Construction sequence

There are a number of steps in a construction sequence. The following steps show the expected construction sequence for a brick veneer dwelling.

1. **Site set out**

   The site gets marked to show where the dwelling will be located, and levels are also taken to determine the required depth of excavation. Profiles are used on site and these are left in place until the footing or the slab on ground is poured and the base structure is completed. Profiles are two timber pegs driven vertically into the ground; a horizontal member gets nailed to the pegs. From this horizontal member, markings are made to show the centre of the footing and measurements are taken from here. Profiles are put in each corner of the building and are opposite each other, a string line gets tied between the opposite profile and this is how the centre of the footing is determined. The centre of the footing should always be used as a reference point.

2. **Site excavation**

   This stage is also known as bulk excavation as the site is cleared removing any organic vegetable matter and trees from the top soil. At this stage if the house is on a sloping site, drainage is put around the site to divert the water away from the building. This is called a cut off drain. If a septic tank or other form of on-site waste disposal is required, this is also done at this stage.

3. **Excavation of foundation for footing and slab**

   The foundation is excavated for the footing after the site is set out. Usually lime is used for marking on the ground to show the outline of the footing and where the piers are located. Lime is used because it is white and inexpensive. If a slab on ground is used, the same procedure takes place except if the slab has loadbearing walls. Slab thickening beams also need to be done at this stage.

   At all times, while the excavator digs the foundation it is important to know the levels on site, otherwise the strip footings will be unnecessarily deep. When the concrete is placed in the footing, the footing must finish 100 mm below the finished ground level (FGL). This is to
ensure that the moisture in the ground is kept the same around the footing edge. The raft slab must finish 150 mm above the FGL to ensure that the dwelling cannot be flooded.

The drainage and plumbing excavation can be done at this stage as well.

4. Drainage and plumbing services

All the drains are now put in place, and if they need to go through a footing, a sleeve is put around the drains to allow the pipe to move freely. The sleeve is also required if the drain pipes penetrate the slab. Care must be taken to ensure when the waterproofing membrane is later placed, that the penetration is sealed properly around the membrane. This is because the membrane under the concrete slab stops any water penetration into the building in the form of dampness.

5. Placement of trench mesh in foundation

The trench mesh is placed on the foundation and chairs are put under the trench mesh to maintain the required cover for the steel. All laps must be done as per the Australian Standard or the approved plans. At this stage if a slab is used, the top steel is put in place as well. Reinforcement steel in slabs must be placed on chairs.

6. Preparation under raft slab

Once the excavation is complete, a layer of sand is put on the soil. This layer of sand is there to protect the membrane from any penetration or damage that could occur if it was placed directly onto the soil. Then the membrane is put in place and care is taken to seal off penetrations and to provide the appropriate lap. This lap also gets taped to ensure a complete seal under the concrete slab.

7. Placement of fabric and trench mesh in raft slab

Fabric mesh is placed on the membrane and trench mesh is placed in the perimeter edge beam, in the thickening beams and under loadbearing walls. Once all the steel is in place it is tied together. This is to stop any movement while the concrete is placed. Chairs are placed under the steel to obtain the appropriate cover to the steel.

8. Placement of concrete in foundation and isolated piers

When the concrete is placed in the trench, care must be taken that the trench mesh maintains the required cover. The trench must be free from any loose soil and water. Piers must also be clean, free from any loose materials.
9. Placement of concrete for raft slab

Concrete is placed on the membrane.

10. Construction of dwarf wall and brick piers for timber floor

For timber floor framing a dwarf wall or brick piers with ant caps for termite protection are constructed for bearers and joists.

11. Framing, windows and exterior doors

The carpenter or builder builds wall and roof frames with window openings on site, or erects prefabricated frames by fixing them together. Windows are installed. Platform sheet flooring are installed once floor framing is complete.

12. Exterior cladding

The interior frame is enclosed by the chosen exterior building material – either brickwork, weatherboards, mud bricks, AAC, etc.

13. Stairs

Stairs would now be installed so that the subcontractors working inside can get from one floor to the other without depending on ladders.

14. First fix plumbing

The plumber would now install all pipework for water supply and sanitary drainage for all wet areas.

15. Roofing

The roofer can install the roofing to make the building now watertight.

16. First fix electrical

Codes call for the house to be weatherproof before the wiring is installed, with the exterior windows and doors in place and the roof on. The electrician will now put in the boxes (switch, outlet, and lighting) and will pull the wires into them. Cable, telephone, speaker wires, etc. are also installed at this point.

17. Exterior Paint

Many surfaces on the outside need to be protected from the elements, so it is a good idea to paint exterior surfaces (where required) as soon as practicable.
18. **Internal lining and insulation**

Only once everything else is in the walls and inspections are completed, can walls be insulated and lined.

19. **Strip timber flooring and trim**

Timber strip flooring and trim are installed including door and window architraves, skirting and mouldings.

20. **Tiling to wet areas**

All wet areas have water resistant plaster. Ceramic tiles or other water-proof material are applied to this surface. This ensures that water is contained and does not affect the structural integrity of the floor members.

21. **Cabinets and benchtops**

Kitchen and Bathroom cabinetry and benchtops are now installed.

22. **Finish Electrical**

Here is where the electrician comes back to install the switches, outlets, light fittings, ceiling fans, etc.

23. **Finish Plumbing**

The plumber will install the sinks, baths, toilets and all the taps.

24. **Paint, finishes, carpet**

Carpet should be one of the last trades to come in.
Research

View the PowerPoint file “Construction Sequence” for more information.

A website that has loads of information with photos and diagrams of how various parts of a building are put together was created by a builder by the name of Bill Bradley. His website is well worth referring to for excellent information – just be aware that he is originally from England and still uses the term “foundations” for the item which we know of in Australia as “footings”. In addition, since he works in Darwin, some processes and methods may vary from where you live.


See also:

http://www.home-building-answers.com/building-sequence.html

and


There are many YouTube videos that show the construction process for different types of construction (brick veneer, cavity brick, etc.). This is a very good and quick way to learn more about house construction. However, be aware that construction processes can differ in different countries, so

Residential construction sequence:  https://www.youtube.com/watch?v=2mpGOlzSzIQ

House construction documentary:  https://www.youtube.com/watch?v=OTIWndoAir4

The following YouTube clip show the construction of a house using insulated panels (this one is Australian):

https://www.youtube.com/watch?v=XgdcBOWPYZc