

Quick and Dirty P&P Construction

Terms

Footprint: The area of a given floor of a building, in 10'x10' sections.

Space: a volume of building construction, a 10'x10'x10' volume (i.e. a 10x10 area, one story tall).

Assumptions

- It is assumed that all building materials are on site; if not, transport costs will apply.
- Order of strength: Stone Block > Stone Rubble > Wood > Thatched Frame.
 - Weaker materials may only be used on top of stronger ones.
- A building wall is 6" thick; a fortification wall is 12" thick.
- All costs are rounded up to two digits to keep numbers clean.

Planning

Decide on the overall purpose for the structure – the material quality and extras for an animal barn will be different than those required for a noble's home. Also decide if this is a military or civilian structure – military buildings are usually built with tougher and thicker walls.

Capacity

For short-term living for common folk, about half a space per person is required; long-term requirements are DOUBLE this, and military facilities can make due with HALF of any requirements. For upper stations, a bare minimum is generally the normal requirements times the station, plus or minus 10%.

Example: For a noble family of station 4 and five members, at least 20 spaces of above ground building should be assumed as a minimum for long-term living (more than a few days to a month), usually more.

When considering something like an inn, a value of 1/4 to 1/2 of a space per person is akin to a "flop house", 1/2 to 1 space per person a normal inn, and 1-2 spaces per person a fine inn.

Structure

Buildings are designed with two or three components – basement, above-ground and roof. In most cases each floor in a basement or above-ground has the same footprint, but designs other than a simple box will require a layout for each floor. Determine the total spaces for the basement or above-ground floors, keeping in mind the number of levels of depth (for basements) or height (for structures) as this will affect overall time and cost.

Example: A station 1 peasant home is a 20'x15' structure on the first floor, with a 10'x15' upper loft and a 10'x15' root cellar. The basement is 1.5 spaces and the above-ground structure is 4.5 spaces.

The roof footprint equals the greatest footprint of the above-ground structure. All roofs have some degree of pitch to allow them to shed water or snow easily. For "roomier" roof structures (like barns or cathedrals), increase the stated footprint by 50%.

Example: The peasant house above has a greatest footprint of 3 and no unusual construction, so the roof has a footprint of 3.

Extras

Decide on any extras required for the building. Multiple story buildings will need stairs (ladders can be assumed for poorer quality small buildings). Buildings in colder climates will need a heating system. In addition, some homes may have their own well or privy.

Site Preparation

Before building can begin the site must be prepared.

Ground Clearing

Prior to construction the building site must be cleared and leveled. For a suitable site with simple vegetation and rubble it takes ONE-QUARTER the required ground level footprint in man-days simply for surface construction. Marginal sites with greater slopes take DOUBLE or TRIPLE the basic time. Rocky terrain can DOUBLE or TRIPLE this time, up to FIVE times for heavy forest or jungle. All multipliers are cumulative.

The cost for ground clearing (in CC) equals ONE-THIRD the total number of man-days. The manpower limit for ground clearing is 5 per footprint.

Excavation

If a basement is in the design, then excavation for it must be done. For normal soil it takes 1 man-day per space of excavation. It takes FOUR times as long for rocky soil; TWENTY times as long for soft rock; FIFTY times as long for hard rock. When excavating below a single story, add 10% to the total time for each level of depth below 1.

The cost for excavation (in CC) is ONE-THIRD the total number of man-days. The manpower limit for excavation is 5 times the average level footprint.

Example: A local lord wishes to have a basement area in his new keep for storage. Each level is 100'x100', and goes down 4 levels (40') into hard soil. The 400 spaces are increased by 30% for the depth penalty, to 520. It will take 2,080 man-days and cost 1,040CC. If he had the available manpower, the fastest he could get this done is 5 days.

If a structure requires excavation, ground clearing is automatically included if the above-ground footprint is smaller than the basement footprint; if larger, the excess must still be cleared.

Construction

With the plans in hand, the construction effort for each component must be determined. The time for all lower components must be settled before higher ones can be done:

Excavation/Leveling > Basement > Above-Ground > Roof

The construction rules assume a normal layout of large and small rooms. If the structure is predominantly open space (cathedrals, warehouses) reduce the effective construction spaces by 25%.

Certain components are "Finished" after construction, reflecting the higher quality construction, design or final touches required by upper station owners.

Basement

Basements may be created using stone rubble or stone block. As for excavation, there is a depth premium of 10% for every level of depth below 1 if using stone block, 25% if using stone rubble. This premium is added to the space count, rounding up.

The manpower limit for basements is 5 times the average level footprint, with an absolute minimum of 2 days per level (to allow the mortar to set).

Basements are not normally finished for low-station buildings, but those of higher stations may have them finished to at least **Common** quality or better if they to be a wine cellar or additional living space.

Example: A 20'x20' rubble basement, three levels deep, is 12 spaces in size; with the depth premium of 25% per level over one it is considered to be 18 spaces of stone rubble construction.

Above-Ground

May be any material, subject to order of strength. As for basements, every story above one adds a 10% premium to the total space count (25% for rubble construction).

The manpower limit for above-ground construction is 5 times the average level footprint, with an absolute minimum of 2 days per level if using stone (to allow the mortar to set), or 1 day total for other materials.

Above-ground structures are always finished.

Example: The peasant home previously mentioned is two stories of wood, so the premium is 10% on the 4.5 spaces of wood construction, for a total of 5 spaces.

Roof

May be any material, subject to order of strength, but usually thatched wood frame for low station buildings or slate-covered wood for higher ones. Stone rubble cannot be used, though stone block is common for military fortifications. For tall structures, increase the effective construction footprint by 10% for every TWO stories (round down).

The manpower limit for roofs is 5 times the roof footprint, with an absolute minimum of 2 days if using stone (to allow the mortar to set), or 1 day total for other materials.

Roofs are not usually finished beyond **Common** except on high station buildings where extra ornamentation, expensive materials or artistic designs might be desired. Thatched wood cannot be finished beyond **Common**.

Example: The peasant home has a roof footprint of 3, but its height of 2 stories does not alter the effective roof footprint.

Stairs

A single story of stairs, 5' wide and 10' long is constructed as if a HALF space object. They may be any material except thatched frame and are subject to order of strength. Stairs are subject to the same finish costs as for the rest of the surrounding structure.

Manpower limits for stairs are 3 each.

Example: A noble home of two stories has a grand wooden stairway of wood (DOUBLE width), requiring 1 space worth of labor and materials.

Heating & Cooking

A heating system must be made from stone rubble or block and takes the form of one or more fireplaces and chimneys used throughout the structure. For northern or mountainous climates, 1 space worth of heating system will provide tolerable winter heat for 10 spaces of structure or 20 spaces of basement. A superior heating system costs TWICE as much and takes TWICE as long to create, but will allow for comfortable levels of heat in the dead of winter. It is assumed that an heating system includes a fireplace for cooking – if a system is only needed for cooking only 0.5 spaces of system is required.

Heating systems match the finish level of the surrounding structure.

Example: A two-story noble home of 50'x40' size, with a 30'x40' basement, requires at least 4 heating systems, but will DOUBLE this for more comfortable levels of warmth in the dead of winter. The basement is more than satisfied with a single system. The 9 spaces of stone block construction will cost 180CC and take 90 man-days to complete.

Barbarian buildings will often just have a simple hearth, a stone-lined firepit in the center of the building that provides heat and cooking in bad weather, the smoke escaping through a covered hole in the roof. A hearth may be added at no cost and may only be used with single story buildings.

Forges

A forge suitable for metalwork or glasswork takes 1 space of stone block to create. A large forge for armor smithing takes 2 spaces of stone block. A forge can double as a winter heat source (large forge counts as a DOUBLE heat source).

Forges are never finished.

Privy

A privy shaft is little more than a rock-lined hole in the ground, usually made of stone rubble, and takes 1 space of labor for every 10' into the ground (subject to depth premium if deeper than 10'). In general, a single privy will provide sanitary waste disposal for 5 people for every 10' of depth for regular soil and for every 20' for rocky soil.

Privy shafts are never finished.

Well

A well shaft takes 2 spaces of materials for every 10' of depth, subject to the depth premium. The actual depth required varies widely by the actual water table, usually 30'-60' in most cases. Wells must be made of stone rubble or block.

Wells are never finished.

Basic Cost and Time

For basements, above-ground structures and all extras, multiply the total number of spaces by the material used cost to find basic cost and time for each component:

- **Thatched wood:** 5CC and 2 man-days
- **Wood:** 10CC and 4 man-days
- **Stone Rubble:** 10CC and 10 man-days
- **Stone Block:** 20CC and 10 man-days

For roofs use HALF the above values multiplied by the effective footprint.

Example: for the peasant home the rubble basement of 1.5 spaces costs 15CC and takes 15 days (min 2). The above-ground wooden structure of 5 spaces costs 50CC and takes 20 days (min 2). The Thatch roof takes a final 8CC and takes 3 days (min 1). A single skilled worker can complete this home in 38 days, but even with more than enough workers it takes a minimum of 5 days.

If using unskilled labor supervised by skilled craftsmen (no more than 10 per supervisor), increase time by 50% and reduce cost by 25%. The final finished quality (see below) cannot be better than **Fine**.

If slave labor is used DOUBLE the time and reduce cost by 50%. The final finished quality cannot be better than **Common**.

For military structures, DOUBLE the cost (including transport costs) and time for "outpost" level construction and TRIPLE it for "fortress" level construction.

Open Frame Structures

The above rules assume an enclosed structure. For open structures, like a gazebo or Greek temple, divide the cost (and any transport costs) by FIVE and the construction time by TWO.

Finish Time & Cost

As constructed, the building is usable but fairly barren and only suitable for minimal living standards or military fortifications. To make it suitable for those of greater stations, additional finish time by craftsmen and artisans will be needed. The added finish cost can be found by multiplying the basic cost by the desired living standard:

- **Common:** x1
- **Fine:** x3
- **Opulent:** x10
- **Extravagant:** x30
- **Regal:** x100
- **Imperial:** x300

Common is suitable for most structures of station 1 or 2, and some humbler station 3 people. Greater stations will tend to want the teak floors, glass windows and all the other expenses. Finish time in man-days equals the finish cost divided by FIVE (by TEN if **Extravagant** or better). The manpower limit for finish work equals the total number of building spaces (or footprint, for roofs).

Example: The peasant home above is to be finished to Common levels, so the basic cost of 73CC requires another 73CC of finish work, which will take another 15 man-days (minimum 3). Throwing in the excavation and clearing (1 day, 1CC), this house will cost a peasant 150CC to purchase (not including land).

Minimal Time

Given the various manpower limits, even with hundreds of men you can only construct some buildings so fast. The minimal time to complete the main construction equals the total excavation/clearing + basement + above-ground + roof time, or total stairs time, or total heating system time (whichever is greater). Minimal finish time equals the greater of all finish times for basement, above-ground, roof and stairs.

Transport

If materials are not on site they will have to be carried by porter, mule or wagon, which will increase initial time and overall cost. All costs are per space of structure or two footprints of roof. For stone construction the cost and manpower requirements at TEN times greater; for thatch and wood they are HALVED.

- **Porters** are the most expensive, used only when the route is impassable by mules. It costs 50CC per day of distance (100 men).
- **Mule trains** are used where the terrain is passable, but not to wagons. It costs 10CC per day of distance (2 drovers, 25 mules).

- Where road surfaces are available, **ox-drawn or horse-drawn wagons** can be used. It costs 3CC per day of transport (1 teamster, four animals and a large wagon).
- **Small Boat** transport is available if materials and building site are both on the water. It costs 1CC per day of transport (1 boat with 10t capacity, 3 sailors). Time includes 1 day to load and 1 day to unload.

All costs include pay and any animal fodder and assume a round trip (empty coming back). If the cargo can be carried in a single trip, cut cost in HALF. In addition, if land transport is over roads, cut the cost in HALF for porters or mule trains (already figured into wagon cost).

Example: A peasant home is to be built with local stone rubble from the fields for the basement, but the lumber comes from forests that are 2 days away. The 4.5 spaces of house and 3 units of roof total 6 points of transport. Using hired wagons, it will cost 36CC to transport the lumber to the building site.

For distances less than 10 miles the cost per unit of capacity is reduced (i.e. more trips per day); multiply the cost by the distance divided by 10 to find the actual transport costs.

Example: A building site is 2 miles from the quarry where the rock is coming from, using ox wagons. The normal rate for stone would be 30CC per space of construction, but this is reduced by a factor of FIVE due to the close range, to 6CC per space.

Fortifications and Features

Military fortifications and structures are usually constructed at basic cost – there is no need for any finish time. All construction units are given in terms of spaces of material (as for construction). However, if a fortification is to have any sort of ornamentation, the designer may apply the appropriate level of finish

Walls

A 10'x10' standing wall 1' thick takes 1 space of material and is usually made of stone block (though rubble can be used). Fortification walls taller than 10' are subject to the usual height penalties, and are often made with multiple thickness for added toughness. The manpower limit for walls is 5 men per 10' of length.

Example: An outer curtain wall of stone block for a keep will be 20' high and 3' thick and run 100'. It will take 60 spaces of labor, plus the 10% height premium. It will cost 1,320CC and take 660 man-days. Assuming he had the 50 workers maximum to work on it, it would take 14 days minimum to complete.

Field Walls

A field wall suitable for marking off property and nominally retaining cattle or goat herds is little more than a piled wall of un-mortared rubble. A 50' section of wall (3' high and averaging a foot thick) costs 10CC and takes 4 man-days to build (1 space of stone rubble, if materials need to be transported).

Paddocks

A wooden paddock suitable for containing horses can be constructed as a wooden framework. A 400' of fence (5' high) costs 10CC and takes 4 man-days to build (1 space of wood, if materials need to be transported).

Roads

All roads require extensive clearing and leveling prior to eventual construction. For open terrain it takes 200 man-days to clear a 15' road path one mile long; DOUBLE or TRIPLE this for rugged terrain; up to FIVE times if extensively rocky, sloped or forested. The cost in CC to clear the path equals ONE-THIRD the number of man-days.

A 15' wide red-quality road (rubble cobblestone) takes 100 spaces worth of stone rubble for every mile of roadway (1,000CC, 500 man-days). If stone block is used instead of rubble (2,000CC, 500 man-days), the resulting road will be much more durable. Well-used roads must be maintained at 1% of their original construction cost and time each year (0.5% for stone block roads).

An orange-quality road (crushed gravel) is 15' wide also takes 100 spaces of stone rubble for every mile of roadway (500CC, 250 man-days). Clearing and leveling costs are HALVED, and maintenance time and cost is 2% of original construction cost.

Example: an orange-quality road is to be constructed between a town and a small fishing port 5 miles away, taking 500 spaces of material. After the roadway is cleared and nominally leveled (500 man-days and 170CC), it will cost 2,500CC and take 1,250 man days.

If a roadway is simply cleared but not finished with stone it is considered a grey-quality road. These provide road travel rates only in clear weather and must be maintained at 10% of original cost and time every year.

The manpower limit for roads is 1,000 per mile.

Bridges

A standard 10' bridge can be constructed for 1 space of labor for every 10' of length and can be wood or stone (stone rubble is not feasible beyond 50'). If a bridge is to span a river DOUBLE the effective cost (and effective spaces if transport costs for materials must be considered) and multiply the final construction time by FIVE.

All bridges have a length premium of x1 for every 50' of length. This premium modifies the effective materials (for transport) and labor.

Example: A 200' bridge will normally take 200 spaces of material, but the premium of x4 means that 800 spaces of labor and materials will actually be needed.

Maximum manpower is 5 per 10' length of bridge (including minimum time).

Piers & Docks

Piers and docks can be constructed as for bridges, except that normally only wood is used. For docks along the shoreline there is no length premium, and the length premium for piers is x1 for every 200' of length.

Yearly Maintenance

In general, low-traffic structures and fortifications have a maintenance cost of 1% of their total value. This cost, divided by 3 and rounded up is the number of man-days required to perform the maintenance (Increase time by 50% if performed by unskilled labor under guidance, but reduce cost by 25%). Inhabited structures require 2.5% of their total value in maintenance, while high-traffic or public structures require 5% of their total value in maintenance. Round up to the next CC.

Example: A home of 163CC has a maintenance cost of 4.075CC, rounded to 5CC per year. It will take 2 days and 5CC if he hires out a skilled worker, or he can do it himself in 3 days with a carpenter checking his work for 4CC.

Keep in mind that this maintenance cost assumes no storm, war or other damage – it is only basic wear and tear.

Examples

The following standard structures are built using this system. All prices have been rounded up to “simpler” sale numbers...if you want actual price, figure it out yourself. ☺

Artisan's Household (2,600CC)

A home for a wealthy family of station 2 or 3. It is a fine quality two-story 50'x40' wooden building with a fine quality wood and slate roof and a common quality 30'x40' rubble wine and storage cellar. Wooden stairs lead to both the second story and the cellar. The main structure has a superior rubble heating system; the basement is nominally heated. Maintenance 65CC.

448 days to construct (5 minimum), 362 days to finish (7 minimum).

Barracks (5,600CC)

A stone block structure suitable for long-term residence of a company of soldiers (100 men), usually an integral part of castles or keeps and built to outpost standards. The building is a poor quality two-story 50'x50' stone block building with stone block stairs, a poor quality stone block roof and a nominal heating system. Maintenance 140CC.

1,437 days to construct (12 minimum)

Barracks, garrison (760CC)

As for a normal barracks but build to hold a company of soldiers in a training camp or near a city, not on the front lines or as a part of the last lines of defense. The building is a poor quality two-story 50'x50' wooden structure with wooden stairs, a poor quality wooden roof and a nominal heating system. Maintenance 19CC.

334 days to construct (4 minimum)

Barbarian Hut (35CC)

A basic building commonly found in barbarian or nomadic cultures, suitable for a family in good standing. The structure is a poor quality 20'x20' thatched building with a poor quality thatched roof. A firepit in the center provides winter heat. Maintenance 1CC.

13 days to construct (1 minimum)

Barbarian Hut, Large (140CC)

As for a barbarian hut, only larger and suitable for a chief or shaman. The structure is a common quality 30'x30' thatched building with a common quality thatched roof. A large firepit in the center provides winter heat. Maintenance 4CC.

30 days to construct (1 minimum)

Barn (115CC)

A 30'x20' unfinished wooden building with a vaulted roof allowing for hay storage above the main floor and multiple stalls. Used for keeping up to 5 horses or cows, or 10 mules out of bad weather. A half-size heating system is included in case of very cold winters. Maintenance 3CC.

49 days to construct (2 minimum), 14 days to finish (1 minimum)

Common Inn (930CC)

A basic inn normally found along roads or in towns for travelers. It has 10 rooms for guests (single or double occupancy) who live in the upper floor, with the innkeeper and family living on the first floor. The second floor has a small common area by the stairs with private tables. Overall, it is a common quality two-story 40'x30' structure with wooden stairs to the upper story and cellar and a common quality wooden roof. A common quality 30'x30' rubble cellar is used for storage. A nominal rubble heating system supplied both upper stories and cellar. Maintenance 47CC. Normal rates for this inn are 2CC per night for a room.

276 days to construct (5 minimum), 88 days to finish (2 minimum)

Freeman's Home (400CC)

A basic home for station 1 or 2 living for a commoner family. It is a common quality two-story 30'x20' wooden building with a common quality thatched roof and a poor quality 20'x20' rubble root cellar. Wooden stairs lead to both the second story and the cellar, and the building has a basic rubble heating system in the above-ground structure only. Maintenance 10CC.

128 days to construct (4 minimum), 32 days to finish (2 minimum)

Merchant's Shop (1,600CC)

A basic home and shop for a station 3 merchant family that lives over the shop. It is a fine quality two-story 40'x30' wooden building with a common quality wooden roof and a common quality 40'x30' rubble storage cellar. Wooden stairs lead to both the second story and the cellar, and the building has a basic rubble heating system in the entire building. Maintenance 77CC.

308 days to construct (4 minimum), 204 days to finish (7 minimum)

Peasant Home (145CC)

A basic home for a station 1 peasant family. It is a common quality 20'x15' wooden house with a 10'x15' upper loft and a common quality thatched roof. A poor quality 10'x15' root cellar is also included. The main house is heated; the root cellar is not. Maintenance 4CC.

51 days to construct (4 minimum), 12 days to finish (2 minimum)

Serf's Hovel (40CC)

A simple home for a station 0 serf family. It is a poor quality 15'x15' wooden house with a poor quality thatched roof that is arched for some storage. A half-size rubble heating system is included, providing nominal winter heat. Maintenance 1CC.

20 days to construct (2 minimum)

Servant's Residence (200CC)

Usually part of the lands of a higher station employer, basic living for four servants. It is a common quality 20'x30' wooden structure with a common quality wooden roof. A nominal rubble heating system is included. Maintenance 5CC.

48 days to construct (2 minimum), 18 days to finish (2 minimum)

Stable (680CC)

These are used to house up to 20 mules or 10 horses overnight (along trade routes) or over longer periods (wintering, or as a part of a full-time farm). A stable includes the structure itself plus a paddock that surrounds 10 acres of pasture. The stable itself is a common quality 50'x30' wooden structure with a common quality vaulted wooden roof and a nominal rubble heating system included for the comfort of the stablehands and/or guards during cold winter nights. Maintenance 15CC.

129 days to construct (2 minimum), 64 days to finish (2 minimum)

Trader's Shop (920CC)

A basic home and shop for a station 2 trader family that lives over the shop. It is a common quality two-story 40'x30' wooden building with a common quality thatch roof and a common quality 40'x30' rubble storage cellar. Wooden stairs lead to both the second story and the cellar, and the building has a basic heating system in the entire building. Maintenance 46CC.

295 days to construct (4 minimum), 87 days to finish (2 minimum)