DEUTSCHES INSTITUT FUR BAUTECHNIK

Anstalt des Öffentlichen Rechts

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Notification of amendement of the general construction supervision authority permit

Permit number:	Z-1 4.4-493
Applicant:	MTH Befestigungstechnik GmbH Weinleite 1 91522 Ansbach
Approved item:	MTH - beam clamps
Valid until:	28 February 2011

This notification amends the general building supervision authority permit no. Z-14.4-493 of 07 February 2006. This notification consists of three pages. It is only valid in association with the aforementioned general building supervision authority permit and may only be used together with same.

AD II. SPECIAL CONDITIONS

The special conditions of the general building supervision authority permit are amended as below.

Section 3.1 is amended as follows:

3. Scope

3.1.1 General
The concept of proof in DIN 18800-1:1990-11 applies. For fatigue proof the rules in DIN EN 1993-1-9 apply.

3.1.2 Stress in the direction of the screw axis (tensile forces)

3.1.2.1 Mainly static stress
The metrology values for tensile strength (limiting tensile force) $N_{R,d}$ per clamp joint (4 screws) are given in Appendix 3, Table 2.

3.1.2.2 Mainly non-static stress
In testing fatigue the fatigue graph in DIN EN 1993-1-9 for the stress concentration case 50 can be used.

3.1.3 Stress at right angles to the screw axis (shear)

3.1.3.1 Mainly static stress
For the shear stress capacity VR, d per clamp join (4 screws) the following applies:

$V_{R,d} = \mu \bullet (N_{R,d} - N_d)$ with:
μ = 0.2 friction coefficient
$N_{R,d}$ metrology value of tensile capacity per Appendix 3 Table 2
N_d metrology value of tensile forces exerted

If shear is exerted longitudinally and laterally simultaneously then the resultant value applies.
For selected values of the tensile forces exerted the tensile capacities are given in Appendix 3, Table 3.

3.1.3.2 Additional requirement for mainly non-static stress
Only brief shear stress such as in crane travel beams due to crane starting and stopping, mass forces from drives or crane slanted travel are permissible.

3.1.4 Bending moment stress
If the clamp joints have to transmit bending moments e.g. in crane track beams due to vertical crane wheel loading with torsion-resistant support beams or horizontal lateral stress crosswise to the crane track beam then the moment may be allowed for applying equivalent tensile force. The tensile force must be so determined that it leads to the same stress in both most highly stressed screws and clamping plate pairs as the bending moment.

For the pretensioned beam clamps joints the equivalent tensile force can be calculated using the bending moment stress as an approximation applying the formaula:

$$\Delta N = \frac{3M}{b}$$

M is the bending moment stress, AN the equivalent tensile force for the beam clamp joint 4 screws) and b the flange width of the support beam subjected to torsion.

3.1.5 Local bending stress in the support flanges

Bearing of the additional bending stress in the support flanges as a result of the forces transmitted by the beam clamp joint vertically to the flanges must be proven. A quarter of the longitudinal force exerted on the clamp joint is to be used per bearing plate. The flange edge is to be assumed to be the line of the force exerted.
The calculation methods envisaged in [1] and [2][1] may be used as the basis for calculating local bending stress in the support flanges.

Kathage (D. Sc. Engineering)

[1]) [1] P. Sahmel
To calculate the bending stress exerted by the crane trolleys in support flanges
Fördern and Heben 19 (1969) no.14, pages 866-868
[2] British Standard B.S. 2853: 1957
Amendment No. 3, published 3rd August, 1967
The design and testing of overhead runway beams