

Crafting Log Homes Solar Style

AN INSPIRING GUIDE TO SELF-SUFFICIENCY

Rex A. Ewing and LaVonne Ewing



PIXYJACK PRESSLLC

INDEX

Italic numbers refer to photos/illustrations

- access to site, 30-31
- air-conditioning, 19
- appliances; for off-grid homes, 249; propane, 42
- backfilling around foundation, 75
- batteries, 201-203
 - placement of, 23
 - wiring, 203
- Benshoof, John, 25-27, 108, 118, 140, 141, 150, 155, 160, 166, 169
- Bergey Wind Power, 195-198
- Bosworth Tools, 56, 56
- Brannon, Glenn & Carole, 164
- Buckhorn Camp, 24, 24, 99, 139, 157
- ceiling options, 21, 136-137
- charge controllers, 200-201
- checks/cracks in logs, 174-175, 174
- chimneys, settling around, 170
- chinked vs. chinkless, 95-96
- chinking, 178-179, 178, 179
- cisterns, 226-227
- cleaning logs, 175-176
- comparing kit prices, 25
- composting toilets, 42
- concrete: floors, 76; foundation walls, 73-74
- Cooper, Jim, 26
- corn / pellet stoves, 219-220
- Coseno, Tom & Kathy, 103-104
- costs to consider (checklist), 248-249
- Cudworth, Ken & Gladly, 224
- damp-proofing foundation, 75
- decks / porches, 238-239
 - railings, 239-240
- designing for efficiency and comfort, 16-23
- doors. *See* windows
- dormers, 123
 - framing, 133-134, 134
- drawknives, 56, 56
- drip edge/flushing, 175
- drywall, installing, 233-235
- eaves, 19, 144, 174
 - framing, 134-136, 134, 135
- electrical considerations, 22-23
 - wiring a log home, 159-161
- Enertia Building Systems, 103
- English, Michael & Dianne, 86
- excavation, 61-63
 - septic system, 64
- finishes, log. *See* log finishes
- fireplaces
 - Rumford, 35, 35
 - settling around chimneys, 170
- floor plan considerations, 20-21
- floors, 79-84
 - concrete, 76
 - l-joists, 80
 - installing 2nd floor, 111-113
 - joists, 82-83
 - subfloor, 83-84
 - support, 81-82
- footings, 69-70
- forced air heating, 212-213
- foundation, 64-75
 - anchor bolts, 74, 74-75
 - backfilling, 75
 - beam pockets, 74, 74-75
 - concrete pour, 72-74
 - damp-proofing, 75
- foundation *continued*
 - footings, 69-70
 - making it level, 68-69
 - making it square, 66-68, 67
 - pier, 40-41
 - walls, 70-74
 - polystyrene forms, 71-74
- frame walls, settling, 166-168, 166, 167, 168
- French, 93, 138, 175
- gables, 117-123
 - framed, 122-123, 122
 - full log, 118-119, 119
 - vertical log, 119-121, 120, 121
- generator, 51-52
- geothermal heating, 213
- gin pole, 89-90
- grid-tied systems, 191-193, 191, 192
- gusset plates, 121
- gypsum concrete (gypcrete) for radiant heating, 215-216, 216
- heating, 211-222
 - and cooling, 18-20
 - domestic water, 222
 - corn/pellet stoves, 219-220
 - forced air, 212-213
 - geothermal, 213
 - hot water systems, 213-217
 - masonry stoves, 220
 - propane wall heaters, 212
 - radiant floor heat, 214-217
 - trombe walls, 20
 - wood-fired boilers, 220-222
 - woodstoves, 218-219

home design
 cross-ventilation, 19-20
 electrical room, 22-23
 heating and cooling, 16-21
 orientation, 17-20, 65-66
 plumbinc, 22, 169-170
 protection of logs, 19
 hot water heating, 213-217
 solar, 217-218, 221

insulation, in roof, 136, 138
 interior finishes, 21-22
 interior log walls, 108
 inverters, 22-23, 204-206
 battery-based, 204-206
 direct-tie, 204
 sine wave / modified sine
 wave, 205-206

Jacka, Jerry & Lois, 49-50
 joists, 80, 82-84
 TJI, 80, 83, 120, 125, 136

Kavouras, Pat, 210
 Kernes, Gregg & Donna, 24
 keyways/splines, 156-157
 Kingsley, Bob & Linda, 157, 170,
 179
 kitchen cabinets, settling, 171

Lasko School of Log Building, 24
 light tubes, 19
 lightning protection (Ufer), 76
 log checks/cracks, 174-175, 174
 log ends, 114, 114
 log finishes, 173-177
 log floor beams, 111-112
 Log Knowledge, 27, 169
 log posts, settling, 170-171, 171
 log preservation, 176-177
 log protection, large eaves, 19
 log railings, 239-240
 log ramp, 92
 log settling, 153, 156-159
 log shrinkage, 153, 156-159

Log Wizard, 89
 logs
 buying, 45-46
 checks/cracks, 174-175, 174
 cleaning, 175-176
 cribbing, 47-48
 finishing (stains, sealers),
 173-177
 green or seasoned, 46-47
 height above ground, 18
 lifting, 89-93
 moisture content, 48
 peeling, 88-89
 preservation, 173-177
 purlins, 137-141, 137
 R-value, 17
 shrinkage, 47
 species, 46, 47
 thermal mass, 17
 twist, 46
See also logwork

logwork
 choosing logs, 105-107
 cutting log ends, 114, 114i
 door & window openings,
 109-110
 first log, 97-98
 floor beams, 111-112, 112, 113
 interior log walls, 108
 keeping it square, 103, 103,
 110-111
 marking for openings, 96-97
 notch types, 99
 notching, 98-102
 removing bumps & knots, 107
 scribing, 99-102, 107
 securing last wall log, 114
 spiking logs, 108-109
 splicing logs, 108
See also logs

lookout rafters, 135, 135i

Mackie, B. Allan, 24, 96, 155
 maintenance of logs, 176-177
 masonry stoves, 220

micro-hydro power, 199
 Moews, Ted & Katie, 34, 116
 moisture content of logs, 48
 Munsell, Greg, 172

non-living spaces, 22-23
 notches
 around floor beams, 111-113
 cutting, 98-102
 round vs. scarf, 99
 saddle (round), 99-101
 scribing, 95, 99-102, 107

off-grid homes, appliances, 249
 off-grid systems, 190-191, 190
 on-demand water heaters, 222
 orientation of home, 17-20, 65-66

passive solar, 18-20
 peeling logs, 88-89
 pellet stoves, 220
 permits and plans, 37-42
 pier foundations, 40-41
 photovoltaic (PV) panels, 127,
 193-195
 plans and permits, 37-42
 plumbing, 22
 gas line for refrigerator, 42
 settling issues, 169-170
 pre-crafted homes, 25-27
 preservatives for logs, 173-177
 pressure washing logs, 175-176
 propane wall heaters, 212
 Pudim, Rob, 210
 pumping water, 225-229
 purlins, 137-141, 137
 interior support, 141-142
 framed gable ends, 139, 139
 full log gable ends, 140
 vertical log gable ends, 140

radiant floor heating, 214-217
 rafters
 log, 136-137, 136
 rafter ends & rain gutters, 144

railings, 239-240
 rain gutters, 144
 rainwater collection, 229
 Reisman, Dan & Ronnie, 78
 renewable energy, 189-208
 batteries, 201-203
 charge controllers, 200-201
 Ewing's home system, 185
 inverters, 204-206
 micro-hydro, 199
 placement and orientation, 17-20
 placement of equipment, 22-23, 41-42
 power sources, 193-199
 solar energy 17-20, 31-32, 41-42, 193-195
 heating water, 217-218, 221
 orientation,, 31
 system sizing, 206-208
 types of systems, 189-193
 wind energy, 32-33, 195-198
 rim joists, 82
 road access, 30-31
 roof, 136-143
 log accents, 142-143
 making it dry, 144-145
 material options, 145-147
 rain gutters, 144
 solar panels, 147
 trusses, 141, 141
 with log or timber rafters, 136-137, 136
 with structural purlins, 137-142, 137
 See also roof framing
 roof framing, 125-144
 dormers, 133-134, 134
 eaves, 134-136, 134, 135
 130-132, 130, 131
 measuring for rafters and gables, 129-131, 129, 130
 pitch, 126-127, 126
 rafter ends & bird's mouths, 131-132, 131, 132
 wall plate, 128

roof pitch, 126-127, 126
 roof rafters, 129-132
 roofing material options, 145-147
 scarf notches, 24
 screw jacks, for settling, 170-171, 171
 scribing, 95, 99-102, 107, 234-235, 235
 septic system, 64
 settling, 153, 156-159, 165-171
 chimneys & stove pipes, 170
 frame walls, 166-168, 166, 167, 168
 kitchen cabinets, 171
 plumbing pipes/vents, 169-170
 screwjacks, 170-171, 171
 stairs, 168-169
 vertical support posts, 170-171
 sheetrock, installing, 233-235
 shrinkage, 153, 156-159
 sill plate, 81-82
 site selection, 29-34
 skylights, 19-20
 solar energy
 components, 41-42
 heating water, 217-218, 221
 orientation, 17-20, 31
 placement, 31-32, 127
 solar arrays, 127, 193-195
 Solar Pathfinder, 31
 solar water heating, 217-218, 221
 solar/wind energy components, 41-42, 41. *See also* renewable energy.
 southern exposure, 31-32
 Southwest Windpower, 196, 198
 spiking logs, 108-109
 stains & sealants, 173-177
 stairs: custom log, 237-238;
 settling, 168-169
 stonework, 242-243
 subfloor, 83-84

 thermal mass of logs, 17
 tile, 241
 TJI, 80, 83, 120, 125, 136

tools, 51-59
 for logwork, 55-59
 preconstruction tools, 51-55
 Trimetric meter, 184
 trombe walls, 20
 trusses, roof, 141, 141
 Tulikivi stove, 220

 Ufer grounding system, 76
 Uni-Solar, 147, 194, 194

 Van Wagner, Scott & Tess, 34-35
 Vesely, Carole, 172

 wainscoting, 236
 washing logs, 175-176
 walls
 interior log, 108
 frame walls for plumbing and electrical, 22-23, 159-161, 167-170
 water
 availability, 32
 cisterns, 226-227
 heating, 222
 pumping, 225-229
 rainwater collection, 229
 well pumps, 227-229
 wind energy, 32-33, 195-198
 towers, 197-198
 window ratings, 18
 windows & doors, 18-19, 151-159
 bucks, 152-153, 152, 153, 155-157, 156, 157
 cutting the openings, 154-155
 design for efficiency, 18-19
 keyways/splines, 156-157
 log settling, 153, 156-159
 trim boards, 158-159, 158, 159
 wiring a log home, 159-161
 Wirth, Roger & Kathryn, 230
 wood-fired boilers, 220-222
 woodstoves, 218-219
 settling around chimneys, 170