

THE USE OF SPECIAL BLIND BOLTS IN THE REFURBISHMENT OF STEEL STRUCTURES

UTILIZAÇÃO DE PARAFUSOS CEGOS ESPECIAIS NA REABILITAÇÃO DE ESTRUTURAS DE AÇO

António Manuel BAPTISTA*

Jean-Pierre MUZEAU**

Michel DRÉAN**

Patrick KIRBY***

Abstract

In refurbishment of steel structures, site conditions are sometimes so restrictive that classical bolts cannot be used easily, but special blind fasteners are available which can be an efficient alternative to classical high-strength or normal bolts. They present appreciable technical advantages in connections to hollow sections or in any cases where both sides of the connection are not reachable. The aim of this paper is to present different kinds of blind bolts with particular regard to their installation process and their main mechanical characteristics.

1 - Introduction

In refurbishment activities, the accessibility conditions are sometimes very restrictive and may influence the technical solutions to be chosen.

Blind bolts can be advantageous to connect parts of structures accessible from one side only and, obviously, for hollow sections. Some of them are based on an installation sequence involving a swaging process and they offer quite high resistances. Some others require a thread or a special nut to be used.

These special bolts are described in this paper with special attention payed to their technological characteristics. The BOM and the HSBB swaged fasteners are first examined. Then, the Ultra-Twist blind bolt, which is an improvement to the BOM fastener, is presented as well as the flowdrill process and the Hollo-bolt. All these devices offer real potential for use in refurbishment as well as in new structures.

* LNEC, Lisboa (Portugal)

** LERMES/CUST, Blaise PASCAL University, Clermont-Ferrand (France)

*** Department of Civil & Structural Engineering, University of Sheffield, Sheffield (UK)