237 Reflectors, 160 ventilation and air conditioning, 106, 107 Pontoons, 512, 514 Refrigeration, cold storage rooms, 109-10 workstations with computers, 351 Porches, 245 Refrigerators, 253 Refurbishment of old buildings, 202-6, 267 Oil-fired heating systems, 95 Poroton, 66 Oil storage tanks, 99, 100 Post-operative facilities, 553 related publications, 590 Refuse collection trucks, 433, 436 Old people's accommodation, 302-4, 305 Potters, rooms for, 320 related publications, 591 Regenerative energy, heating systems, Poultry Open fires, 68 cooling and refrigeration, 110 95 Open-plan banks and building farms, 408 Rehearsal rooms, 485 societies, 360 shops, 369 Reilesch's perspective apparatus, 8 Open-plan offices, 340, 341, 342 Reinforced masonry, 64, 65, 67 stalls, 405 Open-plan schools, 313 Power stations, 403-4 Remote control security systems, 190 Opera houses, 477, 478, 482-5 Prayer rooms, 571 Remote heating systems, 95 Operating theatres, 552, 553, 554 Press boxes, 489 Research laboratories, 321-4, 564 Organs, church, 581-2 Printers, 10, 11 Restaurant cars, 457 Outpatients departments/surgery, 547, Prisms, 160 Restaurants, 305, 455-63, 466, 467 566, 573 Probes, ground, 51 related publications and standards, Profiled glass, 172 593-609 Restoration, 207-9 'Pachinko' gaming arcades, 540 Programme evaluation and review see also Refurbishment of old Paint shops, 386 technique (PERT), 46 Pallets, 392, 394, 395, 396, 439 Projection rooms, 486, 488 buildings Pallet trucks, 434 Proportion, rules of, 1, 15, 24 Retaining walls, 54, 226, 229 Reverberation time, 122, 124 Panorama masks, 153 Psychiatric care, 578 Reversible offices, 341 Panoramic glass lifts, 201 Public health offices, 573 Riding facilities, 517-18 Pantries, 250 Public houses, 458 Paper, sizes and folding, 4, 5, 7 Public libraries, 327, 330 Rifle shooting, 524 Parallel motion rulers, 7 Pucks, 10, 11 Ring drainage system, 60 Roads and streets, 212-25, 272, 450 Park and ride systems, 430 Pulpits, 579 related publications, 591 Parking aircraft, 447, 450 Quick-set hedges, 236 Rogers, Richard, 88 bicycle, 218, 219, 529, 534 Roller shutters, 187 cars, 436-8; see also Car-parks Rabbit hutches, 406 Roller skating rinks, 521-2 fire engines, 453 Rack systems, warehouses, 394, 395 Roller walls, 186 trucks, 436-8 Radiation Roof gardens, 81, 82-5 global, 155 Parks, graveyards as, 587 car-parks, 441, 442 Parquet flooring, 94, 123 ground, 21-3 Roof houses, 75 Partition curtains, 186, 495, 496 solar, 154, 155-6 Rooflighting, 162-3, 175 Roofs, 72-85 Pathology department, 575 Radiators, 96, 114 Radiology departments, 562 aerials, 140 Paths, 216, 217, 229, 298 Radiotherapy, 563, 578 cattle stalls, 415 Paving, 217, 229 Pencils and pens, architects', 7, 8 Rafter roofs, 73 chimneys, 69 Perception and the eye, 24-7, 479 Raft foundations, 53 coverings, 75-6 flat, 79-81, 84 Performance specifications, 45 Railways

European structure gauges and

clearances, 424

Pergolas, 229

Perspective drawing, 8

forms, 72-3, 75-6

lightning protection, 138

Roofs (cont.)	goods, 427	ventilation and air conditioning, 107
renovation, 204	industrial, 397	vibration damping, 121
sheds, industrial, 397	Sheep sheds, 407	windows, 118, 182
slopes, 33, 79, 83, 84	Sheet roofs, 76	Sound-control glass, 169
sports stadiums, 490	Sheltered housing, 302	Space frames, 89–91
storage space, 247	Shelving	Special care units, 558, 578
structures, 72–4	hospitals, 571	Specialist hospitals, 543, 576–7, 578
tensile, 86	libraries, 327, 328, 329	Specifications, 45, 48
thermal insulation, 114	metalworking workshops, 379	Speech intelligibility, 122
transparent, 367	offices, 350	Spiral ramp car-parks, 441, 442
windows, 180; see also Rooflighting	shops, 368, 371	Sport, related publications and
woodworking workshops, 375	warehouses, 391, 394, 395	standards, 594, 609-610
Room climate, human factors, 19, 20	Shielding glass, 169	Sports halls, 491–6
Roundabouts, 215	Ships' cabins, 269	Sports pitches, 497–9, 526–7
Rowing, 515	Shooting ranges, 524–5	Sports stadiums, 489-90, 500-3
Royal boxes, 490	Shoplifting protection systems, 189	Squash courts, 527
Runways, 448, 450	Shopping trolleys, 372, 373	Stables, 412-13, 517-18
Rüter, E., 91	Shops, 368-74	Stages, theatre, 481-2
	Showers	Stairlifts, 201, 299
Sacristy, 580	domestic, 262-7	Stairs, 191-4
Saddle rooms, 517	hospitals, 558, 559	hospitals, 550
Safes, 359, 361	industrial buildings, 400	offices, 353
Safety deposit boxes, 359, 361	sports halls, 495	old people, 302
Safety glass, 168	swimming pools, 531, 534	related publications and standards,
Safety regulations, 394, 483, 563	Showrooms, vehicle, 381	590, 608
see also Fire safety	Shutters, 178	renovation, 206
Sailing, 512–14		schools, 308
	Silos, 419	
Sanitary installations, 401, 470, 471, 531	Sinks, 253	sports stadiums, 489
see also Bathrooms; Showers; WCs	see also Wash-basins	storage space under, 247
Sash windows, 105	Site layouts, 6	symbols, 13
Saunas, 537–9	Site measurements, 52	theatres, 485
Sawtooth roofs, 75, 138	SI units, 2–3	youth hostels, 470
Scales, 6	Skateboarding, 522	Standard Numbering System, 31-2, 33
Scane space frame, 91	Skating rinks, 520–2	Standing areas, sports stadiums, 490
Schools, 307-13, 325, 326	Ski jumps, 519–20	Stargolf, 509
Science libraries, 331	Skittle alleys, 528	Stations, 428-9, 430-1
Science rooms, 309	Skylights, 175	Steam jet cooling, 106
Sculptors, rooms for, 320	Skyscrapers, 354, 358	Stencils, lettering, 8
Seating	Slate roofs, 75	Stepped housing, 297
churches, 579	Slaughterhouses, 387	Steps, garden, 229
cinemas, 487	Sliding doors, 184, 186, 373	see also Stairs
laboratories, 322	Slopes, houses on, 272, 274, 283, 288	Stereographic projection of sun's path,
lecture theatres, 318	Small animal stalls, 405–7	152
offices, 348, 349	Small goods lifts, 199	Sterile goods rooms, 552
	Small goods into, 195	
restaurants, 455–6, 458	Smoke extraction/venting systems,	Sterilisation of hospital instruments,
sports halls/stadiums, 490, 495	127, 175	554, 567
theatres, 478, 479	Smoke hoods, 68	Stone, natural, 23, 37, 62, 94, 228, 229
Sectional drawings, 43	Snack-bars, 459, 460	Storage
Security systems, 125, 188, 189-90	Snorkel banks, 362	bedrooms, 257, 260-1
banks and building societies, 361, 362	Soakaway, 60	boats, 514
libraries, 328	Solar architecture, 101–3	CAD v. paper-based systems, 10
offices, 349	Solar constant, 154	cold storage rooms, 109-10
warehouses, 394	Solar control double glazing, 167	freight yards, 427
see also Locking systems	Solar electricity, 104	heating oil, 98, 99, 100
Selectivity code, 167	Solar energy, 101, 102, 104, 154, 155-6	hospitals, 571
Self-service restaurants, 459, 461	glass, 167	space, houses, 247, 250, 299
Semi-detached houses, 275, 276, 278	Solar heat, 104	sports halls, 492, 493
Serlio, Sebastiano, 476	Solar positions, 151-3, 164-5	theatres, 483
Services	Solar radiation, 154, 155-6	warehouses, 391-5
connections, 71	Solid fuel heating systems, 95	Streets and roads, 212–25, 272, 450
noise from, 120	Solid masonry walling, 63, 65	Strip foundations, 53
Service stations, 445	Sound absorption, 120	Strongrooms, 359, 361–2
Service stations, 445 Service yards, hospitals, 575	Sound insulation, 117–24	Structural glazing, 169
Set squares, 7	bathrooms, 266	
		Stylus, 10, 11
Sewage, farms, 420	glass block walls, 173	Substerilisation rooms, 552
Seward, Edwin, 364	hospitals, 550	Summer houses, 270
Shadows and shading, 153, 159, 178, 235	related publications and standards,	Sunshine, 164–5
Sheds	589, 604–606	see also Daylight
agricultural, 406, 407, 409-11,	room acoustics, 122-4	Supermarkets, 371–4
414–15, 418	shooting ranges, 525	Supervision, construction, 45–50
garden, 270	traffic noise, 223, 225	Supplies areas, hospitals, 567-70

Supporting walls, 64, 65
Surgical departments and surgeries, 551–2, 553, 554, 566
Surveys, renovation of old buildings, 202
Suspended structures, 88, 92, 93
Sway factor, 354
Swimming pools, 240–4, 529–36
roofs, 79, 81
sound insulation, 120
thermal insulation, 113, 114
Synagogues, 584

Tables, 348, 455, 456, 458 Table tennis, 527 Tableware, 255 Tailors' shops, 386 Tanking, 59-61 Teaching hospitals, 572 Tea rooms, 459 Technical colleges, see Colleges Technical conditions, 45 Telecommuting, 337 Telescopic doors, 186, 187 Tempered glass, 168 Tender action, 44-5 Tennis facilities, 506-9 Tensioned structures, 86, 88 Tents, 269 Terminals, airport, 448-9, 450 Terraced houses, 275, 276, 277 Thatched roofs, 75, 138, 140 Theatres, 106, 107, 476-85 related publications, 594 Thermal boundary layer resistance, 111 Thermal capacity, 111 Thermal conductance, 111, 181 Thermal conductivity, 111, 115-16 Thermal insulation drawing conventions, 14 exterior walls and roofs, 66, 114-16 flat roofs, 79 floor heating systems, 99 loft space, 78 pig sheds, 410 rabbit hutches, 406 related publications and standards, 589, 605-606 summertime, 156 terminology and mechanisms, 111 types of construction, 113 ventilation, 105

Thermal resistivity, 111
Thermal transmittance, 111, 167
Thomsen, Kaj, 91
Three-level houses, 282
Throwing fields, 501
Ticket machines, railway stations, 428
Ticket offices, cinemas, 487, 488
Tile drain, 60
Tiled roofs, 75
Timber houses, 37, 203, 205, 270, 271, 284
Time and solar position, 152
Timetable display boards, railway stations, 428

water vapour diffusion, 22, 112

Thermal resistance, 111, 114

'T' junctions, 215 Toboggan runs, 520 Toilets, see WCs Topsoil, 230

Toughened glass, 168 Town houses, 275, 276 Tractors, 416 Traffic layout, 222-4 Traffic noise, 225 Training of plants, 231, 232 Trains, see Railways Tramways, 221 Transfer lettering, 8 Transparent and translucent materials, 150 Travelators, 196 Trees, 236 Trellises, 231, 232 Trenches, 51 Triple glazing, 166

Trombé walls, 102

T-squares, 7

Turf, 226, 230

Trucks, 432, 433, 436, 438

Turning circles, 432, 435, 436-8 Ulm theatre, 480 Ultra-violet light-cooled glass, 169 United States of America, 33, 302, 338 Units, 2-3, 6, 9 Universities, 314-20 hospitals, 543, 572 lecture theatres, 107, 315-19 libraries, 327-9, 331-2 related publications and standards, 592, 608 Urban light railways, 221, 223 Urban planning, and disabled people, 298 Urinals, 263, 399 see also WCs Urns, 586, 587

Urological treatment, 565

Utility rooms, 248-9

Valuation example, 48 Vasari, Giorgio, 476 Vegetable refrigeration, 109 Vegetable shops, 369 Vehicles agricultural, 416 dimensions, 430, 432 loading bays, 434-5 repair shops and showrooms, 381-4 turning and parking, 432, 435, 436-8 Ventilation, 105-8 agricultural buildings, 406, 408, 412, 415, 421 bathrooms, 266 bedroom cupboards, 260 dome rooflights, 175 ducting, 70 greenhouses, 235 hospitals, 563, 569, 574 laboratories, 322 libraries, 328, 329 metalworking workshops, 380 offices, 344, 346 related publications and standards, 589, 604 restaurant kitchens, 461 shops, 369, 371

sound insulation, 107, 120

WCs, industrial buildings, 399

swimming pools, 242

theatres, 478, 481

windows, 105, 177
Venting, heat and smoke extraction, 127
Vibratory pressure process, 53
Video-conferencing, 337
Visual links, 158

Wagner, R., 477 Waiting rooms, 564, 565 Walls, 62-7 glass blocks, 171, 173 hospitals, 552, 559, 578 low-energy construction, 66 mortuaries, 586 pig sheds, 410 renovation, 206 retaining, 54, 226, 229 silos, 419 sound insulation, 118, 119, 123 tennis courts, 506 thermal insulation, 114 Trombé, 102 types and thicknesses, 65 WCs, industrial buildings, 399 woodworking workshops, 375 War cemeteries/memorials, 587 Wardens, youth hostels, 470, 471 Wardrobes, 260-1, 469 Warehouse design, 187, 391-6 Warm construction, flat roofs, 80 Wash-basins, 262, 263, 399, 400, 559 Washing, air, 106 Washing facilities, industrial buildings, 400 Washrooms, hospitals, 552 Waste compaction units, 252 Waste disposal, 248 Waste water, farms, 420 consumption, 265, 569 ground, 21, 51, 60-1 rain, 58, 238 waste, 420 Waterproofing membranes, 14, 85

Waste, 420
Waterproofing membranes, 14, 85
Water sports, 516, 533
Water table, 51
Water vapour diffusion, 22, 112, 115–16
Wattle, 226, 230
WCs
disabled people, 298

hospitals, 553, 559 houses, 262, 263, 264, 266, 267 industrial buildings, 399, 401 mosques, 585 offices, 343, 401 restaurants, 456, 461 schools, 308 sound insulation, 121 sports halls, 492 storage space, 247 swimming pools, 531, 534 theatres, 485 ventilation, 70, 105 youth hostels, 470 Weight-lifting, 526 Weinberg steps, 123 Welding workshops, 380 Wet cells, 558, 559 Wet rooms, 206, 264 Wheelchairs, 298 Wheelchair users, see Disabled people, building for

Wholesale butchers, 387 airports, 446, 450 and chimney efficiency, 69 farm facilities, 417 harbours and marinas, 514 house orientation, 272 office buildings, 352, 354, 355 porches, 245 Windows arrangement, 177 cleaning, 183 construction, 181-2 daylight, 158 glass, 166-70 hospitals, 550, 553, 557 lighting, 150

multistorey industrial buildings, 398

loft, 77, 180

offices, 347, 348, 353

related publications and standards, 590, 608 renovation, 205 restaurants, 456 riding facilities, 517 shading, 178 sizes, 176, 180 skylights and dome rooflights, 175 sound insulation, 118, 182 types and dimensions, 179 ventilation, 105, 177 woodworking workshops, 375 Woermann roofs, 81 Wood block paving, 94 Woodworking workshops, 375-8 Workshops, 375-88 bakeries, 385 hospitals, 570 metalworking, 379-80 related publications, 593

showrooms and vehicle repairs, 381–4 theatres, 484 wholesale butchers, 387, 388 woodworking, 375–8 Workstations, 336, 337 construction calculations, 346, 347, 349, 350, 351 vehicle repair shops, 383 Wrestling, 526 X-ray department, 562

Yachts, 512–13, 514 Youth hostels, 470–2 Youth hotels, 471, 472

Zinco roof cultivation systems, 83 Zoos, 473–5 related publications, 594