1. A connection of the type used in example number 2 must resist a service dead load of 40033.99 Newton and a service live load of 80067.98 Newton. What total length of 6.375 mm fillet weld, E70XX electrode, is requires? Assume that both connected parts are 9.525 mm thick.

SOLUTION:

Pu = 1.2D + 1.6L= 1.2(40033.99) + 1.6(80067.98)

= 176,149.556 N/mm

The shear strength of the weld per mm of length is

244.956 x 4 = 979.824 N/mm

The shear yield strength of the base metal is

0.6Fy t = 0.6(248)(9.525) = 1417.32 N/mm

and the shear rupture strength of the base metal is

0.45Fu t = (0.45)(400)(9.525) = 1714.5 N/mm

The weld strength of 979.824 N/mm governs.

The total length required is

(176,149.556 N/mm) / (979.824 N/mm)= 179.777mm