**RAILWAY ENGINEERING PROJECT**

**ABSTRACT**

Railway rolling stock, which is fitted with metal wheels, moves with low frictional  resistance when compared to road vehicles; on the other hand locomotives and power  cars normally rely solely for traction on the point of contact of the wheel with the rail  whence they obtain adhesion i.e. the part of the transmitted axle load that makes the
wheel "adhere" to the smooth rail. Whilst this is usually sufficient under normal dry rail
conditions, adhesion can be reduced or even lost through the presence of unwanted
material on the rail surface, such as grease, ice or dead leaves

**Permanent way** is the generic term for the track ­ rails, sleepers and ballast ­ on which railway trains run. British practice has diverged quite sharply from that in North America and continental Europe. Although the configuration of the track today would be  recognized by engineers of the 19th century, it has developed significantly over the years
as technological improvements became available, and as the demands of train operation
increased.  However the traditional form consists of  two parallel iron or steel rails, a fixed distance apart, on which the wheels of  trains run,  transverse beams called sleepers, set at a close spacing, that maintain the specified  spacing of the rails and that distribute the concentrated loading of train wheels,  fastenings to hold the rails and sleepers together,  a layer of mineral ballast placed under and around the sleepers, to further
distribute the train loading, and to resist lateral displacement of the sleepers.