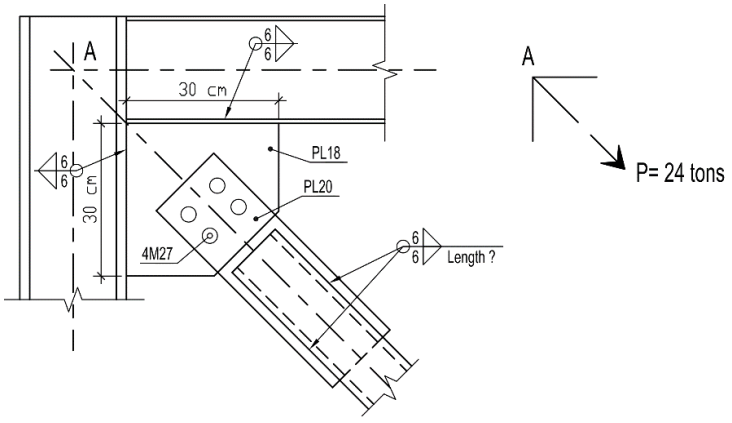
CE388 - FUNDAMENTALS OF STEEL DESIGN – PROBLEM SET

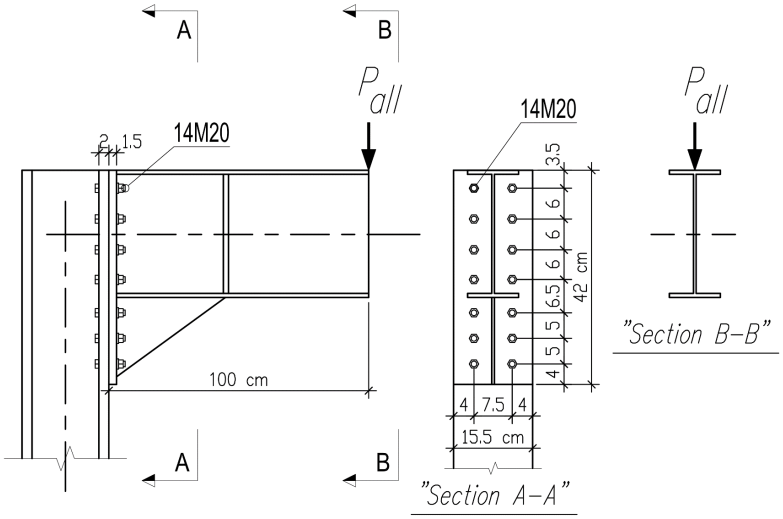
1. A connection detail of a steel structure and axial force of the pipe brace member are given as follows.

a. Check welded gusset to beam-column connection.
b. Check bolted brace to gusset connection.
c. Find out the length required for welded pipe-brace to plate connection.

Use TS648 provisions. EY loading. ST37 steel. All bolts are 4D turned bolts. (σ_{ez}=2.8 t/cm^2, τ_{em}=1.4 t/cm^2). Use TS3357 for allowable stresses in welds.



2. A beam is attached to a column by making use of 14-M20. A point load is applied at the tip of the cantilever as shown below. Determine the maximum amount of allowable load (P_{all}) that can be applied according to TS648 provisions. EY loading. ST37 steel. Consider only the bolted connections. All bolts are 4D turned bolts. (σ_{ez}=2.8 t/cm^2, τ_{em}=1.4 t/cm^2).



3. A cantilever beam subjected to distributed load is attached to a structural system by welding. Determine the maximum length (L) of the beam that can be applied according to TS648 provisions. EY loading. ST37 steel. Consider only the welded connections. Use TS3357 for allowable stresses in welds.