

Due Date: **15.05.2019**

Question 1.

In Figure 1, a bolted unstiffened end-plate connection specimen is given. Column of the specimen is formed by HEA profile with 3m height, cantilever beam of that by IPE profile with L_{beam} length. End-plate with t_{ep} thick is connected to the column flange by 8 pretensioned bolts; connected to the beam by fillet welds. S355 steel grade and E80XX weld material are used. Assign acceptable weld thicknesses and lengths and provide the welds can bear external load safely.

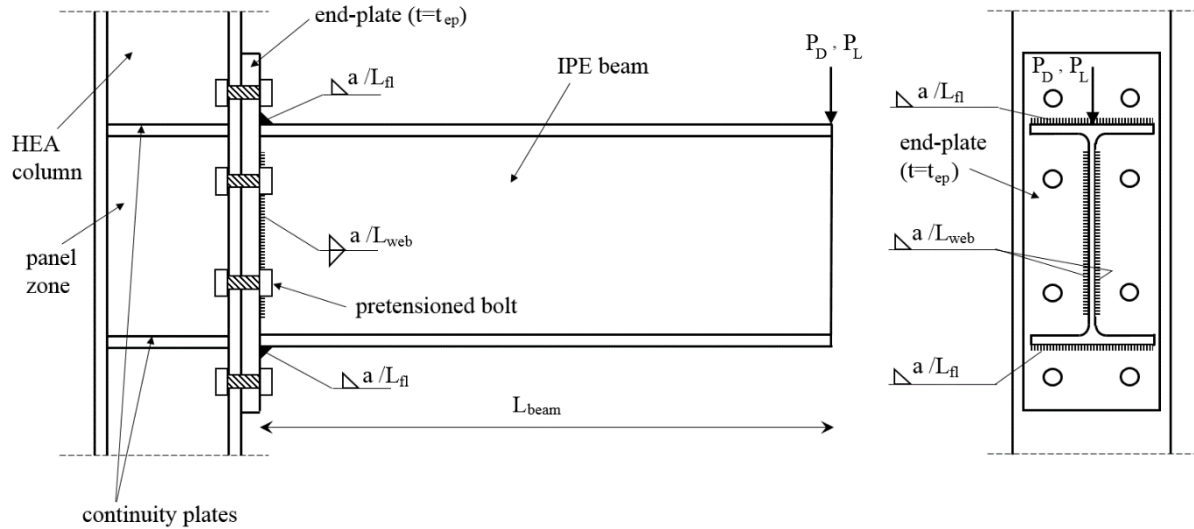


Figure 1. A bolted unstiffened end-plate connection specimen

Parameters:

G (Stu.No. Par.)	0,1	2,3	4,5	6,7	8,9
Column	HE300A	HE340A	HE400A	HE450A	HE500A
Beam	IPE300	IPE330	IPE360	IPE400	IPE450
t_{ep} (mm)	25	30	35	40	45

$$P_D = M_{p_x, \text{beam}} / (2L_{\text{beam}})$$

$$P_L = (0.02G + 0.1H)P_D$$

$$L_{\text{beam}} = 1.5 + 0.4B + 0.6E + 0.2F + 0.4G + 0.3H \text{ (m)}$$

$$\text{Combination: } 1.2P_D + 1.6P_L$$

	A	B	C	D	E	F	G	H
Student No:								

YTU Civil Engineering Department
Structural Engineering – Steel and Timber Structures Division
Steel Structures I
Spring 2018 / Homework III

Question 2.

A tension member spliced using welded connection is shown in Figure 2. S355 steel grade and E80XX weld material are used. Assign acceptable weld thickness and length and provide the welds can bear external load safely.

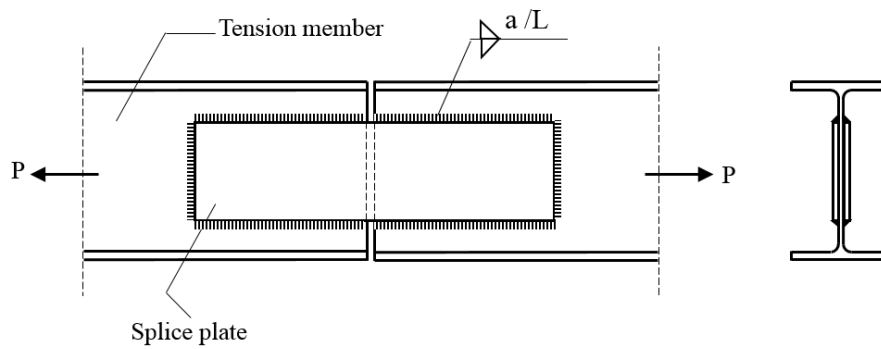


Figure 2. Welded splice

$$P = (F_y A_{\text{tension member}}) / 2 + (F_y A_{\text{tension member}}) (1A + 3B + 4E + 2F + 4G + 3H) / 100$$

H	Tension member	Splice plate
0-1	IPE200	2□150.10
2-3	IPE220	2□170.12
4-5	IPE240	2□170.14
6-7	IPE270	2□200.14
8-9	IPE300	2□230.16

	A	B	C	D	E	F	G	H
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