Super plasticizers can be used for three different purposes or combination reducing agents. By using large enough super plasticizer, it was found possible to lower the water/binder ratio of concrete down to 0.30 and still get an initial slump of 200mm. Reducing the water/binder ratio below 0.30 was a taboo until Bache reported that using a very high dosage of super plasticizers and silica fume, water binder ratio can be reduced to 0.16 to reach a compressive strength of 280MPa **(Bache, 1981).**

Super plasticizers can be used for three different purposes or a combination concrete and no segregation was observed. For mixtures with water cement ratios between 0.3 and 0.45, the slump diameters were between 500 mm and 740 mm and the compressive strength varied between 53 MPa and 68 MPa at 28 days of age. In their work, Roncero (1999) et al. evaluated the influence of two super plasticizers (a conventional melamine based product and a new-generation comb-type polymer) on the shrinkage of concrete exposed to wet and dry conditions. Tests of cylinders with embedded extensometers have been used to measure deformations over a period of more than 250 days after casting. In general, it was observed that the incorporation of super plasticizers increased the drying shrinkage of concretes when compared to conventional concretes, whereas it did not have any significant influence on the swelling and autogenous shrinkage under wet conditions. The melamine-based product led to slightly higher shrinkage than the comb-type polymer. It must be realized that the introduction of super plasticizer in concrete involves a new chemical component in a complex hydraulic binder system, which already contain several added chemicals.

3. Properties of SCC

3.1 Fresh SCC Properties:

The three main properties of SCC in plastic state are;

a) Filling ability (excellent deformability)
b) Passing ability (ability to pass reinforcement without blocking)
c) High resistance to segregation

3.2 Hardened Properties of SCC:

Self compacting concrete and traditional vibrated concrete of similar compressive strength have comparable properties and if there are differences, these are usually covered by the safe assumptions on which the design codes are based. However, SCC composition does differ from that of traditional concrete as they are mixed in different proportions and the addition of special admixtures to meet the project specifications for SCC. Durability, the capability of a concrete structure to withstand environmental aggressive situations during its design working life without impairing the required performance, is usually taken into account by environmental classes. This leads to limiting values of concrete composition and minimum concrete covers to reinforcement.

4. Composition of SCC

Materials used in this investigation:

- **Cement**: Commercially available Ordinary Portland cement (OPC) 53 grade manufactured by Birla shakti Company was used. Literally, cement means a binding material. It has the property of setting and hardening when mixed with water to attain strength. The cement may be natural or artificial. Natural cement is manufactured by burning and then crushing natural cement stones, which contain argillaceous and calcareous matter. Artificial cement is manufactured by burning appropriately proportioned mixture of argillaceous and calcareous materials at a very high temperature and then grinding the resulting burnt mixture to a fine powder.

- **Coarse aggregate**: The coarse aggregate from a local crushing unit having 12mm normal size well-graded aggregate according to IS was used in this investigation. The coarse aggregate procured from quarry was sieved through 20mm, 16mm, 12.5mm, 10mm and 4.75mm sieves. The material passing through 12.5mm IS sieve was used in this investigation.

- **Fine Aggregate**: The fine aggregate was obtained from a nearby river course. The sand obtained was sieved through all the sieves (i.e.4.75mm, 2.36mm, 1.18mm, 600µ, 300µ, 150µ). Sand passing through 4.75mm IS sieve was used.

- **Flyash**: Waste materials from Thermal Power Plant. Fly ash is an industrial waste product dumped by fired power plants. Continued experiments and researches in the area of industrial waste management have resulted in successful utilization of fly ash in to a powerful medium in the construction industry.

- **Super-Plasticizer:** The super plasticizer used in this experiment is Glenium 51. It is manufactured by BASF construction chemical India pvt ltd, Mumbai.

- **Viscosity Modifying Agent (V.M.A)**: Glenium Stream 2 which is manufactured by BASF construction chemical India pvt.ltd, Mumbai and it is a premier ready-to-use, liquid, organic, viscosity modifying admixture (VMA) specially developed for producing concrete with enhanced viscosity and controlled rheological properties. Concrete containing GLENIUM STREAM 2 admixture exhibits superior stability and controlled bleeding characteristics, thus increasing resistance to segregation and facilitating placement.