Steel1939UK
The List of Steelwork Sections Available in the UK in 1939 and their Modern Properties
May 2000

Introduction

This Template lists Steelwork Sections available and used in the UK around the 1938/39 periods.

It is meant to help investigate adequacy of existing structures. While giving original dimension of the 1939 sections in Imperial units, the template lists section properties in metric units. These properties have been calculated afresh using current procedures and software.

Loading the Template on to your computer

Steel1939UK is supplied as an Excel 97 Template, having .XLT as its filename extension.

To load Steel1939UK on to your computer, copy this file into Microsoft Office folder for its Templates. Generally the path to this folder in Excel 97 is:

C:\Program Files\Microsoft Office\Templates

If you are using Excel 2000, the path to this folder is:

C:\Windows\Application Data\Microsoft\Templates

To load and use the Template in Excel 97 or Excel 2000, choose:

File, New and the select the file Steel1939UK001016-

If you receive an Excel Warning about running Macros and are prompted for whether to load them, answer YES to Load and Enable Macros. Steel1939UK incorporates VB Macros and to allow your computer to use them is vital for its operation.

Methods for Calculating Modern Section Properties

In addition to using usual fundamental formulae for section properties, the following 3 publications have been used:

SCI Publication (P057), Design of Members Subject to Combined Bending and Torsion, The Steel Construction Institute, 1989

Steelwork Design Guide to BS 5950: Part 1: 1990 Volume 1, Prepared and Published by The Steel Construction Institute, 5th Edition 1997

El Darwish, I.A. and Johnston, B.G., Torsion of Structural Shapes, Proceedings of the American Society of Civil Engineers, Journal of the Structural Division, Vol. 91, No. ST1, pp 203-228, February 1965

Taper in the Legs of 1939 Tees

The Tee sections of 1939 have a taper of 0.5 degrees in both the flanges and the legs. This means that the flange and the leg faces have a subtended angle of 91 degrees.

In order to employ standard equations for modern Tees having no taper in their legs, the leg taper of 0.5 degrees in 1939 Tees have been ignored in calculating their properties.

Accuracy of Originally Published and Newly Calculated Properties

To assess accuracy of various sectional properties, the published and calculated values of Sectional Area and Mass have been compared. The Minimum and Maximum percent ratios for the published and the calculated values of Area and Mass are as follows for various sections.

BSB: Area 98.54% to 100.51% and Mass 97.59% to 100.89% among 40 Sections
RSC: Area 99.78% to 102.17% and Mass 99.90% to 101.94% among 41 Sections
Equal Angles: Area 98.27% to 100.81% and Mass 99.21% to 100.34% among 86 Sections
Unequal Angles: Area 97.67% to 99.58% and Mass 98.13% to 99.62% among 118 Sections
Tees: Area 98.93% to 99.90% and Mass 99.21% to 99.93% among 19 Sections
CHS: Area 98.47% to 102.11% and Mass 99.51% to 100.37% among 110 Sections

About the Sections List Source

The list of sections and their dimensions have been obtained from the following publication:

Handbook for welded structural steelwork
Published by The Institute of Welding
104 Victoria Street, London SW1
First Edition, September 1938
Second Edition August 1939"

In 1939, the cost of publishing this Handbook was borne by:

British Oxygen Co Ltd
Metropolitan- Vickers Electrical Co Ltd
Mures Welding Processes Ltd, and
Quasi-Arc Co Ltd."

The preparation of the Handbook was carried out under the direction of the Handbook Committee of the Institute of Welding, the membership of which was as follows:

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The compilation of the tables and preparation of the examples in the Handbook was carried out by Messers R.T. James & Partners, Consulting Engineers.