Balconies

The function of the balcony is:

1. Making a private area outside the apartment, usually supported by columns, brackets, console, or cast in situ enclosed by a balustrade.
2. Separate cold / warm constructions,
3. Allow cold constructions parts to make movement due to temperature changes
4. Must be design for a long life span, minimum of maintenance.

In our case we decided to use prefabricated concrete elements resting on a small console that a protruded from a column, and also is resting on a metal angle bracket fixed on the inner wall. The bracket is fixed with balcony by a threatened rod and bolts, and also with taking in consideration the movement of concrete slab.

There is different solutions for fixation, for example: balcony fixed to the bracket but the bracket is protruded from the external cladding.
Another solution for balcony is by casting in situ with using shock absorbing and thermal break system.

Another solution is by resting balcony directly on the inner leaf, but this solution is not good because it have a direct cold bridge.
The column used for resting our balcony are 200x200mm with console. And for concrete columns we make separate foundation.

Another important thing is to calculate the area of the abutment due to the concrete movements. The concrete slab is expected to have a horizontal movement of 0.7mm/meter span width → the width of the neoprene abutment should be 5 times the height of the abutment and min 50mm; it has to be calculated

**ABUTMENT - CONCRETE SLABS**

**Calculate area of abutment**

Balcony slab with dimensions 5 m. x 1.5 m.

Necessary abutment approx.:  
0.015 m² x 1.5 = 0.0225 m²

Abutment with 4 supports:  
0.0225 m² / 4 ~ 0.006 m² = 6000 mm²

Width of abutment = **50 mm** (see previous slide)

Length of abutment  
= 6000 mm² / 50 mm = **120 mm**
Benefits of using precast balconies:

- Ease of speed of erection
- Balconies can be erected with floor units prior to pouring screed
- High quality finish
- Minimal site labor
- Savings in construction time
- Manufacture is not affected by adverse weather conditions
- Rain water outlets can be incorporated into the finished balcony
- The issue of cold bridging can be overcome by incorporating a thermal break such as the Schuck isokorb system as part of the balcony
- [http://www.schoeck.co.uk/en_gb/solutions-uk/cantilever-structural-components-7](http://www.schoeck.co.uk/en_gb/solutions-uk/cantilever-structural-components-7)

Another big issues regarding balconies is Drainage:

1- All surfaces accessible for water must have a slope toward the drain
2- Every balcony slap must have its own drain.
3- Every balcony slap must have an edge up along the sides.
4- The drain must be placed so it is easy to access.
5- Drain from the roof ought to be separate from balcony drain.
6- The slope must be minimum 15-20 pro mille

Examples:
In our case we decided to make the drain close to the wall.

**Railing is also a big issue for the balconies:**

The function of the railing is to provide protection from the fouling. The fixation of the railing is recommended to be done always on the side of the balconies due to weather conditions which can cause some cracks.

Examples:

The balconies must have a tolerance of minim 50mm all around because of movements and temperature changes.