BOLTED CONNECTIONS

A bolt may be defined as a metal pin with a head at one end and a shank threaded at the other end to receive a nut as in Fig 1.0(a). Steel washers are usually provided under the bolt as well as under the nut to serve two purposes:

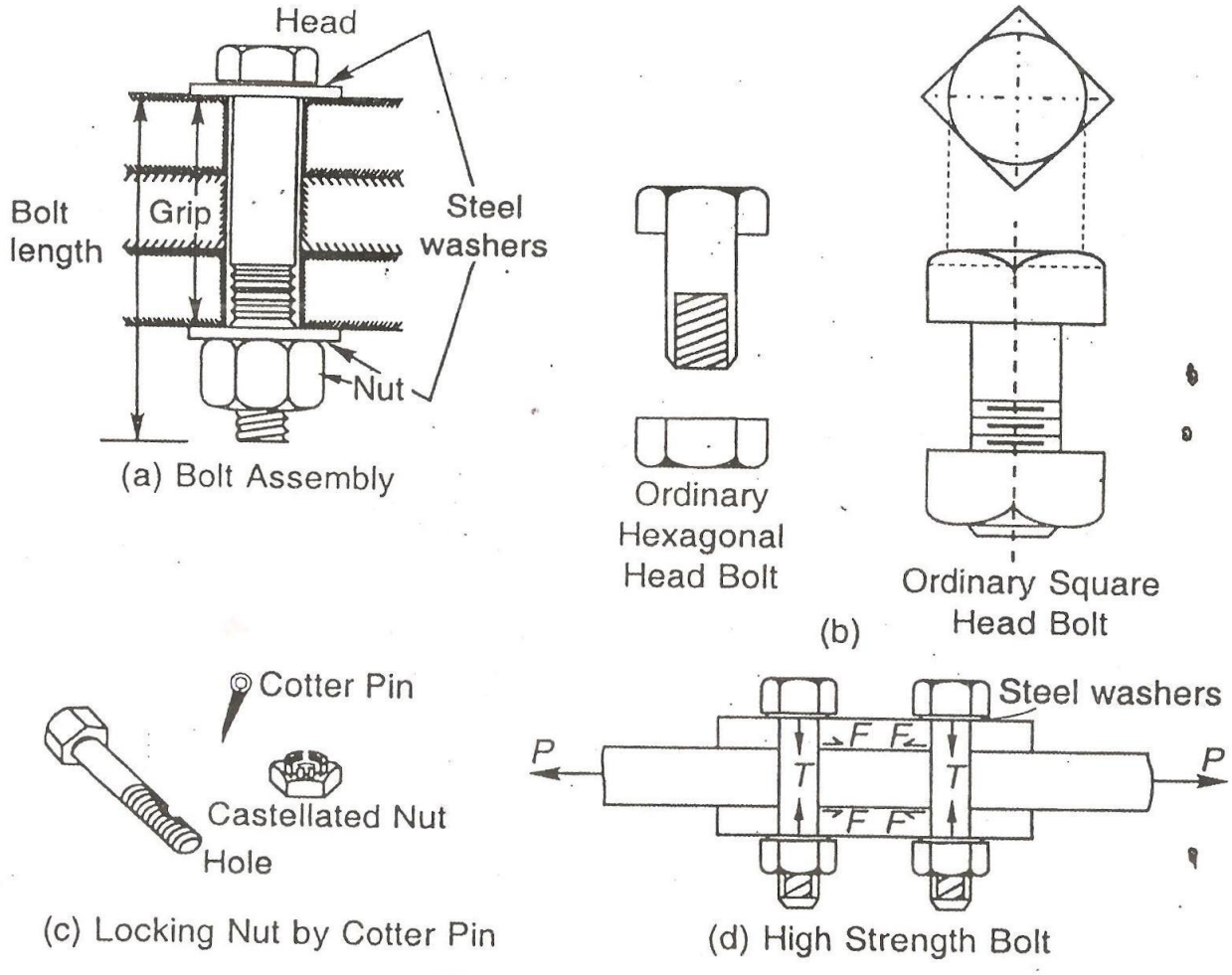

Fig. 2.12 Bolted Joints

1. To distribute the clamping pressure on the bolted member.

2. To prevent the threaded portion of the bolt from bearing on the connecting pieces. In order to assure proper functioning of the connection, the parts to be connected must be tightly clamped between the bolt between the bolt head and nut. If the connection is subjected vibrations, the nuts must be locked in position.

Bolted connections are quit similar to riveted connections in behaviour but have some distinct advantages as follows:

1. The erection of the structure can be speeded up, and
2. Less skilled persons are required.

The general objections to the use of bolts are:

1. Cost of material is high: about double that of rivets.

2. The tensile strength of the bolt is reduced because of area reduction at the root of the thread and also due to stress concentration.

3. Normally these are of a loose fit excepting turned bolts and hence their strength is reduced.

4. When subjected to vibrations or shocks bolts may get loose.

Uses

1. Bolts can be used for making end connections in tensions and compression member.
2. Bolts can also be used to hold down column bases in position.
3. They can be used as separators for purlins and beams in foundations, etc.

Source : http://www.nprcet.org/e%20content/Misc/e-Learning/CIVIL/VI%20SEMESTER/10111CE603%20-%20DESIGN%20OF%20STEEL%20STRUCTURES.pdf