

YOUR OWN SAFE AND CHEAP SURVIVAL RETREAT



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1. Dirt-Cheap Survival Retreats

Back in the 1970s, we were in the tail end of the Cold War. People were looking for someplace to hide, should Washington and Moscow ever lose it and push the button. Bomb shelters and wilderness retreats were the byword of the day as people who didn't trust the government were trying to come up with a plan for survival.

For the last 30 years, things have been quiet. While I'm sure that few people who had built fallout shelters and bought a hideout in the mountains have gotten rid of them, I haven't heard that many people talking about them. That hideout in the mountains became a hunting cabin and the bomb shelter which was stocked to take care of the family was converted to just another storage room.

The last few years have changed all that. Once again we're living in a time when people don't trust the government and are looking to their hole card. Fallout shelters are getting cleaned out and restocked. The cabin in the woods is being fixed up again and readied should it be needed. People are preparing.

That's great for those people who have a cabin in the woods or an underground shelter that they can turn to, but what about the rest of us? Oh, I know that there are people today who are building bunkers and hideaways. I see the videos just like everyone else does; how people are

building bunkers to prepare for an apocalyptic event. I've even seen the family who is building a castle in the woods, so that they can repel all invaders and survive any attack.

There's nothing wrong with that. I think it's great that these people can build themselves a bug-out location where they hide out when things fall apart. But what about the rest of us who can't afford to spend \$100,000 to build a bunker in a hidden location? Is all lost for us, or is there some other option?

I believe there is. I believe that it's possible to create a safe and secure, livable bug-out location without having to spend a fortune. Oh, it might not be as fancy as those custom-built bunkers; but it will work. It will provide a place for you and your family to survive any coming chaos.

Don't get me wrong now. I'm not talking about an elegant option. You and I can't afford to build a multi-million dollar underground home to use when the zombie apocalypse (or whatever) comes. I'm talking a survival shelter. That means that it may not be the most comfortable; it may not be fancy; it may even be rather primitive. Nevertheless, it will be a place to wait out any coming calamity and survive.

1.1 What Type of Shelter do You Need?

It's very easy to get carried away when talking about survival shelters. People start thinking of they need a bunker, or a castle, or even a huge log cabin in the woods. But is that really what you need? Will that castle really help protect your family any better? Or is there an element of overkill in what some people are doing.

Let's start by analyzing the type of disasters that you might need shelter from, looking for the worst likely event. Please note that "worst likely" and "worst possible" aren't the same thing. In the 1970s, the likelihood of nuclear war was very real. At that time, thinking in terms of a bomb shelter to protect yourself from a nuclear blast and the resulting fallout wasn't unrealistic, but the likelihood of a nuclear war with the Soviet Union has disappeared, as there is no longer a Soviet Union to concern ourselves with.

That's not to say that the Soviet Union is the only nuclear threat that exists in the world. North Korea and Iran have both publicly declared their intent to attack the United States with nuclear missiles. There's only one little problem; they don't have the technical capability to follow through with that threat. Even though North Korea has nuclear bombs and missiles, they don't have the knowhow to make missiles that will reach the United States. So, while that is a threat, it's not a likely threat.

We also have other enemies around the world. China is still an enemy, even with all of the business that we do with them. Anyone who thinks that international trade is a mitigating

factor against war needs to study their history better. Historically, countries ignore that little detail when they declare war.

Even though China has nuclear tipped missiles, the likelihood of China lobbing a few of them over here is pretty slim. Even if they were to do so, the most likely form for that attack is as a high altitude burst, to cause an EMP and take down our electronics. That would provide a much easier “kill” for them, without the risks associated with full-blown nuclear war.

Actually, our electric grid is very vulnerable to attack, whether by EMP, cyber attack or simple acts of sabotage. If an enemy wanted to mess things up here in the United States, disrupting our electricity is one of the easiest and most effective ways to do so. We depend on electricity for so much, that much of the government, industry and people’s private lives would come to a screeching halt were the grid to suffer an attack and go down. Not only that, if the attack were serious enough, like an EMP, we would be without electricity for months.

There is evidence that some of the recent power outages that have been experienced in various parts of the country have been man-made events, including both cyber attacks and direct sabotage. If that’s the case, then those could very easily have been practice missions, in preparation for a full-blown attack on our grid.

While industry and the government are working overtime to plug the leaks in our cyber-security, in order to prevent any such attack from happening, we’re way behind on that work. At this point, we’re playing catch-up to what others have been done; reacting to them, rather than being proactive.

Of all possible external attacks, the two most likely are taking down the electrical grid or starting a biological warfare campaign against us. Either of these could be terrorist attacks, state run terrorism or a direct attack by some unfriendly foreign nation. Since the risk to those countries for initiating such an attack is our retaliation via a nuclear attack (long-standing U.S. policy), it is doubtful that any foreign government would condone a biological attack, whether by their own agents or through terrorists.

Internally, we are highly susceptible to a financial crash, leading to a breakdown in society. There are many indicators that we are already sliding into a financial crisis. Such a crisis would throw the country into turmoil when it happens. Gangs of hungry people will prowl the streets, looting and performing every type of crime you can imagine.

I would rate the likelihood of an internal breakdown, fueled by a financial crisis very high. Actually, it’s probably the greatest risk that this country currently faces, side-by-side with the likelihood of President Obama declaring martial law and suspending the constitution.

We also face a fairly high risk of some sort of natural disaster striking and causing severe damage on a regional basis. I don't have much faith in the theories of the Yellowstone super-volcano destroying most of the country or the magnetic pole of the earth shifting. But you only have to look around to see that hurricanes, earthquakes and tornadoes can strike at any moment. These are fairly high risks, although only on a regional basis.

Why am I talking about all this? Because you can't make an effective shelter to survive in, unless you understand what it is that you are trying to survive. Since the likelihood of an invasion by a foreign army, a nuclear attack and the earth's poles shifting are low; they aren't our priority when designing a survival shelter. On the other hand, the likelihood of an attack against the grid, a financial collapse and natural disasters are all high. Therefore, that should be our focus when designing a bug-out shelter.

1.2 Do You need a Bunker?

As I'm sure you're aware, the late Saddam Hussein was a great fan of bunkers. He built them all over the place; both for his own protection and to protect vital command and control centers for his military. He was justly concerned about being attacked by bombers and wanted to make sure that he would survive.

Bunkers are excellent protection from bombs; actually, they're probably about the only effective defense against bombs, other than blowing up the bomb or bomber before it can get near you. They also do a pretty good job of helping people stay hidden from sight. But that's all they can do. A bunker really isn't the magical survival tool that many people make it out to be. While excellent protection from some types of attacks, they make you vulnerable to others.

Bunkers are more vulnerable to infantry attacks than any other type, especially the type of bunker that is being built as a survival shelter. If there's a breakdown in society and you're hiding in the bunker to stay away from marauding mobs, then you're essentially trying to protect yourself from an infantry attack, albeit one made by untrained infantry.

Locking yourself in a bunker is about the same thing as a rabbit hiding in a hole, hoping that a fox doesn't come around. As long as the fox doesn't know where the rabbit is, the rabbit is safe. On the other hand, if the fox finds out where the rabbit's hole is, then it's just a matter of time until the fox is feasting on fresh rabbit.

The response to proponents of bunkers is to say that they're safe because they have an emergency exit. Okay, if they're smart enough to make an emergency exit, what makes them think that any attackers are so dumb that they won't look for it? Everyone knows about emergency exits. Unless the emergency exit is far enough away as to not seem like it goes with

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the bunker (say 1/2 mile) and well hidden, the first thing that anyone will do on discovering the bunker is start looking for it. They won't bother to attack until they find it.

Of course, as long as you're down in that bunker, you're not going to know that they are up there on the surface, looking for you. The only way that you could be is to have a sophisticated security system, with alarms and cameras, which requires the power to keep the system running and someone to monitor it.

Even then, the bunker isn't secure. Oh, it's probably secure enough to keep anyone from getting to you, unless they bring dynamite or a cutting torch with them. But it's only secure as long as you stay in it. All they have to do is to get you to come out, whether by the main entrance or the emergency exit, and they've got you. Most bunkers don't provide a good means of attacking while exiting; you have to exit and then prepare to attack. In that moment, they've got you.

On top of all that, just the fact of hiding in a bunker will convince anyone that you have something hidden in there that's worth attacking you for. That will motivate them to try and get you out, so that they can get whatever supplies you have.

All bunkers have to have an air inlet snorkel. That's the most vulnerable point of attack. Unless you've created a pretty elaborate protection system, you've left them a way to get to you through that snorkel. All they have to do is build a smoky fire and get the smoke into the snorkel. If they have a vehicle and a piece of hose, then they put the vehicle exhaust down the snorkel, gassing you out.

About the only type of bunker that I think would be effective in the case of attack by a hungry mob is one that is built into the side of a hill, like an underground home. The open side of the home would then need to be protected by a cement wall with firing positions in it. There would need to be a firing position built above the home, in the side of the hill, accessible from the inside, with 360 degree field of fire. A lengthy escape tunnel, leading to a well concealed exit quite some distance away would also be needed, in case it looked like the battle was lost.

This would be an expensive undertaking and not the point of this report. We're looking at ways of creating a low-budget survival shelter, not a high dollar one. What I just described would probably cost over \$100,000 dollars to build.

I hope you've gotten the idea that I'm against the idea of building a bunker. While it sounds like a great idea, not only is it unnecessary, but probably a waste of money. Worse than that, it will probably increase the chances of your family ending up dead; the very thing that you would

build a bunker to avoid. Without building a very elaborate bunker, you're going to be better off with some other sort of shelter.

By the way, just in case you were ever thinking about building a bunker out of a shipping container, don't. Shipping containers are only strong on the corners, where they need to be in order to stack them. The sides and top aren't really designed to hold up against any sort of weight, but merely to contain and protect the merchandise inside. When the hole in the ground you make to bury your container is backfilled, there is a very good chance that the roof or sides of the container would buckle under the weight of the dirt.

1.3 So, What do You Need to be Safe?

Okay, so if bunkers aren't a real good idea for a survival shelter, then what is? Glad you asked.

There are a lot of factors that go into making an effective survival shelter. Taking the aforementioned likely risks into account, it is necessary that the shelter provide for a number of different things:

- Protection from the weather
- Protection from attack
- A secure place to store supplies
- Access to water and other resources

Most of this is accomplished by the location of the shelter, rather than by the shelter itself. A properly located shelter will provide access to water and natural resources, such as wood for a fire, game and fish. What you do in the construction of the shelter will provide protection from the weather and a place to store your supplies.

Your greatest protection from attack is to be someplace where you are not expected to be. The farther you are away from "civilization" the harder it will be for people to find you. If you can find a place way out in the middle of nowhere, where the only roads for miles around are dirt roads, there's a pretty good chance that you'll never have to worry about defending yourself. If you camouflage your shelter, you will make it even less likely, as people won't know you are there.

As for defending yourself, should the need arise, you're better off defending yourself from outside the shelter, rather than inside it. Mobility is an important part of effective warfare. Should you come under attack, you will stand a much better chance of surviving if you can move around while you are fighting.

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With that in mind, in addition to your shelter, you should build a series of defensive positions, preferably with a means of getting from one to another undetected. That will give you the means to fight any attackers, while avoiding getting pinned down to one location, where they can more easily attack you and finish you off.

We're going to approach this problem from the viewpoint of creating a survival shelter which meets all four of those criteria. So, in addition to the shelter itself, you will need to consider some sort of storage, the location, resources and how you will defend yourself.



2. Finding a Location for Your Survival Shelter

Since the most important part of creating a good survival shelter is location, let's start with that. The best possible location to build your survival shelter is out in the wild, where you won't run across other people and you aren't likely to be found by people looking for food. If you end up locating your survival shelter out in the suburbs, you may as well just stay home; your survival shelter won't help you any. That doesn't mean that you need to be so isolated that there's nobody else around, just that you are isolated from the people in the city.

In fact, it could be very beneficial for you to have a few neighbors, just as long as there aren't too many of them and they aren't too close. A retired buddy of mine lives by a lake in Georgia. He has a few acres there, as well as the other residents. They all would qualify as the survivalist type; people who have made their survival shelter into their home, rather than living in the city.

Having a small group of people like that around means that they can help each other out. If someone goes hunting and gets a deer, they share the meat with each other. If another has a problem with their truck's engine than my buddy helps them out. They work together to survive.

They also work together to protect each other. Since all of them have guns and all of them are good shots, going to that lake with the idea of stealing anything probably wouldn't be a good idea. There's a good chance that you'd not only get shot, but get caught in the crossfire of several people shooting at you.

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Everyone in that group is a prepper. They all have stockpiles of food and supplies and they are all living in such a way as to easily cut themselves off from the rest of the world. If the grid goes down or martial law is declared, it really won't make any difference to them. They'll get along just fine.

If you are part of a prepper group, you might want to consider buying some land together, to be held in joint tenancy. If you bought a few acres out in the wild somewhere, you could each build a survival shelter and work together like my buddy and his neighbors. I know a group in Canada that just recently did this. They have bought a few acres of woodlands and are beginning to build their shelters. When the time comes that they need to bug-out, they will all have somewhere to go.

This is a great way of saving money on the land, which is one of the most expensive parts of creating your survival shelter. Land is expensive, and being able to buy it together saves you a lot of money.

Whatever parcel of land you end up buying, you want to be far enough from any city to be virtually invisible to the inhabitants of that city. Your best defense is to be in such a place that nobody pays any attention to you. No matter how good a fighter you are, if you have to fight, you aren't guaranteed a win. The best guarantee for a win is that they never know you're there.

At the same time, you want to be far enough away from your home to get you out of the range of any regional problems that might cause you to have to evacuate. If you live in a hurricane zone, your survival shelter needs to be located far enough away from the shore that if you have to evacuate because of a hurricane, then your shelter won't be affected by it. Likewise, if you live anywhere near a nuclear power plant, you want to make sure that your survival shelter is located far enough away from that plant to ensure that you will be leaving any quarantine zone, should the plant suffer a meltdown.

When looking at land, always look at what natural resources are available. More than anything, you will need a good source of water. If you can find land that has a lake or stream, you'll be much better off. Unfortunately, that sort of land is usually much more expensive as well. However, there is a lot of land available where the water table is high enough that you could put in a shallow well to take care of your need for water.

While having a well professionally drilled is very expensive, there are ways that you can drill a well yourself. This will save you money, while providing you with a source of water, right there on your land.

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In addition to water, it would be good if your land had woods on it. Trees provide fuel for burning, materials for building with and concealment for yourself and your survival shelter. It will be much harder for anyone to find your survival shelter if it is located in the woods, than it would be for them to find one that is located in the middle of the plains.

Finally, what wild game is available in the area? While you will be stockpiling food at your survival shelter, it would also be useful to have game that you can hunt to augment your food supplies. Along with planting a vegetable garden, hunting and fishing can be used to extend the food you have stored, so that you will not run out as soon.

The type of land you are looking for would be called “junk land” by most people. That means that it is undeveloped land that can't really be used for much of anything. The soil is probably too poor for growing anything on; it's not in a convenient location, it doesn't have electricity running to it and there's probably not any water nearby.

There is one redeeming property to junk land; that is that you can buy it cheap. If you look at most tracts of country land, you'll be paying anywhere from \$10,000 to \$50,000 per acre. Junk land can usually be picked up for about \$1,000 per acre, even with the inflated prices of today.

The reason that this land can be purchased so cheap is that nobody wants it. Whoever owns the land probably does so because they inherited it. Maybe it had been useful at one time, but today it's not. This could be farmland that has been overused, land that is associated with a worked out mine, or land that has become unusable due to natural disaster. It will always be land that is in remote, hard to get to places, ideal for a survival shelter.

By buying junk land, you have the advantage of (hopefully) being able to buy it for cash. Remember, if you are making payments on it, you don't own it. Should something happen where you can't make your payments, you will find out quickly enough who really owns that land.

In a crisis situation, you want to be as independent as possible. That means that you want to own the land that you are sitting on. If you have lost your job, along with thousands of other people, and are at risk of losing your home as well, the last thing you need is for the bank to foreclose on your survival retreat, making you lose that possibility as well.

While having your own land to build your shelter on is ideal, it may not be affordable. For many of us who are living from paycheck to paycheck, the cost of buying any land is prohibitive. We can't afford even the least expensive piece of land, let alone buying several acres.

Another option to consider is to build your shelter on the land of someone else. Who do you know that lives out in the country or has land out in the country? Would they be willing to go along with you and

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allow you to build a survival shelter on their land? Better yet, would they be willing to host a survival community on their property? If so, who else could you get to become part of that community?

While not everyone who lives out in the country is a prepper or survivalist, people who live outside the city tend to be more self-reliant and independent. The chances of their interest in working together in a survival situation are much greater than your neighbors in the city agreeing to it.

If you have a friend or family member who will allow you to build your survival shelter on their property, the problem of where to build is solved. However, you will also need to look at their property to see about water and other resources. Do they have a stream or well for water? Is there wood for a fire available? Is there fish and game available? If these things are not available, you will need to make other plans for those resources.

Lack of those resources doesn't mean that you should reject their property out of hand. There is always another way. You might have to put in a well for them and put in a supply of firewood in order to make the place work, but you can still make it work.

The last possibility is to put your survival shelter on public land. There really isn't any such thing as land that isn't owned by someone here in the United States. Whatever isn't privately held is owned by the government.

Of course, the problem with building your shelter on public land is that it is illegal. You can be sure that eventually someone will come along and tell you that you have to move. For that reason, you really don't want to build a permanent shelter on government land. If you do, you will end up losing it. However, you could use a portable shelter; that would give you the option of moving, when they find you.

We will be discussing both portable and permanent shelters in this report. In many cases, a permanent shelter can be made portable, simply by mounting it on a flatbed trailer. While that adds to the cost, it makes it possible for you to take the shelter with you and keeps government officials from taking it from you.



3. The Easiest Option

The easiest survival shelter you can find, which won't be all that expensive, is a used travel trailer. Travel trailers are like cars, they start to depreciate in value the moment you drive them off the dealer's lot. So, while a brand new travel trailer might cost \$25,000, a ten year old one would go for about \$3,000.

Another way that buying trailers is like buying cars is that you definitely don't want to buy it without checking it out thoroughly. Manufacturers of travel trailers are trying to make their merchandise as inexpensively as possible, so that they can be competitive. That means that everything in the travel trailer is subject to damage, as well as wear and tear.

My family lived in a motorhome for several years, traveling full time. The motorhome we had was an old Winnebago. It had not been designed for living in full time, although that's what we were doing with it. The frame rails were bent behind the rear axle, the wall was separated from the floor, the roof sagged and the furnace never worked. Yet, with all that, we did fine with that motorhome, putting over 150,000 miles on it in the years that we used it.

Don't bother buying a travel trailer from a RV dealer, buy one privately. Just like a car, you will get a much better deal on a travel trailer that you buy directly from the owner, than you will buying it through a dealer. However, you need to check it out thoroughly. Travel trailers, as well as everything in them, can break. Check the function of everything, especially:

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- The lights
- Refrigerator
- Stove and oven
- Furnace
- Water pump
- Check fresh, black and gray water tanks for leaks
- Generator (if it has one)
- Air conditioner
- All door and cabinet latches
- The flush valve for the toilet (it both needs to not leak water out before flushing and open properly to flush)
- Sink faucets
- Verify that the sink drains don't leak (both sinks)
- Check all gas lines and water lines for leaks
- Ensure that the roof isn't leaking
- Check to see that the roof isn't sagging (the weight of the air conditioner can do this)
- Verify that the walls are firmly attached to the floor all the way around
- Check the frame, axle and hubs for rust
- Pull out exterior window shades and porch shade (if it has one) to make sure they are undamaged)
- Check the function of any control panel, indicators and gauges

You may find that the owner has allowed the battery to discharge from sitting so long and that there is no propane in the tanks. Don't accept their word that everything works. Their motivation is to sell it, not that you be happy. If the battery is dead, charge it, or check things off of your vehicle battery. If there isn't any propane in the tank, use the one from your barbecue grill to check the function of the stove, fridge and furnace.

You don't necessarily have to refuse to buy a particular trailer if something is wrong with it; but you need to know about it before negotiating. You can usually use any problems to your advantage as negotiating points. However, keep in mind that parts for a travel trailer are specialty parts, so are much more expensive than those for home repairs. If you're not sure what a repair is going to cost, check on it before making an offer.

Since you'll be buying privately, you can probably do pretty well on the negotiating. People who are trying to sell travel trailers usually want to get rid of them. Since there isn't really much of a market for them, prices are usually fairly low. If they are desperate to get rid of it, they might jump at a really low offer.

Remember, both their asking price and your offer price are starting points for negotiating. You will probably end up somewhere in the middle. Of course, it would be nice if they would accept your offer right away, allowing you to save the most possible money.

Setting up Your Travel Trailer

Before moving your travel trailer to your land, you want to make sure that you fix everything in it and do any modifications that you need. When we received our motorhome, I changed the back bedroom, which had twin beds, to a queen-sized bed. I also added in additional storage space, wherever I could. Travel trailers never have enough storage space, so look around and see if there is any wasted space. If there is, make or buy something to put in that space, so that it is usable. Even a few inches of wasted space can be used to store something.

Try staying a night or two in your travel trailer, cooking, relaxing and sleeping in it in your driveway. That will show you a lot about what you need to do to have it ready for long-term use. It's a whole lot easier to make any repairs or modifications while it is in your driveway, than it is to do so when it is out in the middle of nowhere.

It would be a good idea to buy some spare parts for your travel trailer as well. They use automotive light bulbs for the lights. Like any light bulb, these can burn out at the most inopportune times. The light fixtures in them tend to burn out after a while as well. I had a problem with the heat from the bulbs eventually burning a hole through the middle of the lens, so I always kept some spare lenses around. You might also want some spare plumbing fittings as well as the plumbing line, in case something freezes.

If you can afford a spare propane tank, that's a good thing to have as well, as you usually won't know when you are about to run out of propane until it happens. A spare propane bottle could save you a trip to get it refilled at an inopportune time.

The retired friend I mentioned earlier who lives at the lake added a wood-burning stove to his travel trailer for heating. While his trailer has a furnace in it, those furnaces are not very efficient. He uses his wood burning stove for heat and only uses the furnace when it's too cold for the stove to keep up. Travel trailers aren't well insulated, so you may find that it gets very hot and very cold in yours. Be ready for that.

In addition to preparing the trailer, you need to prepare the site for it on your property. It is not a good idea to just park a travel trailer on bare ground for long periods of time. Unless the ground is rock hard, it will eventually start sinking in. You're better off putting in some concrete pads for the trailer to sit on. That will prevent it from sinking.

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If the trailer is going to be set on your property permanently, you will be better off putting the concrete pads so that they will support the trailer's frame, instead of supporting the wheels. Jack the trailer up and set it on concrete blocks on those pads. Then take the wheels off and store them under the trailer. This will eliminate a lot of the springiness that is normally associated with walking around inside of a travel trailer.

One of the troubling limitations of a camper trailer as a survival shelter is the limited size of the tanks. There are three tanks; one for fresh water, one for grey water (shower and sink) and one for black water (the bathroom). The fresh water tank will be somewhere from 40 to sixty gallons, with the other two equaling that size or slightly more.

You can refill the fresh water tank from the outside of the trailer by attaching a hose. However, if you don't have city water or a well on your property, this might be difficult. The best way to handle this then is to bring the water in and transfer it to the trailer's tank.

You will need to learn how to do things while using minimal water. When we lived and travelled in a motorhome, I learned how to shower using only 1/2 gallon of water, including washing my hair. While my wife and daughters couldn't quite manage that, they were also forced to learn how to use the least possible water to bathe.

The gray water from the trailer's sink and shower can be used to water your vegetable garden or just allowed to spill out on the ground. There is nothing in this water that can cause a problem. On the other hand, the black water must be disposed of carefully. If you don't have a septic tank, you will at least need a hole in the ground, well away from your water source, to dump the black water into. Bacteria have been shown to travel as much as 100 feet through the ground, so it is necessary to keep it far away from your water supply, so as to prevent contaminating your water.

Electrical power enters the trailer via a 30 amp, 120 volt connection, similar to but not exactly like that used for a clothes dryer. If you have 120 volt AC power on your property, you will need to install a power box beside the trailer to plug into.

The major users of electrical power in a travel trailer are the air conditioner and the refrigerator. The refrigerator will also run off of propane, using 12 volt DC battery power for the controls. If you do not have a source of 120 volt AC power on your property, you can operate without it. However, you won't be able to use the air conditioner or any 120 volt AC electronics that you have, such as computers and televisions.

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The batteries used for travel trailers are 12 volt, lead-acid, deep cycle batteries, the same type that are used for boats. If you don't have a 120 volt power supply, you can recharge these off of a solar panel, keeping constant power to your trailer.



4. Building Your Own Survival Shelter

There are a number of ways of building your own survival shelter; often for much less than you can buy a trailer for. A lot depends upon your ability to build things, as well as your ability to scrounge used materials and repurpose them. If you can do these two things, then you could build a shelter for as little as \$100 (less the land).

Remember now, we're talking about a survival shelter. So, the building methods I'm going to talk about are rather rustic. If you want something more than rustic, then you're going to have to be willing to spend more time, more effort and more money.

For the first couple hundred years of American history, all the way through the westward expansion, a large percentage of our population lived in rustic homes that they built themselves. Those homes were so rustic that they usually had dirt floors. The people who insisted on fancy comfortable homes stayed in the East, where they wouldn't be inconvenienced by buffalo, Indians, dirt and bugs. Of course, a fair number of them had the money to buy or build a nice home with wood floors and even carpeting.

Much of the world still lives in homes that readily compare to the homes built during pioneering days. While they don't meet our building codes, you aren't going to have to worry about that. While your survival shelter may not be as comfortable as your home, remember that much of the world is living at that level. If they can survive it, you can too.

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Keep in mind that whatever one person has done, you can do too. While the majority of the early farm and ranch homes in the Old West had dirt floors, as people became more prosperous they would add wood or stone floors to their homes. If you look carefully at many of the old homes that still exist, you can see the various stages that they went through as the family became more prosperous.

So, the first thing for you, like for them, is to build a basic shelter to keep you out of the cold and rain. Once you get that built, you can start working on expanding and improving it, using the materials at hand, to make your home nicer and more comfortable.

In fact I'd recommend designing your survival shelter with that in mind. Build something basic, which can be expanded upon. The next stage of your construction can be larger, better built, and more comfortable. As you move into that new section, the original shelter can then be used as a storage room, kitchen or bedroom. Continue adding and repurposing rooms as you have time and resources.

The key to doing this successfully is to develop the plan for how you want the final structure to be laid out, before building the first part (your survival shelter). That way, you can keep the best access available for your living room, make sure that you have enough space for all the rooms you want to build and utilize any terrain features, such as rock, to your advantage.

How you build and what materials you use will depend largely upon what you have available. Almost anything can be used as a building material, although it is most common to use the natural materials that are available on site. That's why so many log cabins were built in early America. With plentiful forests to work with and no sawmill to convert them into boards, log cabins were a sensible way to build. However, in the Southwest, where trees are rare, log cabins couldn't be built. Instead, they built their homes out of adobe.

Some of the more common building materials that have been used throughout American history include:

- Stone
- Logs
- Sawn boards
- Brick
- Adobe (mud brick)
- Sod
- Fabric
- Animal skins

In our modern day society, there is one material that I would add to that list; an excellent material for building an inexpensive survival shelter: pallets. You can often get used pallets for free, especially the broken ones. The pallets are easily disassembled, providing free lumber for building a variety of things.

I have seen a number of plans online for survival shelters built entirely out of used pallets. While you can tell what material was used, it's not real obvious. If anything, it looks like a clapboard cabin, built out of small clapboards. The structural strength of the shelter comes from the spacer strips that are used between the upper and lower decks of the pallet. These are roughly the size of 2x4s, although only four feet long.

I've also seen some videos in which plastic soda bottles were used for building in a number of countries. This provides a very inexpensive way of building an attractive and bulletproof home. Since the soda bottles are essentially salvaged garbage, the cost of building is quite low.

4.1 Planning Your Survival Shelter

Before you start building, you want to take a look at the land you have available. Where would be the best place to locate it? Your first consideration is having a good place for construction, but you should also consider making it defensible. If moving 100 feet in one direction or another would make your home harder to approach or easier to defend, then by all means move it.

Are there any natural terrain features which you can use in making your home? Some land has rock outcroppings or caves that can be incorporated into the home. Mesa Verde National Park in Southwest Colorado has a number of caves that entire Indian communities were built in. This made for a very defensible location, with excellent protection from the weather. The Indians would farm on the mesa top and get their water from the stream running through the bottom of the gorge where the cave was found.

There is a rather large beautiful home that was built in Arizona along these same lines. The owners found that the cliff face of a mesa on their property had a large cave in it. They closed off the cave with adobe, adding modern doors and windows. The inside of the home, is a combination of natural cave walls and man-made walls. It is beautiful, functional and practical. Heating and cooling is almost unnecessary, as the home keeps comfortable year round without it, except in the most severe weather.

Your shelter is most likely going to have to be made out of whatever material you have in abundance on your property, unless you want to truck all the material in. So, look around at

your property. What materials do you have in abundance? How accessible are those materials? How easily can you get them from where they are to your building site?

Specifically, you're looking for timber or rock that can be used. It takes quite a bit of materials to build a house, albeit small. So, when you are looking at materials, overestimate the amount of materials that you will need. You may find that some of the materials available on site are not usable, due to problems with consistency or quality. Materials found in nature will show defects and variances, making them hard to use.

Don't forget about expansion of your shelter either, as you are looking at materials. If you are thinking of building out of stone, but only have enough stone to build one room, then you'll need to build the rest of the home out of some other material. It might be better to use the stone for the fireplace or floor, and build the walls out of some other material.

4.2 Basic Building Types

The style of your survival shelter is only limited by your imagination. The material is limited by what you have available and how much money you want to spend. Nevertheless, there are several considerations in the design of your building, specifically how you will use the available materials. Let's look at the basic building material types, to gain an understanding of how to use them.

Logs

Log homes are built by laying a series of logs, one on top of another, up to the height desired for the wall. To make a corner, the logs of the two adjacent sides are notched, so that they will stack with only a minimal gap between them. In colonial times, some log homes were made of squared logs. That required a skilled craftsman, who could cut the logs to have a square cross-section.

The problem with any log home is that you have to have logs of about the same size. Unless your property has a stand of old growth pine trees, it is unlikely that you will have adequate straight logs of the same size to build a log home. This problem is intensified with a squared log home, as you need much more consistency in the starting size of the logs, in order to be able to cut squared logs that will nest together to make the wall.

It is difficult, but not impossible to make multiple rooms or make additions when building with logs. The basic problem comes in finding a way to connect one room to another or to connect the new construction to the old. Typically, when a multi-room structure is made of logs, it is a single rectangular room, which is then divided on the inside by walls that are made of

clapboards. Modern log homes do something similar to this, in that they use typical stud and drywall construction on the inside of the home to divide it up.

The size of the shelter is limited by the size of the logs available. The favorite pine tree used for making log cabins is the lodge pole pine. These trees grow to a height of 40 to 60 feet. As they grow, the lower branches die off, leaving a straight, smooth log of 20 or more feet in length.

The bark should be removed from the logs as this will rot quickly and fall off. There will typically be some slight gaps between the logs, unless you are highly skilled at cutting the notches and smoothing the logs. These gaps are chinked with mud, clay or cement to provide a relatively airtight structure.

Windows and doors can be added to a log structure fairly easily during construction. The only thing that needs to be done is to cut the logs to the right length and then add doorposts or window posts. These are made of squared logs and provide the finish edge. They are attached to the ends of the logs by drilling and driving in wood pegs (dowels or branches).

While being made all of wood, a log cabin won't catch fire easily. Catching it on fire would require soaking it with some sort of flammable liquid to act as an accelerant. They are also pretty much bullet proof, as few bullets will penetrate through eight or more inches of wood.

Wood (Pallets)

Wooden pallets don't provide as strong a structure as logs do, but they are relatively easy to work with and best of all... free. When you take the pallet apart, you end up with boards that are three to four feet long. These should be sorted by size and cut to a consistent length to make them easier to work with.

The framing of the shelter is made out of the 2x4 pieces that form the spacers between the top and bottom layers of the pallet. By making a double thickness, offsetting the joint between adjacent pieces, a strong structure can be built. Make sure that if there is a cutout in the wood pieces that it is to the inside, so that the outside has a flat surface to nail the siding to.

Door and window frames need to be made from the same pieces as the framing. While a single stick on all four sides will work, doubling it will add a considerable amount of strength.

Siding a shelter made of pallets is extremely easy as well, as the top slats from the pallets can be used as clapboard. Simply nail them to the side of the shelter, overlapping each board over the edge of the one below it. If you stagger the boards, so that all the ends are not in the same place, it helps prevent water from running down the crack between the boards.

Pallets can even be used for the floor of the shelter. Most pallets have spaces between the individual boards that are used to form the top of the pallet. If the boards are removed, they can be reattached close together, eliminating these gaps. Use the inner spacers from pallets that have been taken apart to connect pallets together.

In the same way that pallets can be used to make the floor of a shelter, they can also be used to make the roof. This is about the only material that can be used to make a shelter, which will also work for its roof. In all the other cases, different material needs to be used for the roof.

While pallets are probably the easiest material to build a survival shelter out of, as well as being extremely inexpensive, they do have one problem. If the wood is left unpainted, it will start to rot. Therefore, it is recommended that the shelter be painted. If you want to leave it looking natural, treat the pallets with linseed oil or Thompson's water seal.

Adobe

Adobe is a mixture of clay, sand, and straw, with some water to mix it together. The mixture is poured into molds and allowed to dry in the sun. The dried bricks are stacked, much like brick, using more of the adobe mixture as mortar between the blocks. The exterior and interior are then covered in plaster or stucco to protect the adobe from the rain.

This makes an amazingly strong structure. Some of the oldest buildings in the United States were made of adobe and still stand today. The Alamo, in San Antonio Texas, was a Catholic mission, constructed of adobe. The Battle of the Alamo was fought in 1836, yet the building still stands.

Adobe is extremely heavy, so the ground underneath it must be compacted. A wide footer is used to spread the weight as much as possible, as well as a stem wall that extends one to two feet into the ground. Failure to compact the ground and provide a good footer will cause the wall to crack as it settles. Due to the high weight, adobe walls are rarely built more than two stories high.

Doors and windows must be framed with wood, with a strong lintel above them, which can support the weight of the adobe wall above it. Lintels are usually wide, extending well into the wall on either side, in order to help spread the weight that the lintel is holding.

One of the nice things about building out of adobe is that it is extremely cheap, although it is fairly labor intensive. The adobe itself is made totally of materials found on site. Much of the ground in the Southwest is sandy clay, which is perfect for making adobe out of.

Adobe walls are usually topped with wood, in order to provide something for the roof structure to attach to. As it is difficult to nail to adobe, lengths of rebar can be used today to attach this wood cap to the wall.

Adobe is fairly weatherproof, even without being coated. Even if the mixture gets wet in a rainstorm, it is not likely to lose much material. It would take many hard rainstorms to wash away an adobe wall, which was very thick. Adding the outer layer of stucco makes the wall virtually impervious to the rain. Being thick and solid, it is also bullet proof.

Cement Block (Cinder Block)

Building with adobe has basically been replaced by building with cement blocks, commonly referred to as “cinder blocks.” While there are still places in the world where they build with adobe, often referring to it as “cob,” here in the United States, its use has virtually disappeared.

The advantage of cement blocks over adobe is that you buy the cement blocks instead of making them. Of course, that means that you have the cost of the cement blocks to contend with, which is higher than making your own adobe bricks. Nevertheless, cement blocks are a very inexpensive way to build. Depending upon where you buy them, cement blocks cost between 75 cents and a dollar a piece. It takes 60 cement blocks to build every 10 feet of 8 foot high wall.

In Mexico, where they build with cement blocks all the time, they put a cement pillar every ten feet. This is done to support the weight of a cement floor and the walls for the second floor. If all you are going to do is build a one-story shelter and never make it any higher, you don't need to use the cement columns, saving considerably on the cost.

Cement mortar is used for building cement block walls. Like brick, cement blocks are built in rows or “courses” with each one offset from the one below it by half the width of the block. This makes the wall stronger, by staggering the joints between the blocks. The weakest point in the wall is usually where the mortar meets the block. Even so, this joint is much stronger than it is for brick.

Like adobe, cement blocks need a wide footer and a stem wall that extends into the ground. The floor can be poured as part of the foundation, or it can be added later. Typically it is poured as part of the foundation here in the United States, but poured later in Mexico.

Sod

During the westward expansion of the United States many homes in the Great Plains were made of sod. These dwellings, called “soddies” were essentially the same as adobe, with the exception that they used the natural sod, rather than making the adobe bricks.

The grass in the Great Plains was so thick, with such a thick root structure, that it had to be removed before planting could commence. The grass was first cut and stacked for hay, before the sod was cut. Plowing through the sod was difficult, but when plowed through, it could be cut and removed in blocks about four inches thick. These became the building blocks of a soddie.

Soddies weren't as rugged as homes made out of adobe and didn't last as long. Nevertheless, they would last a number of years, without any further work. Typically, a family would build a soddie to get started and replace it after several years. They also built their barns and stables out of sod, both in order to use up the sod and as a cheap, readily available building material.

Earth

An ever simpler building material than adobe or sod is earth. Earth shelters are built like a sandbagged revetment in the military. Bags are filled with dirt or sand and stacked, making walls. No mortar is needed, as each layer of dirt or sand conforms to the one below it, naturally forming itself to fit.

The bags protect the dirt or sand, keeping it from washing away. Eventually, the bags rot from the weather, especially sunshine, and then the wall will begin to wash away. Even so, as a temporary structure, they are easy to build and can be built anywhere for a very minimal cost.

Stone

Stone is one of the hardest materials to build with, as it is inconsistent in size. About the only stone that is reasonably easy to build from is flagstones. Even then, the stones are inconsistent in their thickness and will need to be cut with a chisel to make pieces in the size that you need.

With the difficulty in working with stone, it is better suited for use in making fireplaces and for paving floors. Cement mortar is needed in either of these applications, both to hold the stone together and to fill the areas between the stones, so that there is no area that is left for dirt or for fire to get through.

Once constructed, a stone wall, floor or fireplace will usually outlast anything. There are stone fireplaces and chimneys scattered around the country, which are the only remaining part of

many different structures. Even when there is no sign of what else stood there, the stone chimney lets us know that at one time, someone had built in that place.

Soda Bottles

Building with soda bottles is a relatively new invention, which is highly imaginative and very effective. Not only that, but it takes garbage and recycles it into something both useful and beautiful. While most of the soda bottle buildings being made are in third-world countries, there is no reason why you couldn't build a survival shelter in this manner.

The shelter is made out of empty plastic soda bottles, filled with sand. The same sized soda bottles need to be used for a wall section, although they don't all have to be the same type. Bottles are laid in a row to make a straight or curved wall and wired or tied together. The space between them is then filled with cement mortar. Each layer of bottles is offset from the one below, so that the bottles rest in the "V" made where the two bottles below come together.

While a slow building method, this creates a wall that is strong and attractive. The finished wall is about as strong as an adobe wall and is also bulletproof. Developed as an inexpensive method for building homes in third-world countries, these homes can easily solve housing problems for many.

Since the only materials needed are bottles, wire or twine, sand and mortar, the overall cost of building the walls is extremely low. Assuming that there is sandy soil on site, the only materials that need to be purchased are the mortar and wire. Bottles can be collected from friends and neighbors or even from recycling centers.

Cloth

There are a couple of ways of making cloth survival shelters. The nice thing about these is that they are portable, like a tent. At the same time, these shelters are larger and more rugged than a typical camping tent. Of course, the disadvantage of a cloth shelter is that it really isn't that rugged or warm, as one layer of fabric really doesn't provide much in the way of insulation.

Several ancient people groups lived in portable cloth dwellings. Typically, these were nomadic people that followed the game or their own herds. The notable thing about this is that these people lived their whole life in these dwellings, proving that they do provide adequate shelter.

The first I'd like to mention is the teepee. American Indians, especially those living in the Great Plains, used tepees for centuries. The typical teepee was about ten feet in diameter, although there were some permanent ones which went as high as 30 feet in diameter. Theirs were made

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of animal skins, but the concept remains the same. I have known of several survival instructors and artists who have lived months or even years at a time in a teepee.

The teepee's structure is made of poles. There are three main foundation poles, forming a tripod. The other poles are added, leaning against these three, to form the rest of the cone to support the covering. This isn't actually a circle, but more egg shaped, with the door being at the point of the egg.

The covering itself can be made of heavyweight canvas, sealed to provide some waterproofing. The shape of the covering is a half circle. The flat side of the circle is modified to include a hole for the door, as well as the flaps for the smoke hole. You can find patterns for sewing your own teepee covering online. When placed on the structure, the flat side comes together at the door and is laced together.

The flaps for the smoke hole need their own poles, which can be moved, positioning the flaps to prevent the wind from blowing into the smoke hole and filling the teepee with smoke. In the summer, the bottom edge of the teepee can be rolled up, providing ventilation to keep it cool.

There is another type of fabric shelter, built and used by the Mongolians; the Yurt. A yurt is a little harder to build than a teepee, but provides more living space. An actual door (like a house door) can be used in the yurt, making it easy to enter and exit, as well as providing a way of locking it. Of course, with fabric walls, security won't be all that great.

The key part of making a yurt is the roof hub that goes in the center of the roof. It goes around the smokehole in the center of the roof and is capped by a fabric covering to keep the rain out. This hub is a wood or metal circle or octagon with attachments for the poles every 22.5 degrees (total of 16 poles). The poles can either go into holes in the hub or the hub can have spikes to go into the ends of the poles.

The walls of a yurt are made of lath strips. You can cut those from knot-free 2x4s. The lath strips are made into a diagonal screen with about eight inches between the strips. To make the screen, lay out lath strips on the ground at a 45 degree angle. Overlay these with another layer at the opposite 45 degree angle, making sure that the bottoms and tops form a straight line. Attach the strips to each other everyplace they cross.

The yurt is erected by standing the lath screen on edge and attaching it to either side of the doorframe. The length of your lath screen will then determine the diameter of your yurt. The roof structure is then created by attaching roof poles to the hub at the four cardinal directions and attaching the other ends of those poles to the lath wall. The rest of the poles are then added, attaching each to the hub and the wall.

Once the structure is erected, the covering is attached. The roof of the yurt is covered by heavy canvas. To make this cover, lay out and sew together a circle of canvas the right diameter. Place it over the roof structure, with a slit from the edge to the center. When you overlay the canvas cover, you will need to overlap the canvas at this slit. This will show you where to sew the ends together to make the finished size.

The circle of the hub needs to be cut out of the roof canvas as well. Another circle of canvas, slightly larger than the hub is created and attached to a frame which is placed over the hub and its smoke hole. Some space between this cover and the main roof is necessary to allow the smoke to exit.

The walls of the yurt are simply covered with canvas, tying it off to the lathwork frame underneath. The entire cover, roof and sides can be sewn together, although it typically isn't. The traditional way of building a yurt has the walls attached and then the roof. Some people make the roof slightly oversized, so that the edges of the roof can overlap the tops of the walls.

4.3 Other Parts of the Survival Shelter

Any survival shelter is going to need some common elements, such as doors, windows, floors and a means of heating. These are pretty much independent of the style of shelter you build, so I have decided to deal with them separately. There are a number of ways you can go about each of these items, so you will have to decide what will work best for you.

Once again, the materials you have available to you will have a lot to do with the decision that you ultimately make. Your materials availability may limit your choices, unless you want to import materials to your property. However, in most cases, there is enough variety of ways to do things, that you can get away with not having to import anything.

Floors

Most primitive survival shelters, such as those that were built for homes in the Old West, have dirt floors. While dirt is not an ideal choice, as it becomes packed down it becomes easier to keep the home clean. A hard dirt floor can actually be swept, eliminating much of the dust.

Wood planks were the number one material used for making floors throughout much of history. Today, we use plywood instead, mostly because it is faster and easier to work with, saving money on building the floor. You can easily make a modification of a wood plank floor by using pallets. Either the pallets can be covered by 1/2 inch plywood, or the slats on the top of the pallet can be removed and reinstalled close together, eliminating the cracks between the boards.

Before wood planks were common, a wood floor was made by splitting logs. The split would provide two “boards” with rounded bottoms. When laid side by side, head to foot, they would provide a consistent width. The boards were held in place by using wedges, which would keep them from rolling.

Another excellent material for floors is stone. If you are fortunate enough to have any sort of flagstone or other stone that can be split into sheets, you can make an absolutely excellent floor out of it. The great advantage that this type of stone has is that it can be split to uniform thickness, making it easy to lay a floor. The space between the stones can either be grouted or filled with sand.

If you don't have flagstone available, don't despair. Any smooth rocks can be used to make a floor. If there is a streambed or dry streambed anywhere near your property, you can harvest smooth rocks to make a floor. Lay a bed of sand or concrete and embed the stones into it. Larger stones need to be pressed down further and smaller ones not as far, so that the surface will be relatively level. Use a board to check the level and smoothness of your floor as you work.

Roofing

Generally speaking, the roof is the hardest part of any shelter to build. There are two basic designs to decide between; a typical peaked roof or a shed type roof. The shed roof slopes to one direction, rather than the two directions that a peaked roof slopes.

Roof beams can be made of whatever wood is available. If you are building a wood cabin, for example, the larger branches from the trees or smaller trees are used to make the roof beams. If you are building a shelter out of pallets, you can make a roof out of the pallets themselves. Typically, a roof will need beams every two feet. Most of the time, thinner sticks are then tied from beam to beam, connecting them together and preventing them from moving laterally. This also provides more structure to attach the roof covering to.

Of course, you can build roofs out of a number of man-made materials. The most common for a simple shelter would be corrugated tin sheets. These are readily available, self-supporting and fairly inexpensive. However, they do make the inside of the shelter hot on a sunny day.

The steeper a roof you build on your shelter, the easier it will be for the roof to shed rain and snow. The flip side of this coin is that the steeper the roof, the more of the shelter's heat will be in the roof area, rather than the living area below. Most primitive shelters use fairly steep roofs, except in cases where there is little expectancy for precipitation.

Just like the home, the roof can be covered with whatever material is available. Sod can be cut and laid on the support structure, making a living roof. Bundles of grass can be tied together and laid on the roof, parallel with the direction of water flow. Using grass or whatever other living, growing material is very common in many cultures.

In Mexico, they use the leaves of palm trees to make a roof called a “palapa.” Bundles of palm leaves are tied together and then tied onto the roof structure. Courses of palm leaves are used, with the higher up courses overlapping the lower ones so that the water will flow off. The finished palapa roof is about ten to twelve inches thick and will last 20 years, keeping the rain out very well.

Doors

Primitive shelters used an animal skin or blanket for a door. This will work as a temporary measure, allowing you to keep some of the weather out. It obviously doesn't provide any security, but is better than nothing.

Doors are one thing that you should import to your site. A commercial door will provide much more security to your survival shelter, as well as being much easier than making one. Used doors are fairly easy to come by if you are patient. If you choose to make your own door, the biggest problem you will have is making the door and frame fit together in such a way as to make them easy to open and close, while also making it relatively airtight.

If you choose to make your own door, you are basically limited to making one out of wood or metal. Either way, it is hard to make a door that is square and not warped or twisted. Any twist in the door will eliminate its ability to seal out the weather well.

Windows

Many primitive shelters used openings in the wall for windows, without any glazing. This provided light and ventilation to the shelter, without anything to disturb it. However, windows of this type did nothing to protect the home from the weather. When night fell or it was about to rain, the windows would have to be shuttered. This was also done in wintertime, making it much darker inside the home.

While you can make your survival shelter this way, it is extremely easy to find used aluminum windows for amazingly low prices. Often contractors who replace them will offer them for sale, often putting them on Craig's List. These contractors are pretty much happy with whatever they can get for the windows, so offer them less than they are asking. They will probably jump at it, especially if you are buying a bunch.

Another option is to make window openings and cover them with clear plastic. This provides some protection from the weather, while allowing light to enter. While not a good long-term solution, you might want to consider using it while you are still building the shelter.

Fireplace

You will most likely need a fireplace of some sort for heating and cooking. Classic fireplace designs are built along one wall of the shelter. This is a very inefficient design for both heating and cooking. You are better off with a fire pit in the centre of the shelter, as that will provide heating all around, rather than losing a lot of the heat to the outside of the shelter.

The best possible option is to install a wood burning stove. These radiate heat very well, as they are metal on all sides. They also provide an excellent cook top, as the stove has a flat top with burners for placing pots on.

It is not necessary to put a chimney in if you have a smoke hole directly above the fire pit or wood burning stove. Granted, a chimney will help prevent the inside of your shelter from smoking up, but you can function without it. The chimney might be an improvement that you add, later on.

Modern chimneys are triple wall, providing three separate air passages. The innermost air passage is the one that the smoke travels up. The outer two passages, which are concentric around the chimney, are connected at the bottom and open at the top. Cool air travels down the outer passage and then warms as it comes in contact with the heated air in the chimney. It then travels back up through the middle passage; all by convection.

The idea behind this triple-wall chimney design is safety. The outside of the triple-wall pipe is cool to the touch. That prevents burns and prevents the chimney from causing any risk of fire. However, it also prevents any heat from radiating away from the chimney, inside the shelter, to help heat it. In olden times, they used a simple single wall chimney. While not as safe, heat could radiate from the chimney pipe, helping to heat the structure.



5. Building an Underground Survival Shelter

While I'm not in favor of the bunker mentality, there are several advantages of building an underground home and I don't think they should be dismissed out of hand. Please note, I see a distinct difference between an underground bunker and an underground home, mostly in that an underground home has one side open to the countryside. There are only three sides that are actually underground.

To build a true underground shelter, you need to own land that provides a hillside, rather than just flat land. Oh, I suppose it's possible to build an underground home if you truck in dirt and make an artificial hill over your home. That would in essence be the same as building it into a hillside, but it would be rather costly. The point of this book is to find inexpensive ways of building a survival shelter and that definitely wouldn't qualify.

The biggest advantage of an underground shelter is the insulation value that the ground provides. I don't care how thick you build your walls and what you insulate them with, you will lose some heat to the outside. You will also pick up heat from the outside in the summer. With an underground structure, you will lose very little heat to the outside air in the wintertime and have a shelter which will remain much cooler in the summertime.

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Another great advantage of building underground is that you only have one visible side; so if you are concerned with appearances or making it look good, you only have to make one side look good. The rest of the shelter is going to be hidden by tons of dirt, where nobody can see it.

From a defensive point of view, an underground house can only be attacked from one direction; the front. Of course, they could sneak up on you over the roof and then drop down in front of the house to attack you. If you could build your shelter into a cliff face, that would eliminate that possibility for everyone but Special Forces trained soldiers of whatever type.

If you have a natural cave available on your property, that's an ideal underground shelter. Be careful when exploring your cave though, as caves in the wild are seldom unoccupied. You might find anything from mice to bears already inhabiting the cave. If you have to chase any inhabitants out, make sure that you are bigger and tougher than they are, or at least better armed.

Watch out for holes and pits in your cave as well, as these can appear out of nowhere and can be quite deep. Never assume that a floor which looks flat actually is, or that a floor that looks strong enough to support you actually is, until you have checked it out thoroughly.

Caves can often go back a long ways into the mountain. To use one as a shelter, you may need to block off some part of the cave, or some passageways that go to other places underground. This will be necessary to keep animals out, as well as prevent others from finding a back door into your shelter.

I would never recommend digging your own cave or using an abandoned mineshaft for a shelter. Natural caves are structurally stable and not very likely to collapse, even in the case of an earthquake. Man-made caves on the other hand, are not stable. Shifting in the ground, especially shifting caused by an earthquake can easily cause a collapse of a mine tunnel. A wider opening, such as a cave, is even worse. Unless you have enough of a structure to support the roof and the overburden, you could find that your shelter has become a death trap.

Building an underground shelter requires the use of a bulldozer and a backhoe, or at least the backhoe. You have to dig out a place to build your shelter. I realize that this sounds contradictory to the previous paragraph, but let me explain. When you are building an underground shelter or home, you don't dig a cave into the side of the mountain, you dig a pit with a flat floor that is at ground level. In other words, at your floor level the edge of your hole will be at ground level. The floor will extend back from there, remaining flat, or slightly angled for better drainage. The whole thing will be dug out open to the sky, not as a cave.

Once you build your shelter, the dirt that you dug out (or at least some of it) will be put back in the hole, covering the roof and backfilling the walls. That's how the home gets underground; not by digging a cave.

You can use several different methods for constructing the shelter; of which the best would be adobe or cinder block. I would not recommend any of the other methods we've discussed, because of their lack of strength. The roof of your underground shelter is going to have to support several tons of earth being shoveled back over it. In addition to the weight of the earth, it should be able to support a vehicle driving over it.

The only way that you can make an underground home that is strong enough for this is to use a flat trussed roof or a concrete roof. The weight of the roof and the overburden will have to be supported by the walls of the structure. You will also need a solid foundation, as the weight from the walls will ultimately be transferred to the foundation.

The design of your underground shelter can help to support the roof and overburden. Essentially, you want a lot of load-bearing walls, each of which needs a good footer. If you can keep the space between the load-bearing walls to a reasonably short distance, like 10 or 12 feet, then you can fairly easily make a roof that will be strong enough. There are a couple of ways of doing this:

- Make metal flat-roof trusses out of rebar that span the distance between the load-bearing walls. Place corrugated tin over this.
- Make a concrete slab roof with rebar (not reinforcing wire net) inside it. To do this, you will need to temporarily support the concrete, which can be done with a forest of scrap 2x4s.

If you are getting the idea that this is considerably more expensive than building an above-ground shelter, you're right. The structural strength required for an underground shelter is much higher than for a similar structure above ground. However, if you can afford to make it that way, you will end up with a much stronger, long-lasting structure.

If you want to make your underground structure more defensible, you can make the outer facing wall out of concrete. An alternative would be to make a normal wall of some sort, and build a half wall in front of it out of concrete, essentially turning the whole front of the shelter into a fighting position.

Don't forget that enemies can always get to you by going over the top of your shelter and shooting down on you from above. If you are serious about making your underground shelter defensible, then you'll need a fighting position on the roof, accessible from the inside.



6. Taking Care of Utilities

If you buy junk land, you probably aren't going to have utilities on it. Adding those utilities in the normal way would be cost prohibitive. The only option is to develop your own. Since this is a survival shelter, that is probably the best thing to do anyway, as the infrastructure may go down.

There are three basic things you need, electricity, water and sewage. You may not need a lot of any of these three, but you will need them, at least to some extent.

6.1 Electricity

In any survival situation, it is commonly understood that the electrical grid will probably be down. All we have to do to see that is to look at any natural disaster or serious storm that strikes anywhere in the country. You can pretty much be sure that the electric grid will go down, at least for a time.

While producing enough electricity to fully run your shelter, especially air conditioners, might be a bit difficult to accomplish, you can easily produce a minimal amount of electricity to run some lights, and some basic electronics. The two most common means of doing this are with solar power or wind power

Wind power requires that you live in an area that has consistent winds. If it is only windy occasionally at your survival shelter site, then forget about wind power. However, if you do have a lot of wind there, then wind power is much less expensive than solar, as well as working day and night. You can either build your own wind power generator or buy one from any of the big home improvement centers for a fairly reasonable price.

One thing to keep in mind when looking at either wind generators or solar panels is that the wattage rating given is at the rated voltage, not at 120 volts. You will have much less wattage at 120 volts, as the rated voltage is usually 12 volts.

To invert 12 volts DC to 120 volts AC, you have to multiply the voltage by ten. That means you have to divide the wattage by ten at the same time. So, a 700 watt wind generator will really only provide 70 watts of power at 120 volts AC or a little over half an amp. That's enough to charge batteries and run some small lights, but not enough to run your computer all the time.

The other means of generating electricity you should look at is solar. While solar is expensive to buy and install, it produces electricity as long as there is daylight. About the only places where you can't use solar power are those that have rain 365 days per year.

Regardless of whether you choose wind or solar, you should put in a battery backup system. This consists of as many deep cycle lead-acid batteries (car batteries) as you can afford, with a battery charger and an inverter. The wind generator or solar panels charge the batteries, rather than supplying power directly. Then, the inverter takes the battery power and converts it to 120 volt AC power for your use.

The other thing you can do with this scheme is to run whatever you can off of 12 volt power. RV lighting is run off of 12 volts, rather than 120 volts. You can also get chargers and adapters for most electronic equipment to run it off 12 volts, as most of it uses only 5 volts to operate. By running this equipment off of 12 volts, you increase the amount of effective power you get out of your batteries, by eliminating the loss inherent with inverting the voltage and then dropping it back down.

6.2 Water

Unless you have a spring, stream or pond on your land, water might be a problem for you. There are several ways you can go about dealing with this problem. The easiest is if there is a water source nearby, such as a lake or stream, albeit not on your property, where you can draw water to transport back to your property.

The best solution is to drill a well, if you can. In many places, you can get water out of a shallow well, something that is less than 25 feet deep. If the ground is relatively soft (sand or dirt) you can drive a shallow well much easier than drilling one. This requires buying a well point and some sections of pipe to match it. The well point is a pointed metal cone attached to one end of a section of metal pipe. The pipe has been cut and screen added, to make a well screen.

The well point is driven into the ground with a sledge hammer or fence post driver. A cap needs to be screwed onto the threads at the hammering end, so that the threads don't get damaged.

When the well point is most of the way into the ground, the cap is removed and another section of pipe is added, putting the cap on the new section of pipe. Work continues in this way until the well is sufficiently deep.

If you have clay or stone, there is no way to drive a well; it will have to be drilled. If you can rent a well drilling rig, that might be the best. Buying a well drilling rig is expensive, but there is a company in Texas that makes a homemade well drill, which runs off of compressed air. With their rig, you can drill a well up to 100 feet deep for about \$1,000. You can find them at: www.howtodrillawell.com

You would be well served to buy some sort of a tank for water storage and to store at least a couple hundred gallons of water at all times. That way, if you are unable to get out and get water, you will have some that you can use. When my family was living in the motorhome, we were able to go about three days on 60 gallons of water, if we had to. That required that we all be extremely careful how much water we used for bathing, as well as how much we used for washing dishes.

Any water you get, whether from a stream, lake, spring or your own well should be purified before drinking. There is less of a risk of drinking water from a well or spring than from a lake or stream, but nevertheless, you are still best off purifying it; at least until you can have the water tested and are sure that it is safe to drink.

6.3 Sewage

Waste water can be broken down into two distinct categories; grey water and sewage. The grey water, which is the vast majority of your waste water, is the water from washing; whether from washing dishes, clothes, hands or bodies. This water is not dangerous and is an excellent source of water for watering your vegetable garden. If you have too much, it can just be allowed to drain on the ground for evaporation.

Sewage is another thing entirely. You need to be careful about sewage disposal. Basically, you need to come up with some sort of a septic system for handling it.

Any septic system consists of two basic parts. There is the septic tank itself, which is intended to capture and store the solid wastes. These eventually fill the tank to the point where the tank needs to be emptied. The second part of the system is the leach field. This consists of a series of perforated pipes surrounded by gravel. The idea behind the leach bed is that the effluent (the water part of the sewage) soaks into the ground, so that it can evaporate.

Part of the reason that septic systems are as large as they are is that all the waste water from the house, grey water and sewage, are run into the septic system. Therefore, a large leach field is needed, so that all the water that is used throughout the house can evaporate.

If you are recycling your grey water in your survival shelter, then your septic system only needs to deal with human waste and any liquids that are used to flush it. With minimal water usage for flushing, you should be able to get by with only a septic tank and no leach field.

While it won't pass building code (like everything else you're doing in your survival shelter), you can make a septic tank by digging a hole in the ground and covering it, much like what you would do for an outhouse. Place it far enough away from your shelter that any unpleasant odor doesn't waft up towards you with the wrong wind. You might also want to put in an access cover to the septic tank so that you can verify the level in it. If it should get too full, you may need to dig another one.

Placement of your septic tank is important. It should be at least 100 feet from any water sources and should not be uphill of any water sources. That includes water sources that are not part of your property. You don't want to be responsible for someone downstream of you ending up sick, because of poor placement of your septic tank.

There are chemicals you can buy for the septic tank which will reduce odor and help the solids to break down. These are commonly used in recreational vehicle black water tanks to protect the family and make it easier to clean out the tank.

6.4 Storage

In addition to the shelter itself, you're going to need some sort of storage for supplies. There probably won't be enough space inside your shelter for more than minimal supplies. To try and store months worth of food inside would be impractical, unless you build a very big shelter.

If you have started with a cave, you might be able to use a section of the cave as your storage room. Another possibility would be to use a temporary shelter as your storage room, when you build a better survival shelter. Regardless of the means, you have to have some sort of storage.

This is where a shipping container could be very useful. Shipping containers are made of metal, designed to store a lot of merchandise and also designed to be locked securely, by as many as four padlocks. If you were to buy a shipping container and put it next to your survival shelter, you could store a large quantity of supplies in it, as well as putting a water tank in it and the necessary tools to continue working on improving your shelter.