REVIEW ANALYSIS OF INDIAN STANDARD

(To be submitted to the Sectional Committee)

1. **Sectional Committee No. & Title:** Building Construction Practices Sectional Committee CED 13

2. **IS No: IS : 2118-1980**

3. **Title: Code of practice for construction of jack-arch type of built-up floor or roof**
4. **Date of review:**

5. **Review Analysis**

i) Status of standard(s), if any from which assistance had been drawn in the formulation of this IS.

Standard (No.& Title)	**Whether the standard has since been revised**	**Major changes**	**Action proposed**
Images in google		**2.4 Jack-arch floor or roof** **2.4.1 Vaulted Roof**	**<u>Addition</u>** The jack arch floor or roof derives strength from lime/cement mortar layer by virtue of latter's bond strength with the bricks In Jack arch floor, **<u>New Addition</u>** parallel beams shall be placed directly on the load bearing walls in between 80cm to 1m spacing and spanning from one wall to other. The space between the two adjacent beams shall be filled with a series of shallow brick arches. To keep the floor level /surface, cement concrete/tiles are further placed on brick jack- arch. Roofing technique involves a series of small sized elongated brick vaults that are supported on intermediate beam. <u>New addition</u> Roof shall be made in the form

			of arch/vault. Here It shall be made of hollow clay blocks. The vaulted roof shall provide extra volume and keep the space thermally comfortable. The part roof shall also be accommodated as part mezzanine space. vaulted roof can be various types-semicircular vault, segmental vaults and catenaries vaults. The vaults of hollow blocks acts as an insulator, being light weight, the load on superstructure shall be reduced.
Civil engineering handbook –P.K. khanna		2.7 Tie rod	**<u>Addition</u>** Due to superimposed load on arch, the tension develops on the supporting members, specially on the walls at the end span, tie rods are provided at the end span to counteract the tension.
		4 Necessary information	**<u>Addition</u>** **g)width of openings, based on which courses of arches shall be decided for floor or roof.**
		5.1.1 Design consideration	**<u>Addition</u>** **c)Loading shall be considered in the design of jack arch slabs/roof are gravity and earthquake loads. The earthquake loads , acting on a jack arch are ;in-plane horizontal loads and out of plane vertical loads. The rise of arches are kept 1/12th of the span. The minimum depth of the crown is kept at 150mm. The tie rods of diameter 20 to 25mm at 1.8 to 2.4m centre to centers shall be anchored**

			into the wall.
		5.2 **Strength &Stability of Jack arch**	**<u>Addition</u>** **The strength of an arch depends upon the compressive strength and the flexural tensile strength of masonary.Brick and masonary shall be decided accordingly.Jack arch system are stable under normal static conditions as the brick arches transfer the gravity loads mainly in compression along the arch to the supporting beam.**
		5.3 **Durability**	**<u>Addition</u>** An arch shall constantly exert pressure sideways, outward pressure has to be managed, a buttress wall shall be required to contain the thrust for durability of arches
t		**5.4.1** **Fire protection**	**<u>New addition</u>** **Timber jack arch flooring system can be found in many historical buildings around the world. The system is formed by timber joists and brick vaults spanning the distance between two adjacent joists .Fire protection of timber joist shall be considered as this has aesthetics cultural values.**
		9.4 **Construction of jack arch**	**<u>New Addition</u>** Jack arches are composed of individual masonry elements cut or formed into wedge shape that efficiently uses the compressive strength of the masonry in the same manner as a regular arch. Metal formwork shall be placed between the beams and bricks are arranged on top of the formwork to achieve a shallow

			vault. It shall then be plastered with cement or lime mortar and water proofed on top. The formwork shall be removed and process is repeated to make the rest of arches. .

ii) Status of standards referred in the IS

Referred standards (No. & Title)	IS No. of this standards since revised	Changes that are of affecting the standard under review	Action proposed

iii) Any other standards available related to the subject & scope of the standard being reviewed (International/regional/other national/association/consortia, etc or of new or revision of existing Indian Standard)

Standard (No. & Title)	Provisions that could be relevant while reviewing the IS	Action proposed

iv) Technical comments on the standard received, if any

Source	Clause of IS	Comment	Action proposed

v) Information available on technical developments that have taken place (on product/processes/practices/use or application/testing/input materials, etc)

Source	Development	Relevant clause of the IS under review that is likely to be impacted (Clause & IS No.)	Action proposed

vi) Issues arising out of changes in any related IS or due to formulation of new Indian Standard

Related IS and its Title (revised or new)	Provision in the IS under review that would be impacted & the clause no. or addition of new clause/provision	Changes that may be necessary in the Standards under review	Action proposed

vii) Any consequential changes to be considered in other IS

Related IS to get impacted	Related IS Title	Requirements to be impacted

6. Any other observation:

7. Recommendations:

To refer the following segment for the proposed for the proposed changes marked in red.