CE388 - FUNDAMENTALS OF STEEL DESIGN

2013-2014 Spring Term

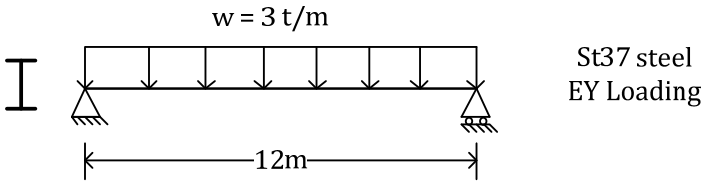
Homework IV

Due date: 2 May 2012

Submit your homeworks to the "CE388 Dropbox" throwing which is located in basement of K2 building until 2 May 2014, 17:00. Fifty percent penalty applies to homeworks submitted from 2 May 2014, 17:00 until 5 May 2014, 17:00. Homeworks submitted thereafter will receive no credit.

1. For the two cases shown below determine the lightest I-section rolled shape that satisfies bending and shear provisions of TS648. (50 points)

- **i.** Beam is continuously supported laterally
- **ii.** Beam is supported laterally at the ends only



Note: Neglect self weight of the beam.

2. For a beam under the following loading condition plot σ_B (allowable bending stress according to TS648 provisions) versus s (unbraced length). The beam has lateral supports at the ends only. St37 Steel, EY Loading. Plot s such that it varies between 0cm to 1500cm. Calculate σ_B values for every 50cm of s (i.e. for s = 0, 50, 100, 150, …, 1500cm). Tabulate your results. (50 points)

- **i.** IPE 500 section
- **ii.** HEM 500 section
- **iii.** Built-up section d = 150cm, b_f = 40cm, t_f = 3cm, t_w = 2cm