Indian Standard

Fixing of wall coverings — Code of practice

(First Revision)

FOREWORD

Formal clause will be added later.

Wall coverings, such as building boards, sheets, etc, are extensively used in the construction of light partitions. They are also used on solid wall backings to obtain various decorative finishes which are easier to install and maintain than the traditional plaster and allied finishes. The selection of these boards depends upon appearance and performance requirements; and the methods of fixing and joining also differ for different types of boards. This standard is intended to give guidance for the selection and fixing wall of coverings.

This standard is intended chiefly to cover the technical provisions relating to fixing of wall coverings and it does not cover all the necessary provisions of a contract.

This standard was first published in 1962. The contents of this standard are being revised with a view to updating its contents in the light of experience gained over the years. The important changes include incorporation of marine plywood, laminated plywood, commercial plyboards, phenol bonded particle board and, veneer and decorative veneered plyboards. In this revision reference has been given to current material standards.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

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Fixing of wall coverings — Code of practice

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1 SCOPE

1.1 This standard covers the fixing of the following ~~rigid~~ wall coverings:

a) Gypsum plasterboards and wallboards;
b) Fibre building boards;
c) Plywood and blockboards;
d) Chipboards, particle board and wood-waste boards;
e) Asbestos cement wallboards; and
f) Multiple layer of coverings.
g) Stone/Marbel/Granite/Ceramic,Porcelin,Vitrified,Mosaic tiles
h) Aiuminium Composite Panel(ACP)
i) PVC wall panel

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1.2 This standard does not cover the application of ~~flexible~~ wall coverings, such as, wall papering, sheeting, ,Fabric etc, ~~and also~~ ~~wood panelling~~.

2 REFERENCES

2.1 The Indian Standards listed in Annex A are necessary adjuncts to this standard.

3 TERMINOLOGY

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

3.1 Asbestos Cement Boards

Boards made from a mixture of clean asbestos fibre, Portland cement and other ingredients as required.

3.2 Blockboards

A board having a core made up of strips of wood laid separately or glued or otherwise joined to form a slab which is glued between two or more outer veneers with the direction of grain of the core blocks running at right angles to that of the adjacent outer veneers.

3.3 Fibre Building Board

Rigid board made from substances composed of vegetable fibres, such as wood pulp.

3.4 Particle Boards, Chip Boards and Wood-Waste Boards

These are boards made from wood chips or other wood-waste material.

3.4.1 *Phenol Bonded Particle Boards*

These particle boards are bonded with phenol formaldehyde synthetic resin and are water resistant boards.

3.5 Plasterboard

Wallboards normally composed of plaster with some reinforcing joints and contained between facing of heavy papers.
It is made up of waterproof resin and is used in interior walls where it shall help to stop moisture coming from ground level

3.6 Plywood

A board formed of three or more layer of veneer cemented or glued together, usually with the grain of adjacent veneers running at right angles to each other.

3.6.1 *Commercial Plyboards*

Plyboards with the commercial ply veneer, the skin layer is not of decorative veneer.Commercial plywood is generally moisture resistant.High resilence to wear and tear,It is durable,flexible and has good tensile strength.

3.6.2 *Decorative Veneered Plyboard*

The finish layer is of decorative teak ply finish, rose wood finish, etc.

3.6.3 *Laminated Plywood*

This type of plywood boards are factory made laminated boards with different colours. The lamination is on one side or two sides but for wall covering one side lamination is required.

3.6.4 *Marine Plywood*

This type of plywood boards are bended with phenol type resins and are water resistant.

3.6.5 *Veneer*

Veneer is the finishing layer of plyboards/block board, etc.

4 NECESSARY INFORMATION

4.1 For efficient planning and execution of work, detailed information with regard to the following will be necessary:

a) Wall areas to be covered;
b) Location, size, type of material used and pattern of doors, windows and also details of openings (inside/outside);
c) Type of supporting framework;
d) Type and size of units of the covering to be fixed;
e) Type of finishing treatment to be applied over the covering;
f) Matching and treatment at all corners and at junction with ceiling;
g) Details, such as, picture-rail, penelling rail, etc, which would come over the covering; and
h) Location of service fittings and accessories (electrical, air-conditioning,
i) Openings at windowAC, in wall coverings
j) Location of split AC on wall coverings , openings in wall for electrical conduits and copper pipes for connection of AC external Fan unit
k) For fire fighting work ,location of splinker unit on inside wall surface and network of pipe
l) Height of inside wall coverings based on false ceiling and ducts of HVAC
m) Location of wardrobe if any at inside face of wall covering

4.2 All information as in **4.1** shall be made available to those who are responsible for fixing the coverings. Necessary drawings and instructions for preparatory work shall be given.

4.3 Arrangement shall also be made for proper exchange of information between those engaged in fixing wall coverings and others engaged in trades, such as electrical wirings and fittings, sanitary fixtures,carpentry, air-conditioning fixture, etc, whose work will affect or will be affected.

5 DESIGN CONSIDERATIONS

5.1 Suitability of Different Types of Coverings

5.1.1 *Gypsum Plasterboards and Wallboards*

These coverings contribute high fire resistance to the partitions on to which they are fixed. Gypsum boards also form a satisfactory backing for further wall finishes, such as, plastering, rendering, etc.

Gypsum boards are sensitive to moisture and shall not be used for exterior wall coverings.

5.1.2*Fibre Building Boards*

5.1.2.1 These boards may be homogeneous or laminated and are produced in a variety of sizes, qualities and thicknesses. They facilitate easy handling and fixing, speedy and dry construction and are light in weight. They are self-decorative or provide a base for practically any kind of decorative finish. The use of fibre building boards will be specially advantageous in prefabricated construction.

The types of fibreboards are:

Insulating boards
wooden fibre board that are designed to offer insulation, sound muting and increase constructional rigidity in interior wall.Types of boards are as such:-

1)Homogeneous,
In which the capacity to absorb the moisture exemplified by wood fibre based board is coupled with fibre glass insulation to provide a board having balance between the capacity to hold moisture and sufficient presence to allow the board to give up the moisture
2) Laminated,
These boards are used because of their resistance to impact,moisture and chemicals
and
3) Bitumen impregnated.
It is used to fill expansion joints in concrete construction.Boards are made from fibre board with asphalt layer .It can be used in roads, ramps,pavements,pedestrian area and concrete floors

b) *Wallboards*

Laminated fibre, Fiber sheet that has enhanced asthetically by adding decorative laminate sheets .
It is used for décor need in kitchens,bedrooms,office,wardrobe,wall paneling etc.,it has very nominal thickness of about 1mm.
2) Bitumen laminated,(see also IS:1398:1982,reaffirmed-2009) and
3) Homogeneous fibre. It has a homogenous structure ,which is finer than that of particle board,

c) *Hardboards* (*see* also IS 1658 : 2006

1) Medium,
2) Standard, and
3r(Tempered).

NOTE Insulating boards are available for thermal insulation, acoustical insulation or for a combined purpose.

5.1.2.2 Ordinarily low and medium density fibre-boards may absorb moisture but bitumen bonded and bitumenimpregnated grades have high resistance to moisture.

5.1.2.3 Low density fibre boards(LDF) and medium density fibre board(MDF)burneasily, but some manufacturers market treated boards which have better fire resistance. Hardboards,*High* density fire board(HDF) do not burn so easily and they can be treated to give satisfactory fire resistance.

5.1.2.4 Most insulating and medium density fibreboards can be finished with a skim coat of hard wall plaster, if desired, but the manufacturer's instructions should be consulted on this point.

5.1.3*Plywood and Blockboards*

Plywood is a composite material manufactured from thin layers piles of wood vener that are glued together with adjacent layer.A typical plywood panel has face veneers of high grade than core stripes.The function of core layer is to increase the separation between the outer layers to accommodate more bending stress .plywood is pressed under high temperature to form sheets.Plywood is ideal for inside and outside purpose.

5.1.3.1 Plywood is available in several grades and types depending upon the finish and the type of veneers as well as the adhesives used.

5.1.3.2 Plywood may be used as a continuous flush surface for covering walls generally in small areas. It is not advisable to use it for very large surfaces as some moisture movements in the supporting ground may be inevitable and the joints would shrink. This defect will be perceptible where butt joints are used but may not be so apparent in the case of V-joints.

5.1.3.3 Special plywoods veneered with decorative hardwoods, or faced with sheet metals on one or both sides, or faced with decorative plastics are available. Metal-faced plywood is specially suited where an impervious easily cleaned surface is required.

5.1.3.4 Blockboards generally the same use as plywood in wall coverings.

Blockboard is a timber based sheet it comprises a core ,the core is made from parallel,rectangular bonded soft wood strips,these are sandwiched between faces .It is poor conductor of heat,sound and electricity.It has strength& durability,reistance to warping,enhance screw holding capacity,eco-friendly

5.1.3.5 The surface of the plywood, blockboards is smooth and can be finished with colour paint, satin, etc. For decorative veneer finish boards, the finishing shall be either wax polish, lacquer/French polish or melamine finish or such finish by which the decorative veneer figures will be seen through polish.

5.1.3.6 Marine ply with phenol bonded resins is water resistant and is specially recommended wherever there is a possibility of moisture absorption, particularly external walls and walls outside toilets, etc.Marine plywood is Engineered to withstand wet and marine environment.It is used for making ships and boats.

5.1.3.7 Factory made pre-laminated plywood/blockboards are suitable for having even quality finish. As the boards are pre-laminated, nailing and screwing spoils the finish. It is, therefore, recommended that these should be fixed in frames or through grooves or by any other design which will avoid direct nailing.Prelaminated boards are made by applying pressure and heat to the board ,before compressing Malamine impregnated paper added.Prelaminated boards are excellent and economical choice for residential and commercial purpose

5.1.4*Chipboards, Particle Boards and Wood-Waste Boards*

In particle board ,wood waste from saw mill is utilized .The amount of adhesive affects the mechanical properties of the board.Synthetic resin is used as binder,Urea formaldehyde adhesive is suitable with wood waste

Particle board or chip board made from wood scrap, saw dust and glue.It

Is engineered panel product which is manufactured using wood chips

These boards have satisfactory structural strength and stiffness. They work well with ordinary saws and drills and can be easily nailed or screwed. The surface is smooth and may be finished with wax polish, satin or paint

5.1.5*Asbestos Cement Wallboards*

Asbestos sheets are used in exterior surface as well as interior surface for wall boards.Main purpose to provide a protective and decorative layer to the exterior of a building,enhancing its aesthtics,weather resistance and insulation

5.1.5.1 Flat sheets of asbestos cement are suitable where moisture is present, such as bathrooms, kitchens, etc.

5.1.5.2 As the surface of asbestos cement boards is very dense and almost impervious, condensation readily occurs on the surface.It is weather resistance, fire resistance,moisture resistance ,impact resistance.,

5.1.6*Other Miscellaneous Types of Boards*

There are many proprietary boards manufactured from several materials, such as wood fibres, woodwool, strawboard, paper, diatamaceous earth, synthetic resins, plastics, reeds strung or bonded together, etc. Some of them may be of composite construction with a core of one material and facing of another.Structurl plywood is extra strong second only to marine ply in strength and durability.ACP,PVC ,Stone ,Marbel, Granite ,tiles are other wall coverings.They shall generally be used in accordance with the manufacturer's instructions.

5.2 Strength and Stability

5.2.1 The spacings at which the covering is attached with fixtures to the supporting framework or to the wall itself shall be such as to enable the doors to withstand its own weight without appreciable distortion.

5.2.2 The spacings for supports and for fixtures for the various types of coverings shall be as given in Table 1.

5.2.3 The fixing of coverings shall reasonably permit the adjustment of the coverings to thermal and moisture movements without cracking or appreciable distortion.

5.3 Heat Insulation

5.3.1 The thermal insulating properties of different types of insulating materials are covered in IS 3792: ~~1978~~.2004

5.4 Sound Insulatio

5.4.1 Regarding the selection of different types of boards for sound insulation reference may be made to IS 1950 : 1962.

5.5 Fire Protection

A fire resistance rating is defined as the time in minutes or hours that a material or assembly of materials will withstand the passage of flames and transmission of heat when exposed to fire under specified condition of test and performance criteria,or as determined by extension or interpretation of informationIn addition to that of the covering proper, the fire resistance of the fixtures, the jointing material and the supporting framework also play effective role in the overall fire protection afforded by the cladding to the wall. The fire resistance ratings for common types of partitions with different wall coverings and inner partition space of 100 mm are given in Table 2.

NOTE — For standard procedure for testing fire resistance rating, reference may be made to IS 1641: ~~1960~~. 1988

6 MATERIALS

6.1 Gypsum Wallboard

This shall conform to IS 2095 (Part-1): ~~1982~~. 2023

Gypsum boards are suitable for heat resistance ,fire resistance ,humidity resistance.It contains a gypsum core,surface is warped with variety of material such as paper and fibre glass or aluminium foil which prevents reflection of heat.It is used to inside surface of walls .It adds to the aesthetics of the home along with the safety of the space.Dry wall is a panel made of Gypsum with or without additive,typically extruded between thick sheets of facer and backer paper

6.2 Fibre Building Board

Hardboard shall conform to IS 1658 : ~~1977.~~ 2006
Hardboard is used in a variety of applications including furniture components,wall paneling,moulded door skins and perforated boards.Hardboard panels and hardboard sheet is a composite panel manufactured primaryily from inter-felted natural fibers consolidated under heat and pressure.

6.3 Plywood

This shall conform to IS 1328 : ~~1982~~,1996, IS 7316: 1976, IS 710: ~~1976~~ 2010 and IS 303 : ~~1975 1989~~
Plywood is a composite material manufactured from of thin layers of piles of wood veneer that are glued together with adjacent layers,having both glued each other at right anglesit is strong due to cross grain construction,resistant to moisture specially marine grade plywood

Table 1 Spacings for Support and Fixing of Rigid Wall Coverings

(*Clauses* 5.2.2, 9.3, 10.2.1, 10.3.1 *and* 12.1)

Sl No.	Type of Board	Thickness	Spacing of Supports	Nail Spacing Centre to Centre		Minimum Clearance for Nails from Edges
				At Edges	At other Supports	
1.	Gypsum board	9.5	400	100 to 150	100 to 150	10
		12.5	500			
		15	600			
2.	Fibre building board, particle board, etc	10	400	75	150 to 200	10
		12	500			
		20	600			
3.	Plywood, blockboard, etc	6.9	400	150	300	10
		12	500			
		16 and above	600			
4.	Asbestos board	6	400	150 to200 (Screws)	150 to 200	
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NOTE — The nails with a shank diameter of 2.00, 2.24 or 2.50 mm are commonly used.						
*All dimensions are in millimeters						

Table-1 Spacing for support and fixing of Rigid wall coverings

(Clauses 5.2.2,9.3,10.2.1.10.3.1 and 12.1)All dimensions are in millimeters

Sl.no	Type of board	Thickness	Spacing of support	Nail spacing(centre to centre) at edges	Nail spacing (centre to centre) at other support	Minimum clearance for nails from edges
1	Gypsum board	9.5 12.5 15 Other thickness	400 500 600 600	100to150	100 to 150	10
2	Particle Board	6 10 12 20 25 30 35 40 45 50	400 400 500 600 600 600 600 600 600 600	75	150 to 200	10
3	Fibre Building Board a)Medium hard board b)Standard hard board c)Tempered Hardboard	 6 8,10 12 2,5,3 4,5,6 7 2,5,3 4,5,6	 400 400 500 300 400 400 300 400	 75 75 75	 150 to 200 150 to 200 150 to 200	 10 10 10
4	Plywood, etck	3 4 6 9 12 19&25	300 300 400 400 500 600	150 150 150 150 150 150	300 300 300 300 300 300	10

	Block Board	12 15 19 25 30 35 40 45 or 50	500 500 600 600 600 600 600 600	150 150 150 150 150 150 150 150	300 300 300 300 300 300 300 300	10
5	Asbestos board	6 5 4	400	150 to 200 (screws)	150 t0 200	-

Note- The nails with a shank diameter rof 2.00.2.24 or 2.5mm are commonly used

Table 2 Fire Resistance Ratings of Stud Partition Walls with Various Types of Wall Coverings

(*Clause* 5.5)

Sl No.	Covering on Each Side	Other Details of Partition				Fire Resistance Rating
		Partition InnerSpace	Type of Stud	Spacing of Stud	Filling	
		mm		mm		h
	12 mm gypsum wallboard	100	Timber	400	Nil	$\frac{1}{2}$
	12 mm gypsum wallboard	100	Timber	400	Mineral wool	$\frac{3}{4}$
	6 mm plywood	100	Timber	400	-do-	$\frac{3}{4}$
	18 mm plywood	100	Timber	400	-do-	$\frac{3}{4}$
	Two layers of 10 mm gypsum wallboard	100	Timber	400	Nil	$\frac{3}{4}$
	Two layers of 12 mm gypsum wallboard	100	Timber	400	Nil	1

6.4 Particle Board

This shall conform to IS 3097 ~~: 1980~~. 2006
Engineered wood product made from wood particle,flakes or chips,generally less strong compared to plywood,smooth and uniform surface suitable for veneers and laminates,susceptible to swelling and damage when exposed to moisture,it contain formaldehyde or other adhesive binder which is pressed and extruded

6.5 Blockboard

This shall conform to IS 1659 : ~~1979~~. 2004
Blockboard is a timber based sheet material that comprises a core,faced on both side. .The core is made from parallel,rectangular section,bonded softwood strips , these are sandwiched between a variety of facing material

6.6 Control Mix and Matches of different material
It is mix and match of material to create a mixed version of wall panel. For example Combination of wooden wall panel for the upper half and gypsum for the lower half for the panel

6.7 Stone wall panel
Enhance the aesthetic value of walls with stone wall cladding.For architectural or interior design ,there are many options for stone wall

6.8 Marbel wall panel
Due to colourful veins ,marbel gives natural texture to walls.The clean lines of marble give some new feel.It shall be used for interior and exterior wall sulrface.

6.9 Granite wall Panel
Granite protects the cement wall and prevents formation of cracks in a thermal environment . Finished Granit shall be used on walls as these resist moisture better than natural stone

6.10 Tiles as wall panel
Ceramic tiles softer and easier to cut and install,strain and scratch resistant.Porcelin tiles can be used for wall covering.Vitrified tiles having number of colours used for wall coverings.It is strudy and resistance to scratches,strains .Ceramic tileas both Glazed and UnGlazed are good for walls where moisture is not a problem.Porcelin is one of the versatile material for wall tiles,it is best choice for outdoor.Mosaic tiles are also versatile and shall be used for walls at inside and outside faces
6.11 ACP as wall panel
ACP or Almunium composite panel is a new age cladding material that is used for building front elevation ,interior,signage,modular kitchen and many more.it can be bent ,folded and turned into shapes.It consists of two aluminium sheets bonded to a core material,core material shall be polyethelene.ACP is lighter in weight,however it is tough and enduring in nature.The thiclness of ACP depands on thickness of aluminium sheet and the mineral core.
6.12 PVC wall panel
Polyvinyl chloride(PVC) panels are hollow core sheets made from plastic bonded together using an adhesive under intense pressure,wall paneling sheets are water proof,termite resistant,durable and easy to install,it is easy to clean.

~~6.6~~ 6.13 Nails

Nails used as fixing accessories for wall coverings shall conform to IS 723 : ~~1972~~.2023 Wood screws shall conform to IS 451 : ~~1972~~.
–1999

~~6.7~~ 6.14 Fixing Accessories

These shall conform to the relevant provisions given in IS 1946 : 1961 and IS 2097 : ~~1983~~.2012

~~6.8~~6.15 Asbestos Cement Sheets

Corrugated asbestos cement sheets used as wall coverings shall conform to IS 459 ~~:~~ ~~1970~~ 1992. Plain asbestos cement sheets shall conform to IS 2098: ~~1964~~.,2001

~~6.9~~ 6.16Water Proof Resins

Synthetic resins are recommended for laminationand joinery of wood, plywood and other wood work.

~~6.10~~ 6.17Edge Seal

Edges of plywood/blockboard are sealed by primer, beeding, etc, followed by sealing coat.

7 FACILITIES FOR THE WORK

7.1 The facilities mentioned in **7.1.1** and **7.1.2** are necessary and shall be provided to the person entrusted with the work of fixing of wall coverings, for carrying out his work satisfactorily.

7.1.1 The supporting walls and framework for the coverings shall be completed. Timber stud framing for partition or furrings shall be treated in accordance with IS 401 : ~~1982~~. 2001

7.1.2 Assembled components, such as, frames of doors, windows, etc, shall be installed in position before the wall covering work is commenced.

8 PREPARATORY WORK

8.1Storage and Handling of Boards

8.1.1*Gypsum Boards*

The boards shall be kept dry in transit and stored flat in a clean dry place.

8.1.2*Fibreboards, Plywood, etc*

The boards shall be stored and handled in accordance with the manufacturer's instructions. They shall be stored in the room where they are to be used, for a minimum period of 24 hours before use.

9 FIXING GYPSUM PLASTERBOARDS AND WALLBOARDS

9.1 The details of fixing gypsum boards are explained in Fig. 1, and shall generally be followed.

9.2 It shall be ensured in the first instance that the moisture content of the timber background is such that dimensional changes will not be serious to cause distortion or cracking in the coverings fixed on it.

9.3 The spacing of nails shall be as given in Table 1 for gypsum wallboards. During fixing, the nailing shall be done starting from the centre of the row, working outwards. The nails with a shank diameter of 2.00, 2.24 or 2.50 mm are commonly used.

9.4 Jointing

The boards shall be fixed with a joint thickness of about 6 mm. All vertical joints shall be staggered, particularly where both sides of the wall are covered.

9.5 Finishing of Joints

The joints shall be filled with gypsum plaster or other finishing material recommended by the manufacturers of the boards. After filling the joints, a thick skin of the finishing materials shall be spread about 50 mm wide on either side of the joint and on to it shall be trowelled dry a reinforcing scrim cloth about 100 mm wide. When metal scrim is used a stiffer plaster will be necessary to enable the trowelling of the scrim down to the board (*see* Fig. 2). The joints may be left open also, if desired.

10 FIXING OF FIBRE BUILDING BOARDS

10.1 General

10.1.1 The details of fixing fibreboards are explained in Fig. 2.

10.1.2 All fibreboards are subject to slight movements due to moisture and temperature changes, and this shall be allowed for in fixing. Preferably, the boards shall be stored for at least 24 hours before use in the same environment as the one in which they are to be fixed.

10.2 Framework

10.2.1 The studs and grounds for fixing the fibreboard shall be spaced as specified in Table 1 for fibreboards. All edges of the fibreboards shall be supported. Intermediate support shall be provided at dado heights for picture-rails and cornices, etc. Fibreboards are generally fixed to wood grounds or studs.

10.2.2 Planed battens 40 x 20 mm shall be used for grounds on solid walls. The battens shall be plugged to the wall at certain intervals ~~of 300 mm~~ and it is advisable to use fixing expansion plugs and rustless screws, unless fixing blocks have been built the wall. On uneven wall faces the battens shall be plumbed and fitted with packing peices at the back where necessary. If there is any possibility of dampness, the battens shall be treated with odourless preservative.

10.3 Nailing

10.3.1 The nails with a shank diameter of 2.00, 2.24 or 2.50 mm are commonly used. Nails shall be spaced as specified in Table 1.

10.4 Joints

10.4.1 An open but joint shall have at least 3 mm clearance.

10.4.2 Joints shall not normally be filled with plaster, but where low or medium density fibreboard is to be plastered, the joints shall be left with a gap of about 6 mm which shall be covered with scrim bedded in plaster before the finishing coat of plaster is applied.

10.4.3 The various types of joints for fibreboard are shown in Fig. 3, and shall generally be followed.

10.4.4 Uncovered joints may be bevelled or parallel grooved, using plane and chisel, but it is quickerand better to use a special fibreboard cutter. Edges may also be rounded with glass-paper or with a rasp.

10.4.5 Fibreboards may be specially moulded on the edges by the manufacturers. It will not be possible to cut these mouldings at the site. The edges may be rebated also for fixing purposes, but nailings shall not be done through the rebates.

10.4.6 Open joints may also be covered with strips of various materials. The cover strips shall be nailed or screwed along the centre so that the fixing passes through the open joints.

10.4.6.1 Wood cover strip may be about 45 x 15 mm or less. Wood mouldings will make a neater cover. Mouldings of fibreboard and hardboard are also available for use in this connection. Plain strips cut from standard sheets may also be used for the purpose.

10.4.6.2 Metal cover strips are made of aluminium, chromium-plated brass, etc. Moulded plastic, linen-backed adhesive paper strip, and other types of metal section specially shaped for the purpose may also be used as cover strips. Linen-backed adhesive board is fixed by wetting it and pressing it over the edges of the boards.

11 FIXING OF PLYWOOD, BLOCKBOARD, ETC

11.1 It is advantageous to use plywoods in the form of panels with stiffened edges by rails, stiles or narrow strips of wood, metal, plastic or other materials. The panels shall be sufficiently thick and stiff to be self-supporting from edge to edge. Some-times, plywood may also be nailed as such to the partition under special instructions obtained from the manufacturer.

11.2 The details of fixing plywood, blockboard, etc, as explained in Fig. 4 shall generally by followed.

11.3 The edges of plywood panels shall be protected before fixing with a suitable sealer. Where there is any possibility of dampness, the back of the plywood, and also the supporting wood grounds shall either be treated with an odourless preservative or by giving a priming coat of paint followed by a sealing coat.

11.4 Both vertical panelling as well as horizontal panelling are possible with plywood.

11.5 In horizontal panelling with plywood in large rooms, the work may preferably be done in bays not exceeding 2.7 m in length. In vertical panelling the width of panels may be 0.9 to 1.2 m.

11.6 Joints

The various types of joints for plywood and blockboards are shown in Fig. 5 and 6, respectively, and shall generally be followed. Where it is desired to make a butt joint done in a blockboard, both the edges shall be grooved and a separate tongue glued in. In long lengths, this joint shall be strengthened by dowels.

12 FIXING CHIPBOARDS, PARTICLE BOARDS AND WOOD-WASTE BOARDS

12.1 The fixing shall generally be done in the same manner as for the fibreboards described in **10**.

13 FIXING STONE,MARBLE,GRANITE&TILES

13.1 Tile adhesive come in various types and are simple to use,these adhesive can be applied after mixing with water .Unlike cement mortar,tile adhesive eliminate the need for soaking wall tiles

Now it is also fixed using appropriate fastners such as screw ,bolts or other hardware.The stone cladding panels are mounted on the anchors or brackets ensuring a secure fit and proper alignment.Anchors or brackets are attached to both the stone and the building substrate.Mechanical fixing provides a reliable alternative to adhesive bonding methods in situation where the weight ,size or environmental factors require additional support and stability

Fixing systems accommodate all types of backing walls whether they are concrete walls, block wall,masonary wall or steel structure. .For mechanical fixing detail , fig.9 may be referred

14 FIXING OF ACP PANEL

14.1 ACP riveted to battens attached to subframe battens that is fixed separately to wall.Battens are members used to create aframe to provide structural support.For fixing detail , fig.10 may be referred. On the otherhand ACP sheet is bent at edges and then connected to the supporting members, in that case rivet will not be visible at façade only clear ACP will be seen.ACP shall conform to IS17682:2021.

15 FIXING OF PVC WALL PANEL

15.1 PVC Panel shall be fixed by applying adhesive in back of the pvc panel, before placing it on wall surface.To ensure a professional ,secure installation,pvc cladding boards shall be fixed to cladding battens,which is fixed in wall

~~16~~ FIXING ASBESTOS CEMENT WALLBOARDS

~~13.1~~ 16.1The details of fixing asbestos cement sheets are shown in Fig. 7 and 8, and shall be generally followed.

~~13.2~~ **16.2** In fixing asbestos cement sheets care shall be taken to avoid rigid fixing as this may cause cracking if the supporting structure expands or shrinks. The sheet shall be fixed with wood screws to wooden grounds, and the screw holes shall be drilled slightly larger than the screw. Asbestos sheets may also be advantageously fixed on to walls with a cement plaster backing. Corrugated asbestos sheets may generally be fixed (see Fig. 8) with the same precautions as for flat sheets but a lap for the corrugations shall be given over the joint. Asbestos sheets are also supported through supporting steel/Aluminium members.Supporting member in tern supported by bracket.and finally bracket fixing anchor is inserted inside wall, In this regard detail is shown at fig.11.

~~14~~ 17 FIXING A MULTIPLE LAYER OF COVERINGS

~~14.1~~ **17.1** When the number of coverings to be fixed is more than one, the first covering shall be nailed or otherwise fixed as specified in **9** to ~~13~~,12&16 and further coverings shall be bonded on to the first covering either with suitable adhesive or as specified by the manufacturer.

In case of some coverings, such as fibre boards, the second or subsequent layers may also be nailed, but the nails shall be long enough to penetrate through the first covering into the supporting framework to the required extent.

~~14.2~~ **17.2** For better stability and strength successive layers may be fixed in perpendicular direction (that is, if one is horizontal, the other immediately above or below it may be vertical); or if all the layers are fixed vertically the joints of each layer shall not occur over the joints of the preceding layer (that is, the joints shall be staggered).

14.317.3 When bonding is done with adhesives, temporary supports shall be given to the succeeding layer till the adhesive has set. The temporary supports may be nails driven at about 300 mm centres both horizontally and vertically or wood framing may be applied to the face of the boards. When the adhesive has set, the temporary supporting nails shall be countersunk to a depth equal to the thickness of the face layer of wall board, and any wood framing used shall be removed.

~~15~~ 18INSPECTION

~~15~~8.1 The important aspects for inspection during fixing of wall coverings are the soundness and rigidity of the supporting framework. There shall be no further movement or distortion of this framework so as to affect the coverings. If inspection shows the likelihood of further movements of the background, special resilient devices in fixing wallboards, capable of absorbing shocks and strains due to movements shall be provided.

~~16~~19 MAINTENANCE AND REPAIRS

~~16.1~~ 19.1Gypsum wallboards and asbestos cement boards do not ordinarily require any further finishes to maintain. Plywood and other boards of wood-based material may require protective finishes periodically renewed to prolong their life.

~~16.2~~19.2 Repairs would arise in the coverings due to cracking or distortion (bulging) as a result of movements of the background, or supporting framework. The cause of these defects shall be first ascertained and rectified. The coverings that are affected shall be replaced with new ones and fixed with resilient fixing devices so as to remain free from the effect of the background movements.

ANNEX A
(*Clause 2*)

LIST OF REFERRED INDIAN STANDARDS

IS No.	Title
IS 2 : 1960	Rules for rounding off mumerical values (revised)
IS 303 : ~~1975~~1989	Specification for plywood for general purposes (second revision)
IS 401 : 1982 2001	Code of practice for preservation of timber (third revision)
IS 451 : ~~1972,~~1999	Technical supply conditions for wood screws (second revision)
IS 459 : ~~1970~~ 1992	Specification for unreinforced corrugated and semi-corrugated asbestos cement sheets (second revision)
IS 659 : 1964	Safety code for air-conditioning (revised)
IS 710 ~~: 1976~~ 2010	Specification for marine plywood (first revision)
IS 723 : ~~1972,~~2023	Specification for steel countersunk head wire nails (second revision)
IS 1328 : ~~1982~~ 1996	Specification for vt. veered decorative plywood (second revision)
IS 1658 : ~~1977~~ 2006	Specification for fibre hardboards (second revision)
IS 1946 : 1961	Code of practice for use of fixing devices in walls, ceilings and floors of solid construction
IS 2097 : ~~1983,~~2012	Specification for foam makings branch pipe (first revision)
IS 2098 : ~~1964~~2001	Specification for asbestos cement building boards
IS 3097 : ~~1980~~2006	Specification for veneered particle boards (first revision)
IS 3792 : ~~1978~~2004	Guide for heat insulation of non-industrial buildings (first revision)
IS 7316 : 1974	Decorative plywood using plurality of veneers for decorative faces

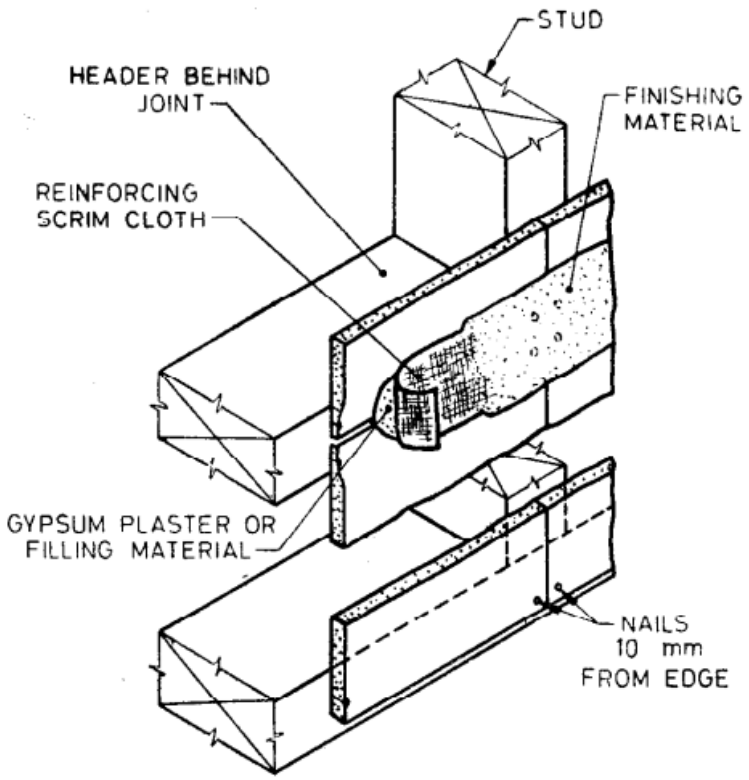


FIG. 1 FIXING GYPSUM BOARDS

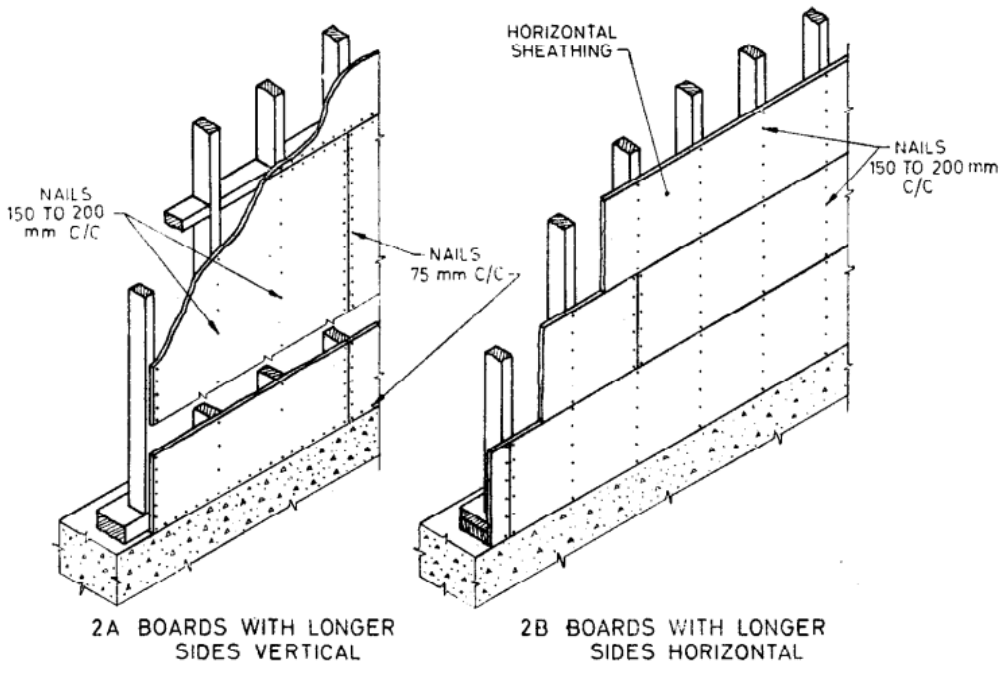


FIG. 2 FIXING FIBREBOARD WALL SHEATHING

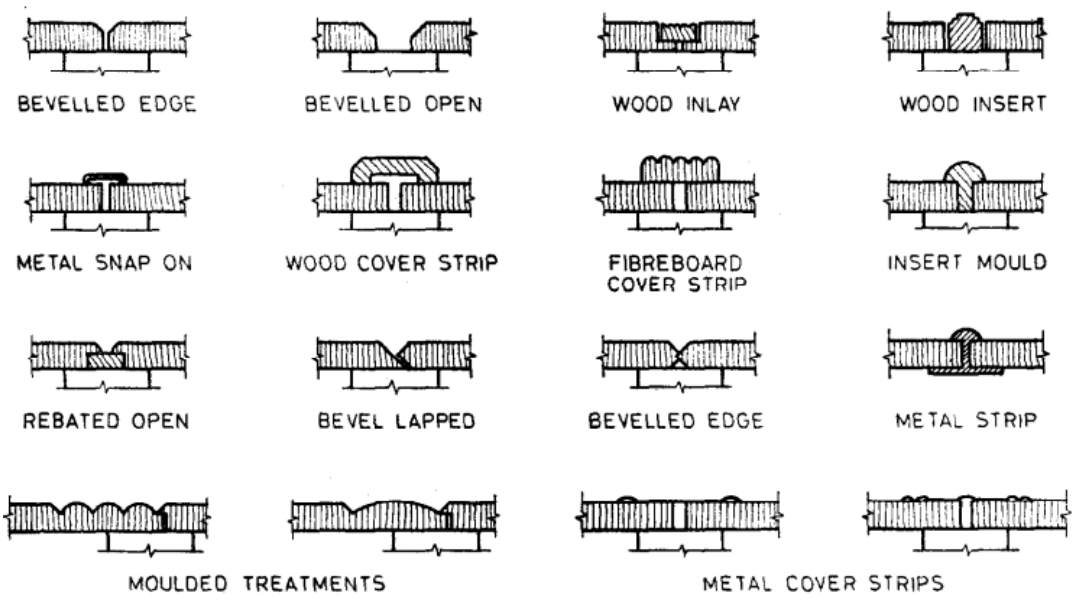


FIG. 3 DETAILS OF FIBREBOARD JOINTS

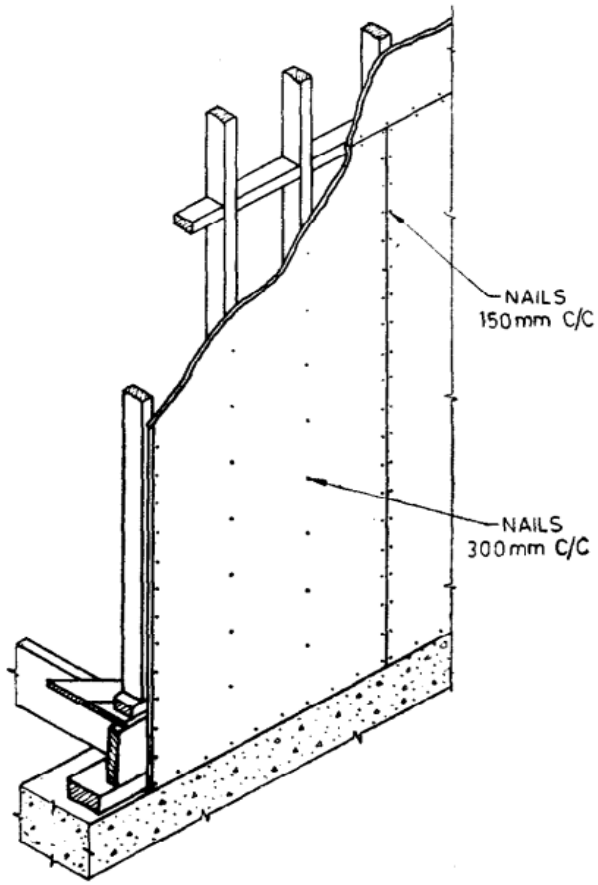
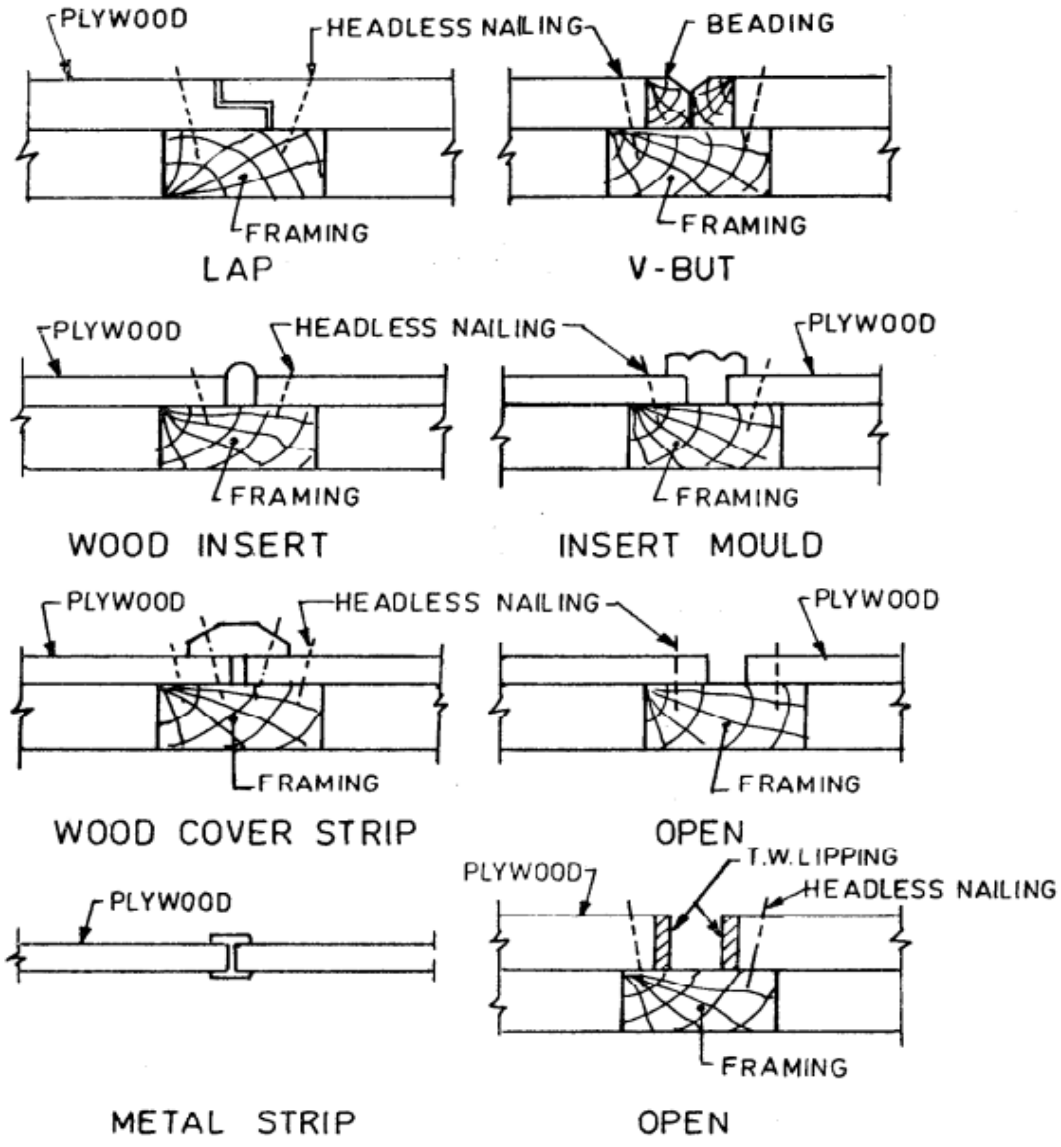


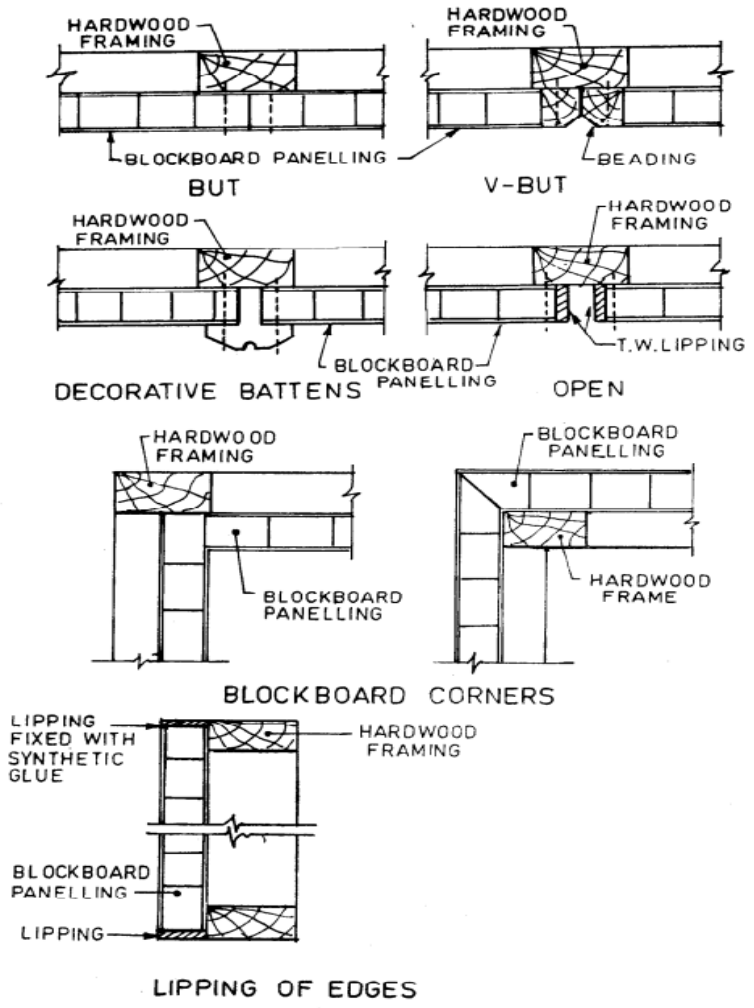
FIG. 4 FIXING PLYWOOD WALL SHEATHING



NOTES :

EDGE SEALING	:	Protect All the EDGES of the Board using a suitable sealant or edge lipping to prevent moisture absorption.
SUGGESTED SEALANT	:	For 6 mm Ply : Epoxy resin, nitrocellulose lacquer.
SUGGESTED LIPPING	:	Veneers – 1.5 mm thick, soild wood strips, P.V.C bands, alastic laminates, aluminium strips.

FIG. 5 DETAILS OF PLYWOOD JOINTS



NOTES :

EDGE SEALING	:	Protect All the EDGES of the Board using a suitable sealant or edge pipping to prevent moisture absorption.
SUGGESTED LIPPING	:	Veneers – 1.5 mm thick, soild wood-strips, P.V.C bands, ylastic laminates, aluminium strips.

FIG. 6 DETAILS OF BLOCK BOARD JOINTS

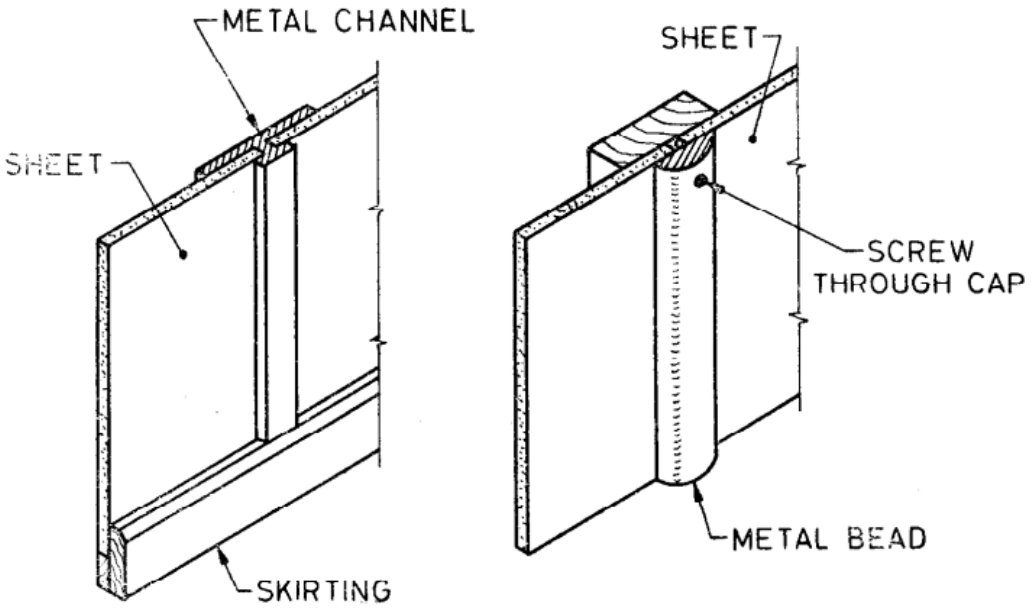


FIG. 7 FIXING FLAT ASBESTO — CEMENT SHEETS

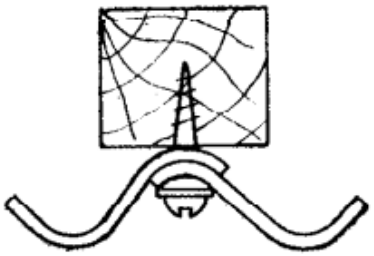


FIG. 8 FIXING CORRUGATED ASBESTOS — CEMENT SHEETS