



6. INSTALLATION




It is essential to identify location of openings, mechanical and electrical (M&E) services, and other fixtures before installation of drywall. The setting out of the framing system, openings and additional supports are critical contributors toward the functionality of the drywall. Sequence of board installation, proper infill and insulation material installation, and treatment material compatibility are also important to achieving quality work. All site work should be carried out in a safe manner to comply with safety regulations.




6.1 Framing Works

Framing works form the structural component of the drywall. It is also critical towards fulfilling its functionality as a wall. Figure 6.1 highlights the sequence of the framing installation process and the recommended good practices to achieve quality work.

Figure 6.1 Drywall Frame Installation Sequence

Work Sequence	Good Practices
<p>1. Mark out the starting line</p> 	<ul style="list-style-type: none">• To ensure starting line and level as per approved shop drawings.• Starting line should be marked on end wall or column, slab soffit and floor slab.• Opening locations should be marked out.
<p>2. Install top track</p> 	<ul style="list-style-type: none">• To ensure evenness of slab soffit before installing the top track.• Tracks should be fastened to structural elements by using anchor bolt or fastener.• Joints in the tracks shall be butt jointed.




Work Sequence	Good Practices
<p>3. Install bottom track</p> 	<ul style="list-style-type: none"> • Floor is to be levelled before installing the bottom track. • Tracks should be fastened to structural elements by using anchor bolt or fastener. • Joints in the tracks shall be butt jointed.
<p>3.1 Bottom track to incorporate M&E concealed services</p> 	<ul style="list-style-type: none"> • To ensure all M&E concealed services are within the track.
<p>4. Install starter stud</p> 	<ul style="list-style-type: none"> • To ensure verticality of the end wall use a spirit level or laser marker. • Gap to be allocated at top track to allow for deflection of top slab. • Place studs in direct contact with doors frame jambs, abutting partitions, partition corners/edges, and existing construction elements. • To check overall verticality of studs.



Work Sequence	Good Practices
<p>5. Install intermediate studs</p> 	<ul style="list-style-type: none"> • Studs to be installed at interval as per approved shop drawings. • Intermediate studs must face same direction to allow for adjustment when fixing plasterboard. • Do not splice vertical metal stud members. • To check overall verticality of studs.
<p>6. Install bracing</p>   <p>Additional hollow section for bracing and load bearing steel stud</p>	<ul style="list-style-type: none"> • Horizontal bracing for all stud partitions to be as per manufacturer's recommendation. • Provide all braced framing of load bearing steel stud framing as detailed in approved shop drawings.

6.2 Opening

The most common openings on drywall are for doors. Such openings are usually reinforced by the introduction of box stud to stiffen the opening. Figure 6.2 illustrates the sequence of opening stiffening and the relevant good practices to achieve quality work.

Figure 6.2 Framing for Openings



Work Sequence	Good Practices
<p>1. Install starter stud</p> 	<ul style="list-style-type: none">Fix all starter studs as per approved drawings.
<p>2. Install metal box studs to secure door frame</p> 	<ul style="list-style-type: none">To secure the door frame, form a metal box stud to fix into back of starter stud. 


Work Sequence	Good Practices
<p>2.1 Install metal bracing above door frame to secure it</p> 	<ul style="list-style-type: none"> • Metal bracing or door head trimmer must be installed for door opening.
<p>3. Alternative stiffener for door</p> 	<ul style="list-style-type: none"> • Rectangular hollow section or timber with the same width as the stud to be placed and properly secured as per approved shop drawing and method statement.

6.3 Additional Supports for M&E Services and Other Fixtures

Additional supports in the drywall frame are required for fixtures such as Fan Coil Unit (FCU) and electrical switches. Spacing of vertical studs and/or bracing to be adjusted accordingly to accommodate the size and weight of fixtures. Figure 6.3 demonstrates some examples of necessary additional supports and the relevant good practices to achieve quality work.

Figure 6.3 Additional Supports for M&E Services and Other Fixtures

Work Sequence	Good Practices
<p>1. Additional support for M&E services</p> 	<ul style="list-style-type: none"> • Identify location and type of M&E services. • Identify penetration for wiring. • Metal bracing must be provided for the M&E services.
<p>1.1 Install additional bracing for M&E services</p> 	<ul style="list-style-type: none"> • Identify location of M&E services. • Ensure proper planning for wiring to enable provision of opening and bracing for services.

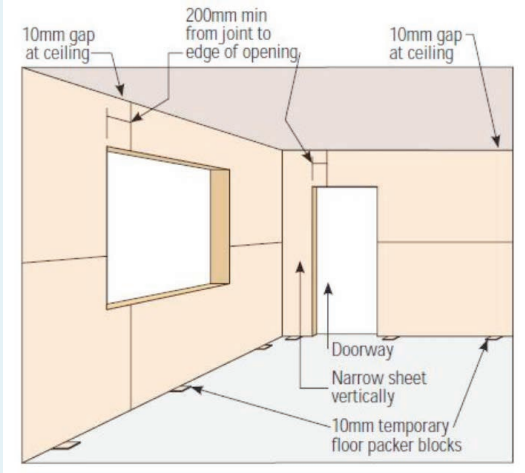
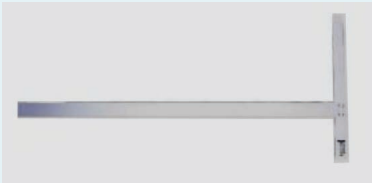

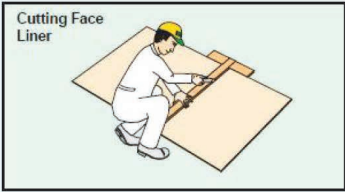
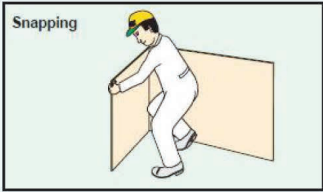
Work Sequence	Good Practices
<p>1.2 Install additional support for FCU</p> 	<ul style="list-style-type: none">• Identify location of FCU.• Ensure support is sufficient to accommodate FCU.• Metal bracing must be done at FCU to withstand the imposed load.

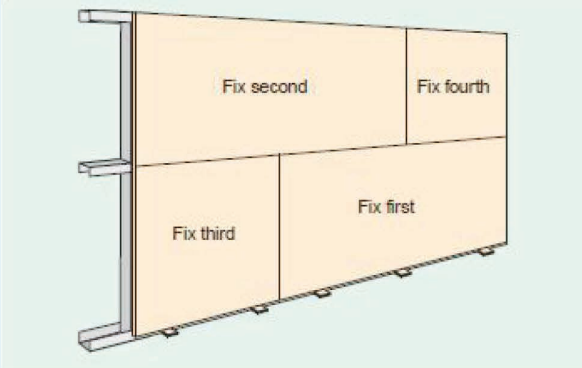
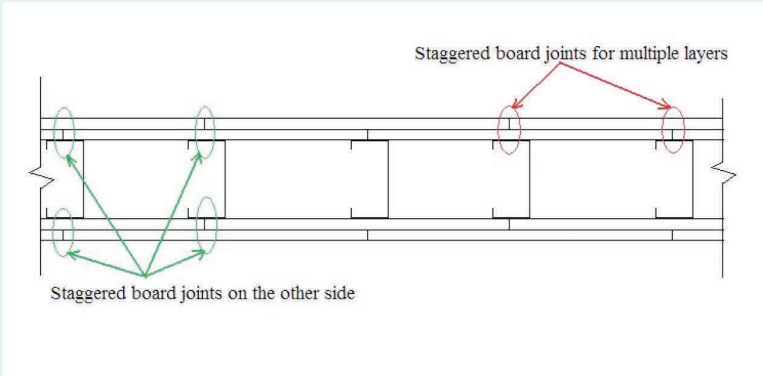
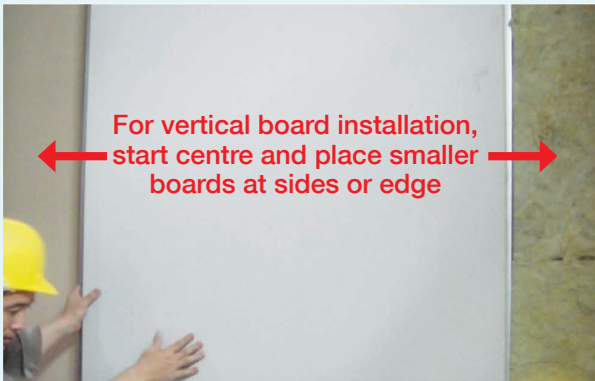
Any other additional fixtures to be mounted on drywall should be identified early and indicated in all shop drawings as well as method statement for approval. Additional supports should be duly designed and endorsed by the professional engineer.


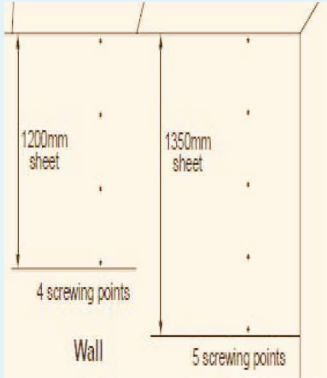
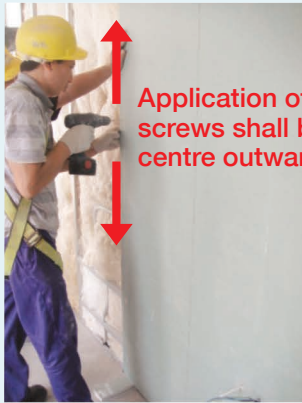

6.4 Board Installation

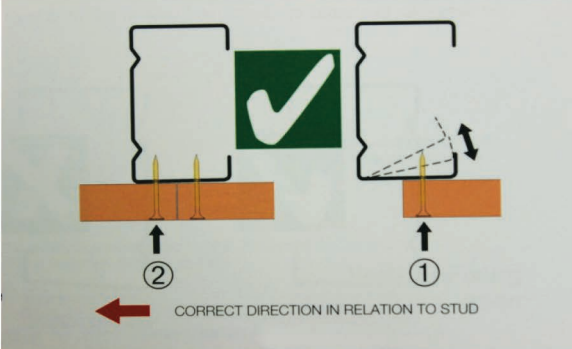
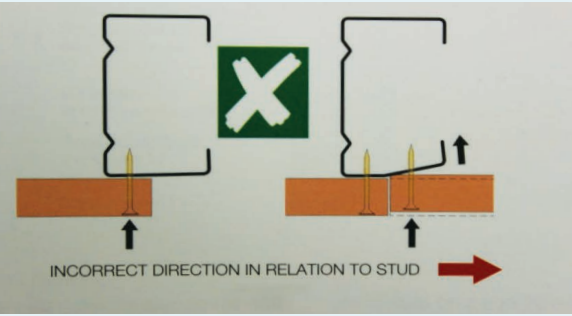
The overall framing installation is heavily dependent on board dimension and type of board layout. Figure 6.4 shows the importance of board dimension affecting framing works and the relevant good practices to achieve quality work.

Figure 6.4 Importance of Board Dimension and Board Layout Affecting Framing Works

Work Sequence	Good Practices
<p>1. Typical board sizes</p> 	<ul style="list-style-type: none"> Identify and calculate area and layout of board to be installed. Frame spacing to be in accordance to board dimension and layout.
<p>1.2 Cutting of Boards</p>    	<ul style="list-style-type: none"> Use proper tools such as T-square and cutting knife to cut boards.

Work Sequence	Good Practices
<p data-bbox="172 320 711 349">2. Sequence of horizontal board installation</p>   	<ul style="list-style-type: none"> • Ensure horizontal board installation sequence as per method statement. • Install panels in such a manner that panel joints do not align with edge of opening. • For multi-layered boards, stagger joints between the layers, as well as on opposite sides of partitions. • Tightly butt tapered end board edge joints. • For vertical board installation, start centre and place smaller boards at sides or edge.



Work Sequence	Good Practices
<p data-bbox="172 320 440 349">2.1 Securing of board</p> <div data-bbox="213 385 509 761">  </div> <div data-bbox="643 385 971 761">  </div>	<ul style="list-style-type: none"> • All butt joint screws are to be staggered. • Plasterboard screws should be spaced <ul style="list-style-type: none"> i. <300mm for butt joints ii. <200mm for angles joints iii. 10 to 16mm from edges and ends of plasterboard sheets
<div data-bbox="445 853 748 1254">  <p data-bbox="580 936 874 1021">Application of drywall screws shall begin from centre outwards.</p> </div> <div data-bbox="301 1301 868 1711">  <p data-bbox="429 1420 743 1478">No fastening of panels to bottom runner/track.</p> </div>	<ul style="list-style-type: none"> • Ensure securing process of the board onto the vertical stud does not cause tilting of flange. Application of drywall screws shall begin from centre outwards. • Install screws from ends and edges of panels, and on centre along abutting end joints; and, on centre within the field of the panel. • Panels shall not fasten directly to the top and bottom runners to allow for top slab deflection movement.

Work Sequence	Good Practices
<p data-bbox="172 320 874 349">3. Sequence of screwing the board onto the vertical stud</p>  	<ul style="list-style-type: none"> • Apply the screws from the leg of top and bottom runners, onto the vertical studs for attachment of the panel. • Proper sequence of board screwing, i.e. correct direction, to the stud to prevent gap between board and stud.

6.5 Infill and Insulation Installation

Proper installation of infill material helps to provide necessary fire resistance and sufficient acoustic insulation. Figure 6.5 shows the proper infill and insulation material installation and the relevant good practices to achieve quality work.



Figure 6.5 Infill and Insulation Material Installation




Work Sequence	Good Practices
<p>1. Typical treatment</p> 	<ul style="list-style-type: none"> Seal all perimeter gap of the wall frame system with relevant material from the approved method statement, material and sample.
<p>2. Placing of infill and insulation material</p> 	<ul style="list-style-type: none"> All infill and insulation material for installation as per approved method statement and material. Ensure all spaces are filled with insulation material. Ensure that all recessed panels, electrical outlets, light switch boxes, etc are encased with fire-barrier seal wrap to seal all gaps and maintain continuity in fire and smoke protection in all fire-rated assemblies.



6.6 Joint Treatment



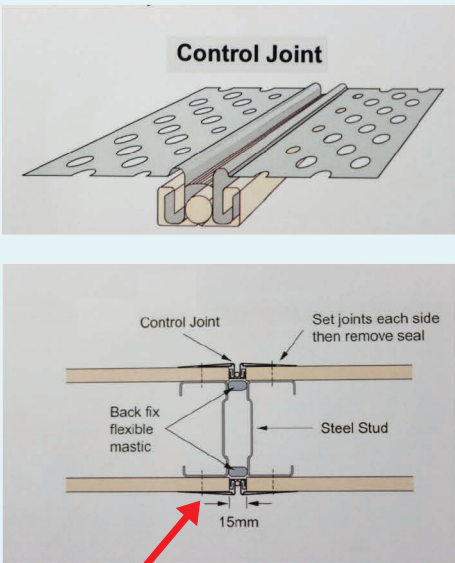
The last procedure of drywall installation is the treatment to various types of joints, edges and corners. Acoustic sealant, corner beads, joint tapes, jointing compound and topping compound are common materials used. Figure 6.6 shows the common types of treatment and the recommended good practices to achieve quality work.


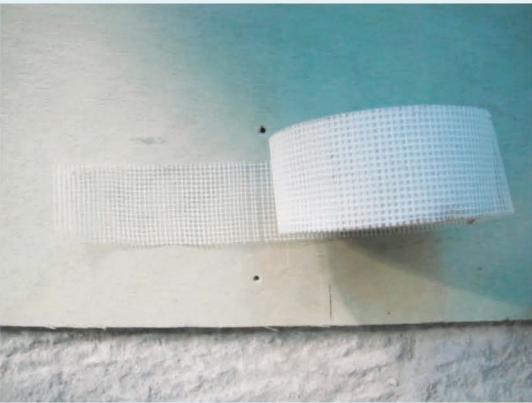

Figure 6.6 Common Types of Joint Treatment

Work Sequence	Good Practices
<p>1. General requirement</p>	<ul style="list-style-type: none">• Proper enclosure of work areas prior to installation will reduce the impact of environmental changes e.g. fluctuations in temperature, humidity, airflow etc.• Good planning prior to hanging panels can eliminate unnecessary joints.
<p>2. Acoustic sealant</p> <div></div>	<ul style="list-style-type: none">• Proper use of acoustic sealant as stated in approved shop drawing, method statement and material.• Use of acoustic sealant to effectively seal perimeters and openings in wall and ceilings to improve sound transmission rating.

Work Sequence	Good Practices
<p>3. External corner bead</p> 	<ul style="list-style-type: none"> • Use of external corner bead enables visually straight joint, better corner alignment and neater finishing. • Functions as a protection against edge damage.
<p>3.1a Fixing of external angle</p> 	<ul style="list-style-type: none"> • Apply a coat of joint compound before placing external angle.
<p>3.1b Fixing of external angle</p> 	<ul style="list-style-type: none"> • Place external angle in position.

Work Sequence	Good Practices
<p>3.1c Fixing of external angle</p> 	<ul style="list-style-type: none">• Ensure verticality of external angle.
<p>3.1d Fixing of external angle</p> 	<ul style="list-style-type: none">• Ensure the final treatment to the external angle by applying three coats of joint compound at stipulated intervals as specified in the approved method statement.

Work Sequence	Good Practices
<p>3.2a Three coats for all joint treatment</p> 	<ul style="list-style-type: none"> • Provide proper treatment to interfacing and butt joints by applying three coats of joint compound at stipulated intervals as specified in the approved method statement. • This is an example of the application of three coats of joint compound for different surface interfacing treatment.
<p>3.2b Three coats for external angle treatment</p> 	<ul style="list-style-type: none"> • Ensure the final treatment to the external angle by applying three coats of joint compound at stipulated intervals as specified in the approved method statement. • This is an example of the application of three coats of joint compound for external angle treatment.
<p>4. Control joint component</p>  <p>Fasten the control joint at maximum 150mm c/c.</p>	<ul style="list-style-type: none"> • Control joint to be provided <ul style="list-style-type: none"> (i) in long continuous walls at 12 m maximum centres; (ii) for panels of different materials. • Fasten the control joint to the plasterboards at a maximum of 150mm centres.

Work Sequence	Good Practices
<p data-bbox="209 327 560 356">5. Jointing tape / Mesh tape</p>  	<ul style="list-style-type: none"> • Proper use of jointing tape as per approved method statement and material submission. • Jointing tape is used for reinforcement of plasterboard recessed joints, internal angles, surface fractures and repairs to internal walls. • Use of internal corner taping tool for internal corner.
<p data-bbox="209 1301 443 1330">6. Joint compound</p> 	<ul style="list-style-type: none"> • Mix proportion to be in accordance to the manufacturer's instruction. • Ensure that compound is used within the stipulated working time as recommended by the supplier, approved method statement and material. • Allow sufficient curing and dry time before sanding and finishing. • Mixing joint compound in clean buckets reduces probability of lumps forming, scratches and harden of material. • Flush and clean compounds from equipment, and brush before the setting action takes place. • Immersion of equipment in water will not prevent hardening of the compound.

6.7 Fixing Items to Drywall

Hanging objects on drywall requires proper fasteners, and knowledge of installation and type of wall material. It is a good practice for the developer to work with the drywall supplier and builder to develop and issue an instruction manual to new homeowners on how to fix items on the drywall.

The correct fixing method depends on the weight of the fixtures and the type of drywall board used.

Wall anchorage

Wall anchorages can be generally classified into 2 main categories, namely:

Light to medium duty anchor (approximately up to 12 kg per point load); and

Heavy duty anchor (approximately 20 kg per point load).

The types and installation methods of some of the common anchors are illustrated in Appendix B.

Light weight fixtures

Light weight fixtures such as pictures frame, small mirrors, light shelves, lamps, tools, sports equipment, etc. can be fixed with simple screw or expandable plastic screw anchor directly on the board wall.

Medium weight fixtures

For medium weight objects such as big mirror, large picture frame or medium size shelve, etc. of up to 12 kg, stronger types of anchorage fitting may be required. It is important the weight of the fixture should not exceed the weight rating of the anchorage. The weight limits of the anchorage can be found on the packaging.

Heavy weight fixtures

For heavy items such as television, wall cabinet and other heavy wall attachments, it is recommended that such fixing be installed by trained skilled personnel. For such heavy fixtures, the anchors are usually fastened onto the studs frame. The number and types of anchors used will be determined by the weight and usage of the fixtures.

It is advisable to refer to the drywall manufacturer's recommendation for the types of anchors to be used for fixing/hanging items onto the drywall.