

# Steel design

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**ASSIGN  
BUSTER**

RESIT WORK Please submit by 5pm on Friday 29th January Figure shows a circular building required for the fabrication of steel-framed structures and material handling equipment. The Client's brief is as follows:

A moving crane of 10 tonne capacity to radiate from a central support to a continuous circular gantry round the main assembly shop.

Minimum clear heights above floor level:

Crane hook 8 m

Access and despatch bay 8 m

Sub assembly and storage bays 5 m

Natural roof lighting equivalent to 20% of floor area.

Vertical cladding to include natural light : 1.5 m high dado wall.

Site Conditions

Made ground to a depth of 2 m overlying a 600 mm stratum of compact gravel over firm clay to a considerable depth.

The site is a low lying industrial area near the coast.

Design wind pressure 1.25 kN/m<sup>2</sup>

You are required to:

Prepare an illustrated design appraisal indicating two distinct and viable structural steel solutions for the building and its foundations and floors.

Identify clearly the functional framing, the load transfer and stability aspects of each scheme. Identify the solution you recommend giving reasons for your choice.

Design typical structural elements of the chosen arrangements in sufficient detail to enable a contractor to prepare a budget quotation.

Prepare, to scale, drawings of the chosen arrangements with sufficient information to enable a contractor to prepare a budget quotation.

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Sketch, to scale, fabrication details of:

a principal column on the periphery of the main assembly shop;

the proposal for the central support.

Figure 1. Circular Fabrication Building.

(From The Institution of Structural Engineers 1975)

The following is the list of reference books that will help the structural design of this coursework along with a couple of pdf files for references:

Structural Steel Design, Volume 1

By Alan Williams

Handbook of structural engineering

By Wai-Fah Chen

Handbook of structural steel connection design and details

By Akbar R. Tamboli

Structural design in metals

By Clifford David Williams, Ernest C. Harris

SCHAUM'S OUTLINES STRUCTURAL STEEL DESIGNS

By Abraham J. Rokach