

## **RC structure**

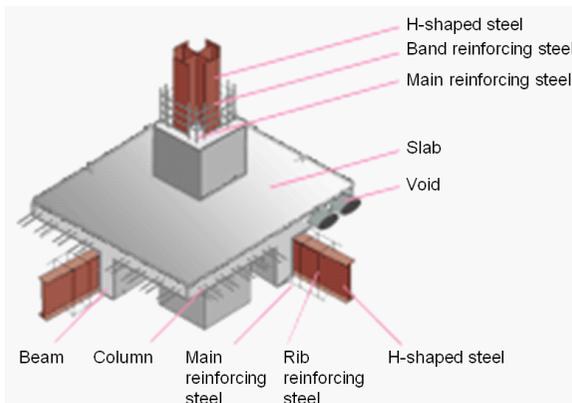


In Japan, RC stands for “Reinforced Concrete”.

This is a construction method which takes advantages of reinforcing steel resistant to tension force and of concrete resistant to compression force, and is a structure type which is much stronger and less shaky compared to wooden construction. Concrete also plays a role in preventing corrosion of reinforced concrete as it is alkaline.

In Japan, generally there are many mid- and low-rise 5- or 6-story buildings, however, recently there are plenty of high-rise apartments higher than 30-stories as well thanks to advancements in technology. If formwork can be made, it is possible to make a building in any shape. Nevertheless, it has a disadvantage of being heavy in weight and is not comparable to wooden construction in terms of the impact on land. In addition, concrete has a disadvantage of being liable to crack over time, which in earthquake prone Japan is a consideration.

## **SRC structure**

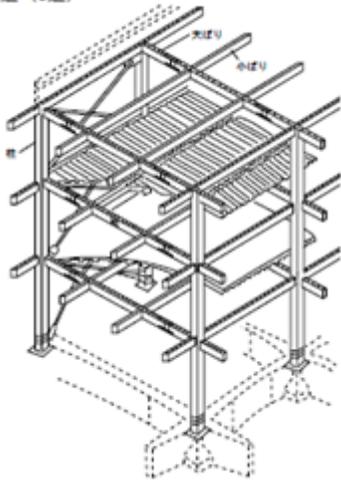


SRC stands for Steel-Reinforced Concrete. In this construction method, the structural components such as column and joist is made with steel, after which formwork is made by setting reinforced concrete around it and thereby making it an integrated structure. It is a construction method which takes advantages of both steel construction and RC structure.

The column made this way can be thin as it is superior to that of RC structure in strength, and is used for the bottom of super high-rise construction and for high-rise construction of 7- to 25-stories and it is also highly earthquake resistant.

## Steel structure (S structure)

鉄骨構造 (S造)



S stands for “Steel” and it is a structure which is made of steel material.

In this building method, major structural parts such as column and joist are set up using steel materials like shaped steel, steel pipe, steel plate, etc. It is often used for high-rise construction due to its strength and light weight properties. It is also called “S structure”.

In general, formwork like column and joist is made with steel and it comprises wall, floor, ceiling and roof by attaching panel to it. It is classified into “light-weight steel structure” and “heavy-weight steel structure” according to the type of steel used.

It is suitable for construction of factories and warehouses.

In addition to that it is excellent in strength, durability and quake resistance, the construction cost is lower than reinforced concrete structure. The disadvantage is that there is a possibility of corrosion by oxidation, if not treated with appropriate rust proofing primer.

It is used for high-rise building. In addition, time for completion is short as curing time of concrete is not required. It has some problems in fire resistance.

## Explanation on RC structure and SRC structure taking apartment structure as an example

The main structure of newly-built apartment is reinforced concrete (RC) structure and steel-reinforced concrete (SRC) structure.

In the past, it was generally recognized that building of SRC structure was structurally strong apartment as mid- and low-rise apartment was constructed with RC structure and high-rise apartment was with SRC structure.

One of the reasons why SRC structure was adopted for many high-rise apartments is that there was strict RC structure regulation on high-rise building. However, now the advancement of technology enables it to pass the regulation and high-rise apartment started to be designed with RC structure as well.

You may think that RC structure in high-rise apartment could cause a problem in quake resistance.

Nevertheless, basically there is no difference between RC structure and SRC structure in terms of quake resistance of a building.

A certain level of quake resistance capability is required by the Japanese Building Standards Act and it is thought that there is no difference as long as it passes the standards.

It is not just about telling which is good RC or SRC structure and which is bad.

It does matter whether it is securely built on site.

Time for completion for a general RC structure apartment is said to be about 1.2 month per story.

If it is a 10-story apartment, the time for completion will be  $10 \times 1.2 = 12$  months.