PROBLEM:

The girder showed in Fig. E1 is fully restrained against lateral buckling throughout its span. The span is 36 m and carries two concentrated loads as shown in Fig. E1. Design a plate girder.

Yield stress of steel, fy = 250 N/mm2

Material factor for steel, γm = 1.15

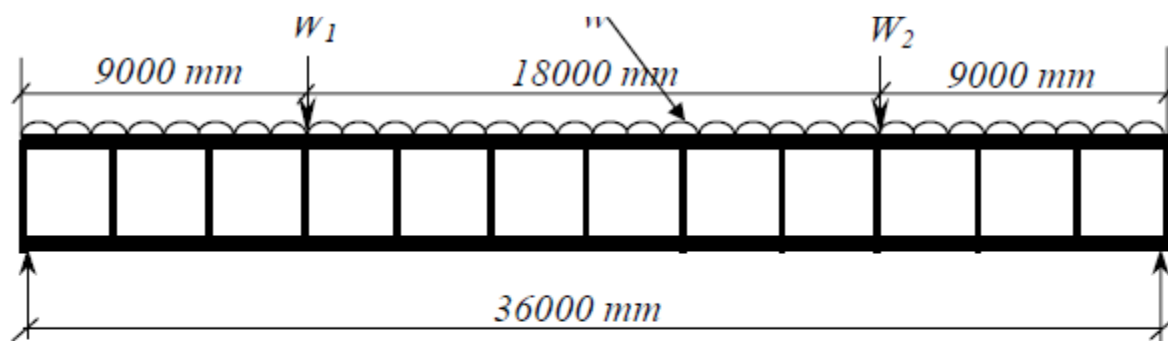Dead Load factor, γfd = 1.35

Imposed load factor, γfλ =1.50

Fig. E1 Example plate girder

Dead load:

Uniformly distributed load, wd = 20 kN/ m (Including self-weight)

Concentrated load, W1d = 200 kN

Concentrated load, W2d = 200 kN

Live load:

Uniformly distributed load, wλ = 35 kN/m

Concentrated load, W1λ = 400 kN

Concentrated load, W2λ = 400 kN