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RECOMMENDATIONS FOR CO-ORDINATION OF DIMENSIONS IN BUILDINGS -- ARRANGEMENT OF BUILDING COMPONENTS AND ASSEMBLIES

PART II FUNCTIONAL GROUP 2 – EXTERNAL ENVELOPE

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PART II FUNCTIONAL GROUP 2 — EXTERNAL ENVELOPE

0. FOREWORD

0.1 This Indian Standard (Part II) was adopted by the Indian Standards Institution on 4 November 1974, after the draft finalized by the Modular Co-ordination Sectional Committee had been approved by the Civil Engineering Division Council.

0.2 Since the basic decision to adopt a 10-cm module has been taken, the work connected with application of this module for different building components, such as bricks, walling materials, roofing materials, etc, has been done by different committees and dimensions have been recommended by these committees for such components.

0.2.1 However, it has been felt that some thought had to be given to the need for dimensionally co-ordinating a particular product, specially with respect to the three dimensions — length, width and height/thickness. It was felt that in some cases such co-ordination of dimensions may or may not be necessary, while in other cases it is absolutely imperative. To identify such parameters for individual components, it was felt that building as a whole should be examined from the point of view of various components that go into it and then decide on the need for dimensional co-ordination on an individual basis.

0.2.2 After such a decision had been arrived at, it will then be possible for the relevant committees to adopt this principle in finally arriving at the nominal and work sizes for the individual components. With this end in view the building has been divided broadly into the following five functional groups:

a) Functional group 1 — Structure;
b) Functional group 2 — External envelope;
c) Functional group 3 — Internal subdivision;
d) Functional group 4 — Services and drainage; and
e) Functional group 5 — Fixtures, furniture and equipment.

0.3 It was indeed very useful for the Modular Co-ordination Sectional Committee to have the views of various architects, engineers and users in

arriving at a basic decision regarding the need for dimensionally co-ordinating some of these products so that the relevant committees could exercise their mind on such items only. Based on these decisions, it may be possible to review the existing Indian Standards on different subjects where dimensions have already been given and arrive at new dimensions, where necessary.

0.3.1 It may be noted that the words 'co-ordination of dimensions' instead of 'modular co-ordination' have been used in the title of the standard with a view to encouraging the concept of establishing the correlation of two or more products when juxtaposed together to perform a function. If such a function is not necessary or there is no function to be done, then it appears there may not be a need for co-ordinating dimension in the products placed together.

0.4 In the formulation of this standard due weightage has been given to international co-ordination among the standards and practices prevailing in different countries in addition to relating it to the practices in the field in this country. This has been met by deriving assistance from the following:

BSPD 6432 : Part 1-1969 Recommendations for the co-ordination of dimensions in building — arrangement of building components and assemblies within functional groups; Part 1 Functional group 1, 2, 3 and 4. British Standards Institution.

BSPD 6432 : Part 2-1969 Recommendations for the co-ordination of dimensions in building — arrangement of building components and assemblies within functional groups; Part 2 Functional group 5. British Standards Institution.

0.5 This standard is one of a series of Indian Standards on modular co-ordination. Other standards published so far in the series are given on page 10.

1. SCOPE

1.1 This standard (Part II) lays down recommendations for co-ordinating dimensions of building components and assemblies for functional group 2 — External envelope which comprises of the following elements of construction:

Walls, wall openings, roofs and roof openings.

2. TERMINOLOGY

2.0 For the purpose of this standard, the following definitions shall apply.

2.1 Element of Construction — A functional part of a building constructed from building materials and/or building components.

2.2 Services — The group of installations each of which supplies one or more services to a building.

2.3 Assembly — An aggregate of building components used together.

2.4 Building Component — A building product formed as a distinct unit having specified sizes in three dimensions.

2.5 Building Section — Building material formed to a definite cross section but of unspecified length. Sections are usually manufactured by a continuous process, such as rolling, drawing, extruding or machining. Examples are angles, bars, tubes, battens, sheet, plate, wire and cable.

2.6 Co-ordinating Plane — A plane by reference to which a building component or assembly is co-ordinated with another.

2.7 Co-ordinating Space — A space bounded by co-ordinating planes allocated to a component, including allowances for tolerances and joint clearances.

2.8 Co-ordinating Dimensions — A dimension of co-ordinating space, which defines the relative positions of two or more components in an assembly, according to the characteristics of the components which are relevant to assembly.

2.9 Basic Size — The size by reference to which the limits of size are fixed.

3. GRADING OF COMPONENTS AND ASSEMBLIES

3.1 Depending upon the relative importance, the components or assemblies shall be given a grading, A, B, or C as follows:

Grading A — Components or assemblies for which dimensional co-ordination is essential.

Grading B — Components or assemblies which in some situations need to be dimensionally co-ordinated.

Grading C — Components or assemblies which do not require to be dimensionally co-ordinated.

4. CO-ORDINATING DIMENSIONS OF BUILDING COMPONENTS AND ASSEMBLIES

4.1 The recommended co-ordinating dimensions of building components and assemblies for functional group 2 — external envelope shall be as given in Table 1.

TABLE 1 RECOMMENDED CO-ORDINATING DIMENSIONS OF BUILDING COMPONENTS AND ASSEMBLIES FOR FUNCTIONAL GROUP 2 — EXTERNAL ENVELOPE

(*Clause* 4.1)

Sl No.	Element of Construction	Assembly	Component	Grading	Co-ordinating Dimensions					Cross Reference to Other Functional Groups
					Length	Width	Height	Depth	Thickness	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
i)	Walls									
		Brickwork		A	√	—	√	—	√	
		Blockwork		A	√	—	√	—	√	
			Bricks	B	√	√	√	—	—	
			Blocks	B	√	√	√	—	—	1, 3
			Damp proof courses	A	—	√	—	—	√	1, 3
			Lintels	A	√	√	—	√	—	
			RCC bands	A	—	√	—	—	√	1
			Cramps	C	—	—	—	—	—	1
			Refractory bricks	B	√	√	√	—	—	3, 4
			Grilles: ventilating	A	√	—	√	—	—	4
			Handrails: balcony	C	—	—	—	—	—	
			Louvres	A	√	—	√	—	—	4
			Facing materials	A	—	√	√	—	—	3
		Curtain walling		A	—	√	√	—	√	
			Sections: mullion	B	√	√	—	—	√	
			Sections: transom and sill	B	√	√	—	—	√	
			Panels: infill and under sill	A	—	√	√	—	√	
			Glazing units: glass and edge sealed	A	—	√	√	—	√	
			Windows	A	—	√	√	—	√	
			Grilles: ventilating	A	√	—	√	—	—	4
			Louvres	A	√	—	√	—	—	4
			Door leaves	A	—	√	√	—	√	

	Panels		A	—	√	√	—	√	
		Bricks	B	√	√	√	—	—	1, 3
		Blocks	B	√	√	√	—	—	1, 3
		Sections: framing	B	√	√	—	√	—	
		Facing materials	A	—	√	√	—	—	3
		Sheets: rigid (flat)	A	—	√	√	—	—	
		Sheets: corrugated and troughed	A	—	√	√	√*	—	3
		Grilles: ventilating	A	√	—	√	—	—	4
		Louvres	A	√	—	√	—	—	4
ii)	Wall openings		A	—	√	√	—	√	
	Doorsets (including side hung single leaf, side hung double leaf, horizontal sliding—single and multi-leaf, horizontal folding, horizontal sliding/folding, horizontal collapsible gates, vertical sliding gates up and over, single and multi-leaf, revolving, hatches, collapsible grilles, roller blinds and shutters)								
		Frames	A	—	√	√	—	√	
		Door leaves	A	—	√	√	—	√	
		Architraves	C	—	—	—	—	—	
		Sills	A	√	√	—	—	√	
		Ventilators	A	—	√	√	—	√	
		Grilles: collapsible	A	—	√	√	—	—	
		Hardware	C	—	—	—	—	—	3
		Roller blinds and shutters	A	—	√	√	—	—	
	Doors-frameless		A	—	√	√	—	—	

* Depth of corrugations.

(Continued)

TABLE 1 RECOMMENDED CO-ORDINATING DIMENSIONS OF BUILDING COMPONENTS AND ASSEMBLIES FOR FUNCTIONAL GROUP 2 — EXTERNAL ENVELOPE — *Contd*

Sl. No.	Element of Construction	Assembly	Component	Grading	Co-ordinating Dimensions					Cross Reference to Other Functional Groups
					Length	Width	Height	Depth	Thickness	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
ii)	Wall openings —*Contd*									
		Windows (sliding, horizontal and vertical pivoting, hung, fixed)		A	—	√	√	—	√	
			Frames	A	—	√	√	—	√	
			Glazing units: glass and edge sealed	A	—	√	√	—	—	
			Sills	A	√	√	—	—	√	
			Ventilators	A	—	√	√	—	√	
			Blinds: roller and venetain	A	√	√	—	—	—	
			Hardware	C	—	—	—	—	—	
iii)	Roof									
		Pitched and flat-finishes and patent glazing (*see* functional group 1 for structural components and functional group 4 for drainage components)								
			Sheet: corrugated/ troughed	A	√	√	—	√*	—	

			Sheet: insulating	A	√	√	—	—	—	3
			Glazing units: glass and edge sealed	A	√	√	—	—	—	3
			Sections: framing	B	√	√	—	√	—	
			Flashings	C	—	—	—	—	—	
			Fixing accessories	C	—	—	—	—	—	
iv)	Roof openings	Roof lighting, ventilation and access (including skylights, roof and pavement lights)		A	√	√	√	—	—	
			Sections: framing	B	√	√	√	—	—	
			Glazing bars and beads	C	—	—	—	—	—	
			Glazing units: glass and edge sealed	A	√	√	—	—	√	
			Grilles: ventilating	A	√	—	√	—	—	4
			Hardware	C	—	—	—	—	—	4
			Louvres	A	√	—	√	—	√	4
			Linings: preformed	A	√	√	—	—	—	
			Kerbs: preformed	A	√	√	√	—	—	
			Ventilators	A	—	√	√	—	√	
			Flashings	C	—	—	—	—	—	

*Depth of corrugations.

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1233-1969 Recommendations for modular co-ordination of dimensions in the building industry (*first revision*)

2718-1964 Recommendation for preferred dimensions for storey heights

4993-1973 Glossary of terms relating to modular co-ordination (*first revision*)

6408-1971 Recommendations for modular co-ordination — application of tolerances in building industry

6772-1972 Recommendations for dimensional co-ordination for industrialized buildings — preferred increments

6820-1972 Recommendations for modular co-ordination — rules for modular planning

7184-1973 Recommendations for modular co-ordination reference lines of horizontal controlling co-ordinating dimensions

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