MEMBERS VAULT · BUILD PLAN

Backyard Build Plan

The Practical Backyard Bunker — phase-by-phase sheets so you can work from the book without rereading the whole thing.

To be used with The Practical Backyard Bunker

These sheets are the working copy I wanted when I was standing in a yard with a book in one hand and a list in my head. They follow the eight phases in Appendix D of *The Practical Backyard Bunker*, from the first phone call to a stocked shelter and a night drill. The book is honest about the calendar: a realistic project takes three to five months, and most of that is planning and waiting, not building. These are not two-day weekend promises. Read the matching book before you build, follow local codes and permits, and treat the sheets as a companion, not a substitute for the book or for a qualified professional where one is needed. Start here only if this is the book and the site you actually have.

WHAT'S IN THIS SET

A short how-to page, a blank sheet you can copy for a work session the book doesn't name, eight phase sheets filled from Appendix D, and the materials checklist from Appendix A. Quantities in the book are rough figures for a typical 10 × 12 poured concrete shelter. Your engineer's drawings and your supplier give the real numbers.

These sheets are a planning companion to the matching book. They are not engineering, structural, electrical, or safety advice and not a substitute for local codes, permits, or a qualified professional. Measurements, materials, and safety notes must come from the book. Do not build from a blank field.

BUILT, NOT JUST WRITTEN.

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How to use these sheets

The chapters of the book are organized by topic. Appendix D puts the same work in the order it actually happens. These sheets follow that appendix, one phase at a time, so you can carry a single page into the yard or to a meeting with a contractor.

1. Read the matching chapters in *The Practical Backyard Bunker* before you start a phase. The sheet is a checklist, not the method.
2. Fill in the date, helpers, and weather at the top of the phase you are actually on. Skip ahead only if the previous “Done when” line is honestly true.
3. Use the materials and cut lists as a reminder of what the book already listed for this phase. If a quantity is a rough figure for a 10 × 12 shelter, it is marked that way. If a field would require a number the book does not give, it is left to the drawings.
4. The questions are questions, not a sign-off that the design is approved or code-compliant. Permits, inspections, and 811 are your jurisdiction’s rules, not this sheet’s.
5. When a phase is done, use “Next phase” to pick up the following sheet. A blank master is included if you need an extra work session the appendix does not name.

A NOTE ON WEEKENDS

The library calls these backyard build plans “weekend-by-weekend,” but this book does not break the bunker into two-day jobs. I kept the book’s eight phases and their week ranges so I would not invent a construction sequence. Some phases are phone calls spread over a month. Some are a few days of machine work with a lot of curing in between. Time estimates in Appendix D are typical, not guaranteed. Weather, inspection schedules, contractor availability, and concrete curing all move the calendar.

These sheets are the working copy. The method, the why, and the full detail stay in The Practical Backyard Bunker.

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Blank work-session sheet

Master template — not a design

Master template — copy this page for a work session the book does not already name. Do not invent materials, cuts, measurements, or safety steps. If the book and the drawings do not give a figure, leave the line blank and go back to them.

PROJECT _____ PHASE OR SESSION NAME _____

DATE _____ HELPERS _____

WEATHER _____ FROM BOOK CHAPTER / APPENDIX _____

THIS SESSION'S AIM

NOT THIS SESSION

MATERIALS FOR THIS SESSION

Item	Qty (from book or drawings)

TOOLS

Tool

STEPS (IN THE BOOK'S ORDER)

- [ ] _____
- [ ] _____
- [ ] _____
- [ ] _____
- [ ] _____
- [ ] _____

BEFORE YOU START · SITE / PERMIT QUESTIONS

Write them as questions ("Have you checked local permit rules for this step?"). Never as a promise the design is approved.

- [ ] _____
- [ ] _____
- [ ] _____

DONE WHEN _____ NEXT SESSION _____

LEFTOVER MATERIALS _____ DATE FINISHED _____

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Phase 1 — Decide and Research

Weeks 1–4 · from Appendix D of The Practical Backyard Bunker

DATE _____ HELPERS _____ WEATHER _____

THIS PHASE'S AIM

Write down what the shelter is for, check whether the site is even a candidate, talk to the building department and your insurer, set a rough budget, and decide prefab or poured. This phase is phone calls, maps, and a sentence of purpose — not digging.

Not this phase. Do not dig, do not order concrete, and do not treat a rough budget as a bid. The rest of the timeline in the book assumes a poured shelter; if a certified prefabricated shelter meets your needs and a truck and crane can reach the yard, get quotes before going further.

MATERIALS FOR THIS PHASE

- [ ] Appendix B cost worksheet, for sketching a rough budget (add 15 percent for surprises — the book's figure)
- [ ] A way to look up your property on FEMA's flood maps
- [ ] A notebook for the name of the person you talk to at the building department

CUTS / LAYOUT

None this phase. This is planning.

TOOLS

None required.

BEFORE YOU START

- [ ] Review the Important Safety Notice at the front of The Practical Backyard Bunker before you go further.
- [ ] This book is for general information only. It is not a set of construction plans and is not a substitute for a licensed structural engineer, contractor, or electrician.
- [ ] Before building any shelter, have the structure designed or reviewed by a licensed professional, obtain the permits your jurisdiction requires, and call 811 before you dig.

STEPS — IN THE BOOK'S ORDER

1. Write down what the shelter is for. One sentence. Storm protection for four people? Multi-day stays for six? This decides size, ventilation, and budget. (Chapter 5)
2. Check your site against the deal-breakers. Look up your property on FEMA's flood maps. Walk the yard in a heavy rain. If the site floods, holds standing water, or sits in a hurricane surge zone, stop and consider an above-ground safe room instead. (Chapters 1–3)
3. Call your building department. Ask whether you need a permit, whether stamped engineering is required, what the setbacks are, and what inspections they'll want. Write down the name of the person you talked to. (Chapter 4)
4. Call your insurance agent. Ask whether a below-grade structure affects your homeowner's policy and what documentation they'll want.
5. Set a rough budget. Use Appendix B to sketch numbers, and add 15 percent for surprises. (Chapter 12)
6. Decide: prefab or poured. If a certified prefabricated shelter meets your needs and a truck and crane can reach your yard, get two or three quotes before going further. It's often the simplest path. The rest of this plan assumes a poured shelter.

SITE / PERMIT QUESTIONS

- [ ] Have you checked local permit rules for a below-grade shelter on your property?
- [ ] Have you asked your building department whether stamped engineering is required?
- [ ] Have you asked your insurance agent how a below-grade structure affects your policy?
- [ ] If the site floods or holds standing water, have you stopped and considered an above-ground safe room instead, as the book directs?

Done when. You have a one-sentence purpose, a first read on flood risk, notes from the building department and your insurer, a rough budget with a 15 percent cushion, and a clear prefab-or-poured decision.

Next phase. Phase 2 — Design and Paperwork (Weeks 4–10)

LEFTOVER MATERIALS _____ DATE FINISHED _____

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Phase 2 — Design and Paperwork

Weeks 4–10 · from Appendix D of The Practical Backyard Bunker

DATE _____ HELPERS _____ WEATHER _____

THIS PHASE'S AIM

Get the information an engineer (or a FEMA P-320 design) needs, lock in the openings and the drainage path on the drawings, submit for the permit, collect contractor quotes, and order long-lead items such as a fabricated steel hatch.

Not this phase. Do not dig, and do not pour anything. Do not cut openings into concrete later — every hatch, vent, second exit, and conduit sleeve has to be in the drawings now.

MATERIALS FOR THIS PHASE

- [ ] Site plan and intended size and use, to give the engineer (Chapter 5, Appendix G)
- [ ] Soil information; a geotechnical test if there's any doubt (Chapter 3)
- [ ] A fabricated steel hatch, ordered once the drawings show its exact opening size — the book notes this can take several weeks

CUTS / LAYOUT

None this phase. Openings are planned on paper, not cut.

TOOLS

The questions in Appendix G, for the professionals you hire.

BEFORE YOU START

- [ ] Have the structure designed or reviewed by a licensed professional before you build (Important Safety Notice).
- [ ] Building codes, soil conditions, and safety requirements vary by location. Follow what your jurisdiction requires, not a blank on this sheet.
- [ ] Ask each excavator how they'll protect the hole from collapse (Appendix D, Step 12).

STEPS — IN THE BOOK'S ORDER

1. Get a soil test if there's any doubt. A geotechnical test tells you soil type and how deep the water table sits. If groundwater shows up within a few feet of the bottom of your planned shelter, you'll want to know now. (Chapter 3)
2. Hire an engineer, or choose a FEMA P-320 design. Give the engineer your site plan, your intended size and use, your soil information, and the depth of soil cover you want. Ask for wall, roof, and slab thicknesses, the rebar layout, and the waterproofing and drainage details. (Chapter 5, Appendix G)
3. Plan the openings. Before the drawings are final, decide exactly where the hatch, both vent pipes, any second exit, and any conduit for future power or solar will pass through the walls or roof. Every one of those needs to be in the drawings, because nothing gets cut into the concrete later.
4. Plan where the water goes. Mark on the site plan where the perimeter drain will empty: daylight downhill, a dry well, or a sump pump. If it's a pump, plan its power and battery backup now. (Chapter 7)
5. Submit for the permit. Include the site plan, the drawings, and any engineering. Ask for the inspection sequence in writing.
6. Get contractor quotes. At minimum: excavation and hauling, concrete supply with pump truck, and, if you're not doing it yourself, forming and placing. Use the questions in Appendix G. Ask each excavator how they'll protect the hole from collapse.
7. Order long-lead items. A fabricated steel hatch can take several weeks. Order it once the drawings show its exact opening size.

SITE / PERMIT QUESTIONS

- [ ] Have you submitted the permit with the site plan, the drawings, and any engineering?
- [ ] Have you asked for the inspection sequence in writing?
- [ ] Are the hatch, both vent pipes, any second exit, and any conduit sleeves shown on the drawings?
- [ ] Is the drain outlet (daylight, dry well, or sump with backup power) marked on the site plan?

Done when. Drawings (or a FEMA P-320 design) are in hand, the permit is submitted, openings and drainage are on the plans, quotes are in, and long-lead items such as the hatch are on order.

Next phase. Phase 3 — Site Preparation (Week 10–11)

LEFTOVER MATERIALS _____ DATE FINISHED _____

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Phase 3 — Site Preparation

Week 10–11 · from Appendix D of The Practical Backyard Bunker

DATE _____ HELPERS _____ WEATHER _____

THIS PHASE'S AIM

Make the yard ready for a machine: utilities marked, the dig staked, a path for equipment, a plan for the spoil, and a temporary fence around the work area.

Not this phase. Do not start the excavation until 811 marks are on the ground and private lines have been found by hand. Do not treat this sheet as a substitute for the locate.

MATERIALS FOR THIS PHASE

- [ ] 811 utility locate request, filed several business days before digging, with marks on the ground (Appendix A; Chapter 3)
- [ ] Private lines (sprinklers, septic, outbuilding power, propane) located by hand (Appendix A)
- [ ] Temporary fencing around the open pit (Appendix A)
- [ ] Ground protection mats for equipment crossing the lawn (Appendix A)
- [ ] Permit approved and inspection schedule confirmed, and stamped plans or a FEMA P-320 design on site (Appendix A) — check these off only if they are actually in hand

CUTS / LAYOUT

Stake the shelter outline, then the larger excavation outline. The book's typical figure for a 10 × 12 shelter is about 16 × 18 feet at the bottom, larger at the top if the walls will be sloped. (Chapter 6) Use the size on your drawings if it differs. Do not invent a different footprint.

TOOLS

Stakes and marking paint

A copy of the drawings and the permit, on site

BEFORE YOU START

- [ ] Call 811 to locate underground utilities before you dig (Important Safety Notice and Step 14).
- [ ] An open pit in a backyard is a hazard to kids and pets, and to you at night — fence it (Step 18).
- [ ] Never enter an excavation 5 feet deep or deeper unless it is protected against collapse (Important Safety Notice). That rule applies as soon as the hole exists.

STEPS — IN THE BOOK'S ORDER

1. Call 811. File a locate request several business days before digging. Mark private lines yourself: sprinklers, outbuilding power, propane, septic. (Chapter 3)
2. Stake out the shelter and the dig. Mark the shelter outline, then the larger excavation outline, typically about 16 × 18 feet at the bottom for a 10 × 12 shelter, larger at the top if the walls will be sloped. (Chapter 6)
3. Prepare the access route. Remove a fence section if needed, lay ground protection mats across the lawn, and mark sprinkler heads and anything else the equipment shouldn't drive over.
4. Plan the spoil. Decide where the dirt goes. Some will come back as backfill, but clay and topsoil shouldn't go against the walls. Arrange hauling for the excess.
5. Put up a temporary fence around the work area. An open pit in a backyard is a hazard to kids and pets, and to you at night.

SITE / PERMIT QUESTIONS

- [ ] Is the 811 locate filed, and are the marks still visible on the ground?
- [ ] Have you marked private lines by hand — sprinklers, septic, outbuilding power, propane?
- [ ] Have you confirmed the permit is approved and the inspection schedule is in writing?
- [ ] Is there a plan for spoil and hauling, including keeping clay and topsoil off the walls later?

Done when. 811 and private-line marks are on the ground, the dig is staked, the access route is protected, spoil and hauling are arranged, and the work area is fenced.

Next phase. Phase 4 — Excavation and Base (Week 11–12)

LEFTOVER MATERIALS _____ DATE FINISHED _____

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Phase 4 — Excavation and Base

Week 11–12 · from Appendix D of The Practical Backyard Bunker

DATE _____ HELPERS _____ WEATHER _____

THIS PHASE'S AIM

Dig to depth with the hole protected, check depth and level, install any under-slab drainage the plans call for, place and compact the gravel base, and get the first inspection if your jurisdiction requires one before the slab is poured.

Not this phase. Do not pour the slab in this phase. Do not enter an unprotected hole. Do not overdig and then fill back under the slab — the book calls that a weak spot.

MATERIALS FOR THIS PHASE

- [ ] Mini excavator or excavation contractor booked (Appendix A)
- [ ] Skid steer, dump trailer, or hauling arranged for spoil (Appendix A)
- [ ] Trench box, shoring, or a plan for sloped walls (Appendix A)
- [ ] Crushed stone for the base, 6 to 12 inches deep (about 3 to 5 cubic yards) — Appendix A, rough figures for a 10 × 12 poured shelter; your engineer's drawings and your supplier give the real numbers
- [ ] Any under-slab drainage your plans call for (Step 21) — use the plans, not a guess

CUTS / LAYOUT

Follow the staked outline and the depths on your drawings. The book's typical excavation outline is about 16 × 18 feet at the bottom for a 10 × 12 shelter (Chapter 6).

TOOLS

Laser level or a story pole (Step 20)

Plate compactor, for compacting the gravel in layers (Step 22)

BEFORE YOU START

- [ ] Never enter an excavation 5 feet deep or deeper unless it is protected against collapse (Important Safety Notice; Step 19).
- [ ] Keep spoil at least 2 feet back from the edge (Step 19).
- [ ] Do not overdig. Filling back under the slab creates a weak spot (Step 20).
- [ ] Excavation can cause serious injury or death if done incorrectly (Important Safety Notice). Hire the work out if you are not qualified to do it.

STEPS — IN THE BOOK'S ORDER

1. Dig. The excavator digs to depth, keeping spoil at least 2 feet back from the edge, with walls sloped, benched, shored, or protected by a trench box. Nobody enters an unprotected hole 5 feet deep or deeper. (Chapter 6)
2. Check depth and level. Use a laser level or a story pole. Don't overdig; filling back under the slab creates a weak spot.
3. Install any under-slab drainage your plans call for.
4. Place and compact the gravel base. Six to 12 inches of crushed stone, compacted in layers with a plate compactor.
5. First inspection, if required. Many jurisdictions want to see the excavation or the base before the slab is poured.

SITE / PERMIT QUESTIONS

- [ ] Have you checked local inspection rules for this step — does someone need to see the hole or the base before the slab is poured?
- [ ] Is the hole protected (sloped, benched, shored, or a trench box) before anyone enters it?
- [ ] Is spoil at least 2 feet back from the edge?

Done when. The hole is at depth and level, any under-slab drainage the plans call for is in, the gravel base is compacted, and any required first inspection is done.

Next phase. Phase 5 — Structure (Weeks 12–16)

LEFTOVER MATERIALS _____ DATE FINISHED _____

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Phase 5 — Structure

Weeks 12–16 · from Appendix D of The Practical Backyard Bunker

DATE _____ HELPERS _____ WEATHER _____

THIS PHASE'S AIM

Form, reinforce, inspect, and pour the slab, the walls, and the roof, then let the concrete cure with the roof supports left in place until the engineer or concrete supplier says the roof is strong enough. Photograph the steel before each pour.

Not this phase. Do not pour until the rebar inspection has passed. Do not strip roof supports early. Do not cut openings into the concrete later — sleeves and framed openings go in now, according to the plans.

MATERIALS FOR THIS PHASE

- [ ] Ready-mix concrete, about 20 cubic yards total for slab, walls, and roof — Appendix A, rough figure for a 10 × 12 poured shelter; your engineer's drawings and your supplier give the real numbers
- [ ] Pump truck booked for wall and roof pours (Appendix A)
- [ ] #4 or #5 rebar, about 1,600 to 2,000 feet (per plans) — Appendix A, rough figure; follow the plans
- [ ] Rebar chairs and spacers; tie wire and a tie tool (Appendix A)
- [ ] Waterstop for the slab-to-wall joint (if specified) (Appendix A)
- [ ] Wall and roof forms, form ties, and bracing; roof shoring posts and beams (Appendix A)
- [ ] Sleeves cast in for vent pipes, conduit, and any future openings (Appendix A)
- [ ] Concrete vibrator, rented (Appendix A)

CUTS / LAYOUT

Wall, roof, and slab thicknesses and the rebar layout come from the engineer or the FEMA P-320 design (Phase 2). Do not invent dimensions on this sheet.

TOOLS

Concrete vibrator (rented)

A camera, for photographs of all the steel before each pour

BEFORE YOU START

- [ ] Structural concrete can cause serious injury or death if done incorrectly (Important Safety Notice). Have the structure designed or reviewed by a licensed professional, and hire the work out if you are not qualified to do it.
- [ ] Do not pour until the rebar inspection has passed (Steps 25, 28, 30).
- [ ] Leave roof supports in place until the engineer or concrete supplier says the roof is strong enough (Step 31).
- [ ] Keep the concrete damp while it cures, as the book directs.

STEPS — IN THE BOOK'S ORDER

1. Form and reinforce the slab. Set the edge forms, place the rebar grid on chairs, and set the wall dowels (starter bars) exactly where the plans show them. Place the waterstop at the wall line if specified.
2. Rebar inspection. Do not pour until it's passed. Take photos of all the steel.
3. Pour the slab. Screed it level and keep it damp while it cures for the first several days.
4. Form and reinforce the walls. Tie the vertical and horizontal bars, set the form ties, and install every sleeve and opening for vents and conduit. Double-check them against the drawings before the forms close.
5. Inspection, then pour the walls. The concrete is vibrated as it's placed to avoid voids. Keep the walls damp while they cure.
6. Shore and form the roof. Supports go up inside the shelter. The roof forms, rebar, and framed openings for the hatch, vents, and second exit go in according to the plans.
7. Inspection, then pour the roof. Photograph all the steel first.
8. Cure. Leave the roof supports in place until the engineer or concrete supplier says the roof is strong enough, commonly a week or more and sometimes considerably longer. Concrete keeps gaining strength for about a month.
9. Strip the forms and inspect the outside. Walk every inch with a flashlight. Patch honeycombing, grind rough seams, fill form-tie holes. Take photos.

SITE / PERMIT QUESTIONS

- [ ] Have you checked local inspection rules for the slab, wall, and roof rebar — and has each inspection passed before the pour?
- [ ] Are every sleeve and opening for vents, conduit, the hatch, and any second exit in the forms, checked against the drawings?
- [ ] Has the engineer or concrete supplier told you when the roof supports may come out?

Done when. Slab, walls, and roof are poured, inspections and photos are on file, the concrete has cured with supports left in place as directed, forms are stripped, and the outside has been inspected and patched.

Next phase. Phase 6 — Waterproofing, Drainage, and Backfill (Weeks 16–17)

LEFTOVER MATERIALS _____ DATE FINISHED _____

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Phase 6 — Waterproofing, Drainage, and Backfill

Weeks 16–17 · from Appendix D of The Practical Backyard Bunker

DATE _____ HELPERS _____ WEATHER _____

THIS PHASE'S AIM

Prime and apply the membrane to the walls and roof, install drainage board and the perimeter drain, test the drain with a hose, set the hatch and vent pipes, backfill in layers, and get a final inspection if your jurisdiction requires one.

Not this phase. Do not backfill until the membrane, drainage board, and drain are in, and the drain has been tested. Do not use clay and topsoil against the walls.

MATERIALS FOR THIS PHASE

- [ ] Primer specified by the membrane manufacturer (Appendix A)
- [ ] Liquid or sheet waterproofing membrane for walls and roof (Appendix A)
- [ ] Detail tape or mastic for corners, joints, and penetrations (Appendix A)
- [ ] Pipe boots or collars for every penetration (Appendix A)
- [ ] Drainage board for walls (and roof, if specified) (Appendix A)
- [ ] Clean drain stone for the perimeter drain (about 2 to 3 cubic yards) — Appendix A, rough figure for a 10 × 12 shelter
- [ ] 4-inch perforated drain pipe (about 50 feet) and solid 4-inch pipe to the outlet (length depends on your site) (Appendix A)
- [ ] Fittings, couplings, a cleanout, and filter fabric (Appendix A)
- [ ] Sump basin, pump, check valve, and battery backup (if not draining by gravity) (Appendix A)
- [ ] The steel hatch, and the two vent pipes planned in Phase 2

CUTS / LAYOUT

Pipe lengths depend on the site and the drawings. The 50-foot perforated-pipe figure in Appendix A is a rough figure for a 10 × 12 shelter. Use the layout on your site plan.

TOOLS

A hose, for testing the drain (Step 36)

Manufacturer's instructions for the membrane — follow them exactly (Step 33)

BEFORE YOU START

- [ ] Follow the membrane manufacturer's instructions exactly (Step 33). This sheet is not a waterproofing specification.
- [ ] Do not backfill against a wall that has not been waterproofed and drained as the plans and Chapter 7 describe.
- [ ] If a sump is required, plan its power and battery backup (Phase 2, Step 10) before you depend on it.

STEPS — IN THE BOOK'S ORDER

1. Prime and apply the membrane to the walls and roof, following the manufacturer's instructions exactly. Detail every joint, corner, and pipe penetration. (Chapter 7)
2. Install drainage board over the membrane.
3. Install the perimeter drain: gravel bed, perforated pipe sloped continuously to the outlet, more gravel, filter fabric wrap, and solid pipe to the outlet or sump.
4. Test the drain by running a hose into it and confirming water reaches the outlet.
5. Set the hatch and vent pipes. Seal every penetration with proper boots or collars. Raise the hatch frame a few inches above finished grade.
6. Backfill in layers. Free-draining gravel against the walls, compacted lightly in lifts of about a foot. Then native soil, then topsoil, graded to slope away from the shelter in every direction.
7. Final inspection, if your jurisdiction requires one.

SITE / PERMIT QUESTIONS

- [ ] Have you checked whether a final inspection is required before or after backfill?
- [ ] Did the hose test confirm that water reaches the drain outlet?
- [ ] Is the hatch frame a few inches above finished grade, and is the finish grade sloping away in every direction?

Done when. Membrane and drainage board are on, the perimeter drain has passed a hose test, hatch and vents are set and sealed, backfill is in and graded away from the shelter, and any required final inspection is done.

Next phase. Phase 7 — Inside (Weeks 17–20)

LEFTOVER MATERIALS _____ DATE FINISHED _____

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Phase 7 — Inside

Weeks 17–20 · from Appendix D of The Practical Backyard Bunker

DATE _____ HELPERS _____ WEATHER _____

THIS PHASE'S AIM

Install ventilation and alarms, add power and lighting the safe way, build out a simple interior, stock the shelter from Appendix C, and test everything with people inside and the hatch closed.

Not this phase. Do not cook with flame inside the shelter. Do not run a generator or any fuel-burning appliance inside or near the shelter. Do not wire a permanent electrical system yourself if you are not an electrician.

MATERIALS FOR THIS PHASE

- [ ] Two lengths of 4- or 6-inch pipe (intake and exhaust); rain caps or elbows; stainless or galvanized insect screen (Appendix A)
- [ ] 12-volt inline duct fan; hand-crank blower (backup); intake filter housing and spare filters (Appendix A)
- [ ] Battery CO2 monitor (NDIR sensor); battery carbon monoxide alarm; battery smoke alarm (Appendix A)
- [ ] Portable power station or LiFePO4 battery bank; 12-volt LED lights and switches; optional solar panel, cable, and charge controller (Appendix A)
- [ ] If you are wiring anything permanently: fuses or breakers, wire, and connectors — and an electrician (Appendix A; Step 42)
- [ ] Headlamp for each person, plus a lantern, flashlights, and spare batteries (Appendix A)
- [ ] Wall shelving; benches with storage, or bunks; fold-down table; rubber floor mats; labeled bins (Appendix A)
- [ ] Bucket toilet or portable toilet, liners, absorbent, and a privacy curtain (Appendix A)
- [ ] ABC fire extinguisher; first aid kit with trauma pads; whistle; pry bar and basic tool kit; NOAA weather radio (Appendix A)
- [ ] Water, food, and the rest of the 72-hour list in Appendix C

CUTS / LAYOUT

Intake low at one end, exhaust high at the other, with caps and screens outside. Mount the 12-volt fan on the intake. (Step 40; Chapter 8) Pipe size is 4- or 6-inch, from Appendix A — follow the drawings if they specify one.

TOOLS

A way to test the fan, lights, and alarms

The Appendix C checklist, taped inside when you are done

BEFORE YOU START

- [ ] Never operate a generator or any fuel-burning appliance inside or near a shelter (Important Safety Notice).
- [ ] Do not cook with flame inside the shelter (Chapter 10 — "No Cooking Underground"). If you want hot food, the book points to flameless ration heaters, or waiting until it's safe to cook outside.
- [ ] If you're wiring anything permanently, use an electrician (Step 42; Chapter 9).
- [ ] Watch the CO2 monitor during the one-hour test with the hatch closed (Step 45).

STEPS — IN THE BOOK'S ORDER

1. Install ventilation. Intake low at one end, exhaust high at the other, with caps and screens outside. Mount the 12-volt fan on the intake. (Chapter 8)
2. Install alarms. Battery CO2 monitor at head height, carbon monoxide alarm, and smoke alarm. Test them.
3. Install power and lighting. Power station or battery bank, LED lighting, and any solar cable through its sleeve. If you're wiring anything permanently, use an electrician. (Chapter 9)
4. Build out the interior. Shelving, benches with storage, a fold-down table, rubber floor mats, a toilet corner with a curtain.
5. Stock it. Water, food, first aid, medications, sanitation, tools, and documents, using Appendix C. Tape the inventory inside.
6. Test everything with people inside. Put the whole family in the shelter with the hatch closed for an hour. Watch the CO2 monitor. Run the fan. See what's missing, uncomfortable, or hard to reach.

SITE / PERMIT QUESTIONS

- [ ] If you are wiring anything permanently, have you hired an electrician?
- [ ] Are the CO2, carbon monoxide, and smoke alarms installed and tested?
- [ ] Is the inventory from Appendix C taped inside?

Done when. Ventilation, alarms, light, and power are in and tested, the interior is usable, Appendix C supplies are stocked with the inventory taped inside, and the family has spent an hour inside with the hatch closed.

Next phase. Phase 8 — Ready (Week 20 and on)

LEFTOVER MATERIALS _____ DATE FINISHED _____

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MEMBERS VAULT · BACKYARD BUILD PLAN

Phase 8 — Ready

Week 20 and on · from Appendix D of The Practical Backyard Bunker

DATE _____ HELPERS _____ WEATHER _____

THIS PHASE'S AIM

Finish the paperwork, put the Quick Start plan and the maintenance dates where you'll find them, run the first night drill, and tell someone outside the household where the shelter is.

Not this phase. Do not call the project finished without the first night drill, the paperwork filed, and two maintenance dates on the calendar. A shelter no one can find, or no one has practiced entering, is not ready.

MATERIALS FOR THIS PHASE

- [ ] The Quick Start Preparedness Plan at the back of the book, with a copy posted inside the hatch (Step 46)
- [ ] A folder with the permit, inspection sign-offs, drawings, and photos of the rebar and waterproofing, filed with your house documents (Step 48; Appendix A)
- [ ] The maintenance log in Appendix F, and two check dates on the calendar (Step 49)

CUTS / LAYOUT

None this phase.

TOOLS

The Appendix F log

A flashlight for the night drill

BEFORE YOU START

- [ ] The night drill is done with the lights off, from the farthest bedroom, hatch secured (Step 47). Practice it calmly; do not turn it into a stunt.
- [ ] Keep the twice-a-year checks on the calendar (Appendix F). A shelter stocked and never checked is how batteries die and food goes out of date (Chapter 10).

STEPS — IN THE BOOK'S ORDER

1. Fill out the Quick Start Preparedness Plan at the back of this book and post a copy inside the hatch.
2. Run the first night drill. Lights off, from the farthest bedroom, everyone in and the hatch secured.
3. File the paperwork. Permit, inspection sign-offs, drawings, and photos of the rebar and waterproofing go in a folder with your house documents.
4. Put the maintenance dates on the calendar. Two checks a year, using the log in Appendix F.
5. Tell someone outside the household where the shelter is and where the hatch is, so they know where to look if you ever need to be dug out.

SITE / PERMIT QUESTIONS

- [ ] Is a copy of the Quick Start plan posted inside the hatch?
- [ ] Has the first night drill been done?
- [ ] Does someone outside the household know where the hatch is?

Done when. The Quick Start plan is posted, the first night drill is done, paperwork is filed with the house documents, two maintenance dates are on the calendar, and someone outside the household knows where the hatch is.

Next phase. Return to the book for upkeep. Appendix F is the twice-a-year log. There isn't a Phase 9.

LEFTOVER MATERIALS _____ DATE FINISHED _____

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MEMBERS VAULT · BACKYARD BUILD PLAN

Materials checklist

From Appendix A · page 1 of 2

Copied from Appendix A of *The Practical Backyard Bunker*. Quantities shown are the book's rough figures for a 10 × 12 poured concrete shelter; your engineer's drawings and your supplier will give you the real numbers. Check off each item as it's ordered. Do not treat a rough figure as a bid or as a structural specification.

BEFORE YOU DIG

- [ ] 811 utility locate request filed, and marks on the ground
- [ ] Private lines (sprinklers, septic, outbuilding power, propane) located by hand
- [ ] Permit approved and inspection schedule confirmed
- [ ] Stamped plans or FEMA P-320 prescriptive design on site
- [ ] Mini excavator or excavation contractor booked
- [ ] Skid steer, dump trailer, or hauling arranged for spoil
- [ ] Trench box, shoring, or a plan for sloped walls
- [ ] Temporary fencing around the open pit
- [ ] Ground protection mats for equipment crossing the lawn

BASE AND DRAINAGE

- [ ] Crushed stone for the base, 6 to 12 inches deep (about 3 to 5 cubic yards)
- [ ] Clean drain stone for the perimeter drain (about 2 to 3 cubic yards)
- [ ] 4-inch perforated drain pipe (about 50 feet)
- [ ] Solid 4-inch pipe to the outlet (length depends on your site)
- [ ] Fittings, couplings, and a cleanout
- [ ] Filter fabric
- [ ] Sump basin, pump, check valve, and battery backup (if not draining by gravity)

CONCRETE AND STEEL

- [ ] Ready-mix concrete, about 20 cubic yards total for slab, walls, and roof
- [ ] Pump truck booked for wall and roof pours
- [ ] #4 or #5 rebar, about 1,600 to 2,000 feet (per plans)
- [ ] Rebar chairs and spacers
- [ ] Tie wire and a tie tool
- [ ] Waterstop for the slab-to-wall joint (if specified)
- [ ] Wall and roof forms, form ties, and bracing
- [ ] Roof shoring posts and beams
- [ ] Sleeves cast in for vent pipes, conduit, and any future openings
- [ ] Concrete vibrator (rented)

WATERPROOFING

- [ ] Primer specified by the membrane manufacturer
- [ ] Liquid or sheet waterproofing membrane for walls and roof
- [ ] Detail tape or mastic for corners, joints, and penetrations
- [ ] Pipe boots or collars for every penetration
- [ ] Drainage board for walls (and roof, if specified)

VENTILATION

- [ ] Two lengths of 4- or 6-inch pipe (intake and exhaust)
- [ ] Rain caps or elbows, and stainless or galvanized insect screen
- [ ] 12-volt inline duct fan
- [ ] Hand-crank blower (backup)
- [ ] Intake filter housing and spare filters
- [ ] Battery CO2 monitor (NDIR sensor)
- [ ] Battery carbon monoxide alarm

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MEMBERS VAULT · BACKYARD BUILD PLAN

Materials checklist, continued

From Appendix A · page 2 of 2

ENTRANCE

- [ ] Steel hatch with gasket, or stairwell door
- [ ] Heavy-duty hinges, gas struts or counterweight
- [ ] Interior release that works without a key or tool
- [ ] Exterior hasp and weatherproof padlock
- [ ] Interior slide bolts or locking bar
- [ ] Steel or aluminum ladder with handholds above the opening
- [ ] Glow tape for ladder rungs and hatch handle
- [ ] Second exit hatch and ladder (if built)

INTERIOR

- [ ] Wall shelving
- [ ] Benches with storage, or bunks
- [ ] Fold-down table
- [ ] Rubber floor mats
- [ ] Labeled storage bins
- [ ] Bucket toilet or portable toilet, liners, absorbent, and a privacy curtain

POWER AND LIGHTING

- [ ] Portable power station or LiFePO4 battery bank
- [ ] Fuses or breakers, wire, and connectors (for a built system)
- [ ] 12-volt LED strip lights or fixtures, and switches
- [ ] Solar panel, cable, and charge controller (optional)
- [ ] Headlamp for each person, plus a lantern and flashlights
- [ ] Spare batteries

SAFETY

- [ ] ABC fire extinguisher
- [ ] Smoke alarm (battery)
- [ ] First aid kit with trauma pads
- [ ] Whistle
- [ ] Pry bar and basic tool kit
- [ ] NOAA weather radio with battery or crank backup

BEFORE YOU CALL IT DONE

- [ ] Final inspection passed
- [ ] Photos of rebar and waterproofing filed with your house papers
- [ ] Drain outlet tested with a hose
- [ ] Hatch opens easily from inside, by every member of the family
- [ ] Fan, lights, and alarms tested
- [ ] Supplies stocked and inventory taped inside
- [ ] First family drill done at night

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