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1.0 The Preconstruction Phase

1.1 Administrative procedures

The procedures involved with building a dwelling are complex, in-depth, technical but very necessary for creating the client's dream dwelling. There are many decisions to be made, from choosing a home design, usually from a selection of display homes, to the colours, fittings and fixtures that should be used on the interior.

1.2 Drawings

The drawings of the dwelling are given to the client and who looks them over and talks to the architect or draftsman about any changes or questions they might have about the drawings. This process usually involves changing the drawings which can take a long time and is probably the hardest and longest phase for the client and the builder.

1.3 Soil tests

Soil tests are taken before any work can be done on the site. This is to ensure that the builder knows everything about the site so that they can convey the information to the appropriate people. For example, if they found that a site was a H class soil, then the builder would have to ensure that the concreter knows the soil type in order to make footings according to Australian standards for H class soil.

1.4 Building registration/licensing

The owner of the specific building company usually owns the building licences for all the building processes the company undertakes.

1.5 Issuing of building permit

To obtain a building permit, the company has to apply to a surveyor to look over the plans. However most of the time, the plans also have to be checked with the council and the developer. Most developers are extremely strict on the façades of the dwellings, even to the type of bricks, as they try to avoid neighbouring dwellings looking the same but still of a quality that matches the neighbourhood.

2.0 The Construction Phase

In this phase, the actual construction of the structure commences. This is the phase that clients love to see as their dwelling is created from the ground up. The various stages of construction that will be discussed in this area of the report are:

- 2.1** Job Set out
- 2.2** Water Tapping
- 2.3** Concrete Slab
- 2.4** Timber Framing
- 2.5** Roof plumbing
- 2.6** Roof tiles
- 2.7** Brick work
- 2.8** Plumbing Rough-in
- 2.9** Electrical Rough-in
- 2.10** Lock-up
- 2.11** Plastering
- 2.12** Fixings
- 2.13** Wall And Floor Tiling
- 2.14** Electrical Fit-off
- 2.15** Plumbing Fit-off
- 2.16** Stormwater Drain
- 2.17** Handover

2.1 Job Set out

This stage of the building process is one of the most important stages. The dwelling is mapped out using wooden stacks, which are painted in fluoro colours to stop them getting damaged or ripped out by machinery turning the soil. Also in this stage the soil is turned and rocks are pulled out to make sure a perfectly flat slab will be possible. If this stage is performed incorrectly, the slab will be poured incorrectly and then the frame will be off centre and the whole house would become skewed.



2.2 Water Tapping

At this stage plumbing is installed prior to the form work and the pouring of the slab. The practice of Water Tapping enables the pipes to protrude from the soil so that they are easily accessible even after the slab has been poured. The plumbing pipes include those for drinking water, service water and sewerage which are the main plumbing needed for all residential dwellings.



2.3 Concrete Slab

2.3.1 Pre-pouring formwork

There are two main types of form work; sand and waffle pod. The waffle pod form is quicker and easier to install than traditional sand. Reinforcement is important as the slab is the weight bearer of the dwelling.



2.3.2 Post-pouring slab

The concrete slab is the base of the entire dwelling and takes the load of the walls and the roof. The slab is reinforced with steel mesh that is held inside the slab with plastic discs called 'chairs', while the slab is being poured. The slab acts as the stumps, piers and the floor joists of a full timber construction. A good slab will have sharp corners and be level in all areas.



2.4 Timber Framing

2.4.1 Wall framing

The timber wall framing is important as it transfers the load from the roof to the slab. Cross bracing and normal bracing prevent the walls from becoming deformed. It is important because it is the major load bearing element of the structure and the mediator between the roof load and the concrete slab. The rafters transfer the roof load on to the ceiling joists. The ceiling joists then transfer their load as well as the roof load onto the stud wall on the ground floor. Finally the load is transferred onto the concrete slab.



2.4.2 Roof framing

The roof frame is another important structural element as it transfers the load from the roof tiles to the walls and then to the ground. The trusses are made in a triangular shape for strength. Trusses spread the roof load along the outer walls. A good placement of the roof trusses are those that line up with the studs in the wall.



2.5 Roof Plumbing

Roof plumbing allows water to flow off the roof down the gutters, into the downpipe and finally into the stormwater drains. Roof plumbing avoids water settling and pooling around the base of the dwelling, thus preventing hydrostatic pressures.



2.6 Roof Tiles

Roof tiles are an important part of residential dwelling structures as they are the chief waterproofing measure. They have a tongue and groove system where they are placed underneath each other and secured by nails, creating a tight interlocking system. Even though the tiles are tightly secured, the right wind direction can still direct water under the tiles so water proofing sheets are placed just underneath the tiles.



2.7 Brick Work

The brick work is another protection method as bricks are waterproof, windproof and fire resistant. They are also very low maintenance. Bricks are tied to the stud work with brick ties which are placed every six brick courses. Bricks are also the main measure of distances in a brick veneer structure. Wall and roof heights are measured at around 27-29 brick courses.



2.8 Plumbing Rough-in

Plumbing rough-in is the practice of drilling holes through the stud work to get important pipes to needed areas like bathrooms, without displacing the plaster walls. The pipes are colour coded and some are even coated in high heat resistant rubber to stop them burning through the stud work.



2.9 Electrical Rough-in

Electrical rough-in is the process of drilling holes in the stud work to allow electrical wiring to pass electricity through to every outlet of the structure. However, too many holes in the stud work can ultimately lower the structural strength of the stud wall creating problems like buckling and deformation, later on.



2.10 Lock up

This stage consists of completion of all the exterior elements of the structure including locks being fitted to the doors and windows and finally being able to be lock and secure the whole structure. During this stage the builder levels, straightens and plumbs all fixtures and walls, they fit all doors and windows and some companies will also fit the bathtub at this stage.

2.11 Plastering

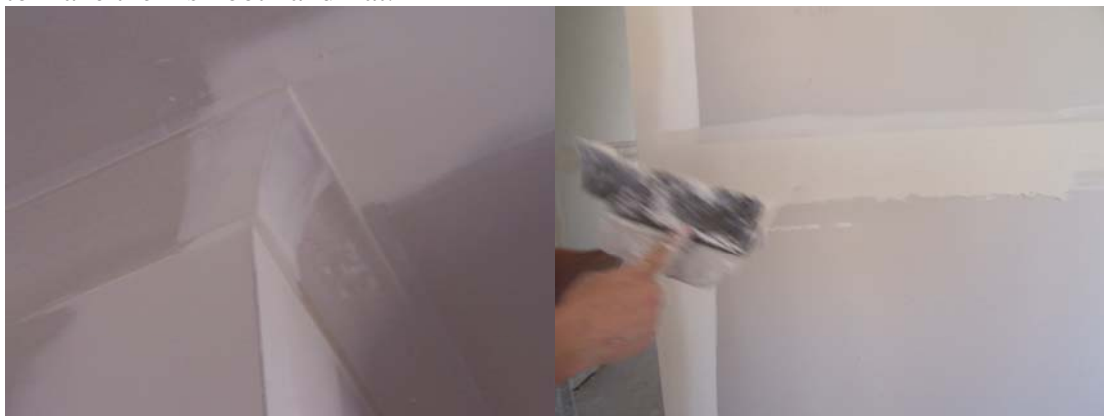
2.11.1 Wall and Roof Plaster

Plasterboard provides a smooth finish and holds all the cables and pipes inside the stud wall. Plasterer use glue to hold the plasterboards on the stud work but drill screws in while it dries. They work on platforms to gain the height needed to effectively work. If there is a deformation in the wall or stud work, plasterers use a blocking technique where a smaller piece is placed over the deformation and stretched over the area to correct this mistake.



2.11.2 Plaster sealing

Plaster sealing uses a putty-like substance to fill the gaps between and above the plaster boards. Plaster sealing also gets into the smallest cracks making it great for repairs. The plasterers, when sealing, use stilts to gain the height needed to work effectively. They also use a sander on a pole to sand down the sealants on the ceiling to make them smooth and flat.



2.12 Fixings

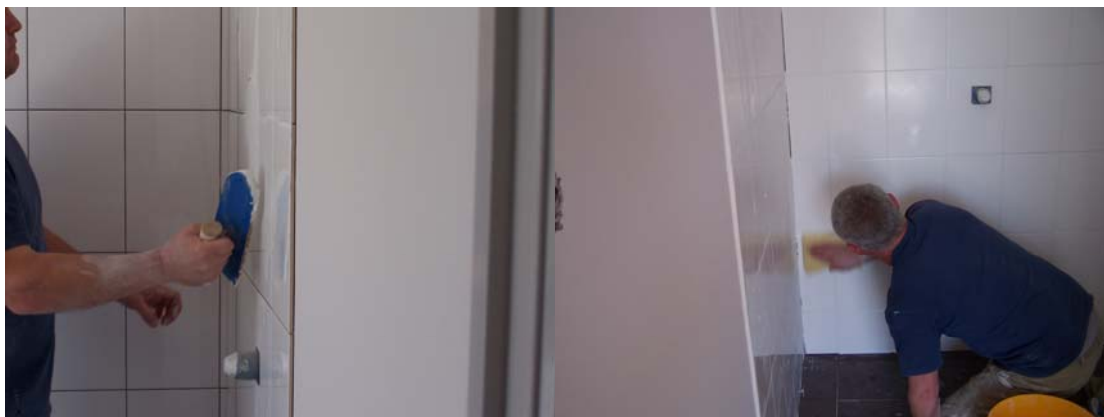
Fixings include doorframes and kitchens. These are the add-ons which make the dwelling much more habitable and appealing. Fixing is also the process of fixing electrical cabling and pipes to their designated areas where power points or taps will be fitted.



2.13 Wall and Floor tiles

2.13.1 Wall Tiles

Wall tiles are used in places that get wet, like showers and bathrooms. They are placed using glue and filled in with cement based grout. Sometimes a sealant is used around the bases of showers or vanities.



2.13.2 Floor Tiles

Floor tiles are usually placed where there is the most traffic where the floor might get dirty or worn. This is because tiles are easier to clean and last longer than carpets. They are attached with glue and filled with grout. Movement gaps are left between the tiles and filled with silicon to allow some movement to occur without resistance. By using soapy water, the silicon is prevented from sticking to unwanted areas.



2.14 Electrical Fit-off

The electrical fit-off is the simple process of placing electrical fittings that make the electricity safe to use, such as power point and light switches. This also includes fitting lights to the ceiling by cutting the plaster around the light fitting and connecting it to the electricity.



2.15 Plumbing Fit-off

The plumbing fit-off is simply the placement of taps, spouts and so forth to allow the controlled flow of water. Unlike electrical fittings which are installed after the plaster is attached by drilling holes through the wall, plumbing fittings are placed over existing pipes extruding from the plasterboard.



2.16 Stormwater

Stormwater drains take the water from the downpipe to the treatment plants for recycling. This practise is a fairly new innovation due to the dryness of the Australian climate. This is important as the rain water is not wasted and can be redirected to water pipes and reused.



2.17 Hand Over

The hand over is the last stage of the construction process and it involves handing over the only set of keys, and a final walk through inspecting to make sure the client is satisfied with the dwelling.

3.0 Services

3.1 Administrative procedures

Most administrative procedures for services usually involve the building company dealing directly with the service companies like water and gas providers. These procedures allow the client to not worry about organising these utilities before moving in.

3.2 Basic regulations about the connections of services

The regulations for service connections are strict but are also easy to comply with. For example, regulations are that the electrical cabling must be 600mm beneath the ground, gas must also be 600mm below the surface as well as 600mm away from any electrical discharge area; phone lines have to be 300mm below the ground. New electrical regulations have just been implemented which state that all electrical devices have to be earthed via a galvanized steel pole connected to the slab via the reinforcement.

3.3 Connection to services

All services are usually connected and active during or just after the rough-in stage. The service connections have to be close to the metre box and in a designated service area. However, this is not mandatory and sometimes just cannot be achieved. To get the services activated, the builder needs to apply to the company providing the service.

3.3.1 Sewage

Sewerage from the dwelling is usually piped to the easement where it is connected to the local sewerage pipeline and taken away via the city's sewerage system.

3.3.2 Stormwater drains

The storm water drainage system has a designated legal discharge point where the water comes under the council's jurisdiction as it is transported via the local stormwater drainage system set up by the council.