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 : 2527:1984,**

3. **Title :code of practice for fixing rain water gutters and downpipes for roof drainage.**

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**
Information from web 1)Literature, complete Guide to gutter protection. 2) Civil engineering handbook – P.K. Khanna	**yes**	**2.1** **Rain water pipes and fittings**	2.1.1(extg) *Down pipes shall be cylindrical shape, unless otherwise specified* New Addition Pipes are for carrying rain water from roof gutter to the ground or to a drain. Traditionally downpipes were made using cast Iron, asbestos and sheet metal etc. Subsequently PVC, Aluminum , UPVC pipes ,HDPC (high density Polyethylene),corrugated PVC pipes .FRP(Fiber glass reinforced Plastics),cupper, steel pipes are being used. Pipes shall have access panels for inspection and rodding, branch, connector, diverters and leaf guards etc.

		2.1.2	**New addition (front portion at existing)** Gutters are long narrow channels that are attached at edge of buildings or structures. Based on shape, gutters are half round,square,deep flow and ogee(a moulded shape with decorative feature lines on the front). Based on location gutters are further divided as- a)Eaves gutter-It is fixed at eave to catch rain water running off roof and forms part of roof drainage system. It shall be supported at top ,details of eaves gutter is shown at fig.1 b)Parapet gutter-Parapet shall have a gutter behind it.Shape of parapet gutter is shown in fig. 2 c)Valley gutter-Where two main roofs meet. It shall be suitable in industrial structure,between adjoinging pitched roofed houses and warehouses, buildings.Valley gutter is shown in fig3.. *(Existing portion of2.1.2----to be added)*
Ned Stevens **Top 5 Types of gutter for hangers for home**		**2.2** **Stay for sheet metal gutter**	**<u>(Existing Paras)</u>** 2.2.3 **<u>New addition</u>** Further gutter hangers are :- a)spikes and ferrules hanger-This type of hanger includes a metal tube called a ferrule which is driven across and ends at the back of gutter.

			b) hidden hanger-This type of hangers are positioned horizontally inside the gutter. c)T bar or T strap-This gutter system is similar to hidden hanger,but it has roof strap that is riveted to its middle and nailed to the roof deck,forming a suspension system d)Bracket hanger- this gutter system is made with a half round style that warps around the gutter and attaches to the facia board. e) warp hanger- It is hybrid of the T-bar hanger and the exposed bracket and strap system. Fig 4 is shown for a few different stays.
		3 Necessary Information	**3.1. <u>New addition</u>** c)Slope of gutter d)Material of gutter e)Type of gutter f) Type of support g)Distance between bracket supports along the gutter.
1)How to design a gutter system that′ s sleep and effective by Dan Simms **2) Rain gutter design by PatrickLesile ,Canada**		**5 Design consideration**	(existing para) *<u>New addition</u>* Basically the rain water gutter shall be designed based on area of roof,slope and average rainfall in the region. Location of where gutter shall be stopped to be identified and number of corner pieces shall appear shall be identified. Considering wind effect on gutter,water flow rate,weight of gutter and water,falling rain effect,span of gutter and

			occasional live load, section of gutter shall be designed.
		5.6.1.2 Allowance for expansion of shrinkage	a) For sheet metal gutters the expansion joints shall be provided as per fig. 5(*extg.fig 2 shall be deleted*) and fig. 6. Expansion joints are pieces that are placed between different sections of gutter and shall be allowed to move without affecting drainage system. (Note- Extg. Fig. 3& 4 **shall be renamed as fig.7&8)**
		7.2 Rainwater pipes	**All** vertical pipes shall be fixed as well as clear the wall so that if any cracks develop in the pipes the wall shall not suffer.Tops of the pipes shall be carefully fixed with the roof outlet and there shall not be over flowing of the rain water or leakage through the wall. ***Existing figure 5 &6 shall be renamed as fig.9and fig.10. Fig 11 shall be added showing rainwater PVC pipes .***
		8. inspection and maintenance	. **8.2. New addition:-** **Common causes of gutter leaks are due to following:-** **a)Gutter joints are leaking** **b)Damaged end caps** **c)Holes and cracks in the gutter system.** **d)Clogged gutter** **e)Loose hangers** **(*Now extg.para*)**

		8.3 **Gutter Elbows**	***New addition*** **Gutter downspout elbows are an essential part of gutter system for directing the water from the gutter away from buildings.** **Gutter downspout elbows shall be in variety of different sizes,types, shapes ,material, angles and colours.** **.**
Literature from Fire Safe Marin		**9** **9.1** **Fire Resistance**	***New addition*** Gutter collect leaves and other debris making it susceptible to wildlife embers which shall spread fire. Burning leaves in gutter can easily spread fire particularly if there is inadequate flashing between gutter and roof line. It is discouraged to use foam in gutter. Metal gutter shall be recommend over plastic gutter in fire hazards areas. Embers shall ignite accumulated debris in any gutter. Metal gutter stay in place and the resulting fire will continue to burn at the roof edge. For fire safety, recommendation of NBC shall be followed.
			Please read this draft in conjunction with fig.2,3,4,5,6,11 attached separately.

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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.