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(Reaffirmed 1998)

Indian Standard

GENERAL CHECK LIST OF FUNCTIONS OF JOINTS IN BUILDING

(ISO Title : Joints in Building — General Check-List of Joint Functions)

National Foreword

This Indian Standard which is identical with ISO 3447-1975 'Joints in building — General check-list of joint functions', issued by the International Organization for Standardization (ISO), was adopted by the Indian Standards Institution on the recommendation of the Building Construction Practices Sectional Committee and approval of the Civil Engineering Division Council.

Wherever the words 'International Standard' appear, referring to this standard, it should be read as 'Indian Standard'.

Building Construction Practices Sectional Committee, BDC 13 [Ref : Doc : BDC 13 (3955)]

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1 SCOPE AND FIELD OF APPLICATION

This International Standard gives a general check-list of functions of joints[1] in building for use in their design.

2 METHOD OF USE OF THE CHECK-LIST

The initial stage in the design of a joint is to determine the conditions applying to it. The next stage is to identify the functions it has in consequence to perform, both those relating to the functions of the joined components and those resulting from the presence of the joint as such. While some functions will be obviously relevant in any particular situation in a building, it is necessary for all criteria to be considered if the design is to be complete. Failure in the performance of only one required function may produce a failure of the joint.

The identification of the range of functions that must be satisfied is simplified if the designer can check against a general list covering the great majority of considerations in the selection of a jointing technique. This International Standard provides such a general list in which functions are grouped under design aspects. Any one joint will be required to satisfy a selection of functions only. However, as the list cannot be comprehensive, the designer may have to identify additional functions applying in a specific situation.

It is in the synthesis of a design for a joint that the interrelationship between joint functions becomes apparent, as one part of the joint may have to perform several functions and, moreover, may impede or prevent the achievement of others.

3 GENERAL CHECK-LIST OF JOINT FUNCTIONS, GROUPED UNDER DESIGN ASPECTS

3.1 Environmental factors

A1 To control passage of insects and vermin

A2 To control passage of plants, leaves, roots, seeds and pollen

A3 To control passage of dust and inorganic particles

A4 To control passage of heat

A5 To control passage of sound

A6 To control passage of light

A7 To control passage of radiation

A8 To control passage of air and other gases

A9 To control passage of odours

A10 To control passage of water, snow and ice

A11 To control passage of water vapour

A12 To control condensation

A13 To control generation of sound

A14 To control generation of odours

3.2 Capacity to withstand stress[2]

To resist stress in one or more direction due to :

B1 compression

B2 tension

B3 bending

B4 shear

B5 torsion

B6 vibrations (or any other type of stress which may induce fatigue)

B7 impact

B8 abrasion (indicate, for each particular case, the type of wear)

B9 shrinkage or expansion

B10 creep

B11 dilation or contraction due to temperature variations

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1) See ISO 2444, first part of the definition :

The construction formed by the adjacent parts of two or more building products, components or assemblies, when these are put together, fixed or united with or without the use of a jointing products.

2) Either during or after assembly.

3.3 Safety

C1 To control passage of fire, smoke, gases, radiation and radioactive materials

C2 To control sudden positive or negative pressures due to explosion or atmospheric factors

C3 To avoid generation of toxic gases and fumes in case of fire

C4 To avoid harbouring or proliferation of dangerous micro-organisms

3.4 Accommodation of dimensional deviations

D1 To accommodate variations in the sizes of the joint at assembly due to deviations in the sizes and positions of the joined components (induced deviations)

D2 To accommodate continuing changes in the sizes of the joint due to thermal, moisture and structural movement, vibration and creep (inherent deviations)

3.5 Fixing of components

E1 To support joined components in one or more directions

E2 To resist differential deformation of joined components

E3 To permit operation of movable components

3.6 Appearance

F1 To have acceptable apperance

F2 To avoid promotion of plant growth

F3 To avoid discoloration due to biological, physical or chemical action

F4 To avoid all or part of the internal structure showing

F5 To avoid dust collection

3.7 Economics

G1 To have known first cost

G2 To have known depreciation

G3 To have known maintenance and/or replacement costs

3.8 Durability

H1 To have specified minimum life, taking into account cyclic factors

H2 To resist damage or unauthorized dismantling by man

H3 To resist action of animals and insects

H4 To resist action of plants and micro-organisms

H5 To resist action of water, water vapour or aqueous solutions or suspensions

H6 To resist action of polluted air

H7 To resist action of light

H8 To resist action of radiation (other than radiation of light)

H9 To resist action of freezing of water

H10 To resist action of extremes of temperatures

H11 To resist action of airborne or structure-borne vibration, shock waves or high-intensity sound

H12 To resist action of acids, alkalis, oils, fats and solvents

H13 To resist abrasive action

3.9 Maintenance

J1 To permit partial or complete dismantling and reassembly

J2 To permit replacement of decayed jointing products

3.10 Ambient conditions

K1 To perform required functions over a specified range of temperatures

K2 To perform required functions over a specified range of atmospheric humidity

K3 To perform required functions over a specified range of air or liquid pressure differentials

K4 To perform required functions over a specified range of joint clearance variations

K5 To exclude from the joint if performance would be impaired :

a) insects
b) plants
c) micro-organisms
d) water
e) ice
f) snow
g) polluted air
h) solid matter

K6 To perform required functions over a specified range of driving rain volume

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