This manual describes how James Hardie’s 7mm thick corrugated HardiFence® sheets can be installed in two different fence systems. The corrugated fibre cement sheet is available raw or in a pre-painted finish.

The two fence systems that can be created using the HardiFence sheets are:

- **HardiFence EasyLock® system**
  This fence system consists of sheets partially buried into the ground with the top of the sheets finishing off with a metal capping. This system is suited for flat or sloped sites which have sandy type soils.

- **HardiFence PaneLock® system (patent pending)**
  This is a novel post and rail fence system suitable for installing on top of a retaining wall or into the ground where the site is reasonably level. HardiFence sheets have an overlap on one edge, and an underlap (or smaller corrugation) on the other edge to enable seamless interlocking of the sheets together.

For installing HardiFence sheets, James Hardie recommends using an accredited fencing contractor. The contractor specialises in HardiFence system installations and will also provide a 12-month installation warranty. For more information please Ask James Hardie™ on 13 11 03.

The specifier or other responsible party for the project must ensure the information and details in this guide are appropriate for the intended application and that specific design and detailing is undertaken for areas which fall outside the scope of this documentation.

For safety, structural adequacy and warranty reasons, your HardiFence system must always be installed according to the specifications detailed in this manual by James Hardie.

**Make sure your information is up to date**
When specifying or installing James Hardie products, ensure you have the current manual. If you’re not sure you do, or you need more information, visit www.jameshardie.com.au or Ask James Hardie™ on 13 11 03.
HARDIFENCE EASYLOCK SYSTEM FOR IN-GROUND INSTALLATION

The HardiFence EasyLock system is an easy to install and affordable freestanding fence solution. The sheets are designed to be buried into sandy soils, eliminating gaps below the fence on both level and sloped sites. The sheets can either be raw or pre-painted depending on the aesthetic requirements. As the HardiFence sheet profile provides a consistent look on either side, both neighbours have the same aesthetic, minimising potential conflicts.

Additional features of this fence system are:

- The HardiFence EasyLock system comes with an option of either pre-finished EasyLock colour capping or Zincalume®† finish capping, to provide professional finish on the top of the fence and lock the sheets into place.
- As the sheets are buried deep into the ground, this provides a barrier to weeds growing under the fence and dogs digging out under the fence. There is also no need for expensive (or cumbersome) footings.
- In addition, as the finished fence stands 1800mm high with no intermediate posts or horizontal supports required, there are no protruding bolts, sharp edges or nails.

HARDIFENCE PANELOCK FOR RETAINING WALLS

The new HardiFence PaneLock system provides all the traditional fence benefits such as privacy, neighbour friendliness, security, strength and durability. It has been primarily designed for use on retaining walls, but can be installed in ground.

The HardiFence PaneLock system has been designed to have the fence posts nested in the valley of the corrugated sheets on one side. This results in an aesthetically pleasing finish on both sides of the fence as one side has no posts visible and the other side has the posts well hidden. This design feature also minimises the footprint of the fence on the retaining wall and minimises post and fastening projections from the fence.

Additional fence posts or raking down may be required at the freestanding ends, refer to page 6 for the design information.

PRE-PAINTED HARDIFENCE SHEETS

HardiFence sheets are now available in pre-painted colours for both HardiFence systems. This eliminates the need for onsite painting, reducing the time and cost to install the fence fully. The fence panels are factory painted and baked to provide a finish that is harder and more scratch resistant than normal house paint. The paint finish has a 10 year warranty against peeling, blistering and flaking.

† denotes a registered mark from BlueScope Steel

FIGURE 1 HARDIFENCE EASYLOCK SYSTEM OVERVIEW

FIGURE 2 HARDIFENCE PANELOCK SYSTEM OVERVIEW
## 3 PRODUCT INFORMATION

### TABLE 1

<table>
<thead>
<tr>
<th>PRODUCT SHEET SIZES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PRODUCT</strong></td>
</tr>
<tr>
<td>HardiFence sheet</td>
</tr>
</tbody>
</table>

**NOTE:** Only the 1800mm HardiFence sheet may be used with the HardiFence PaneLock system.

### TABLE 2

<table>
<thead>
<tr>
<th>COMPONENTS SUPPLIED BY JAMES HARDIE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>GENERAL</strong></td>
</tr>
<tr>
<td>HardiFence clip</td>
</tr>
<tr>
<td>Fibreshear</td>
</tr>
</tbody>
</table>

**EASYLOCK SYSTEM**

<table>
<thead>
<tr>
<th>HARDIFENCE PROFILE</th>
<th>HARDIFENCE CAPPING</th>
</tr>
</thead>
<tbody>
<tr>
<td>HardiFence capping</td>
<td>Used in the HardiFence EasyLock system as capping for the HardiFence sheet. The capping is available in either pre-painted or raw finish. Selling unit lengths: 3750mm and 1875mm</td>
</tr>
<tr>
<td>HardiBlade® saw blade</td>
<td>185mm Ø poly diamond blade, for fast, clean cutting of James Hardie fibre cement.</td>
</tr>
</tbody>
</table>

**PANELOCK SYSTEM**

<table>
<thead>
<tr>
<th>HARDIFENCE PROFILE</th>
<th>HARDIFENCE CAPPING</th>
</tr>
</thead>
<tbody>
<tr>
<td>PaneLock bottom rail</td>
<td>Used in the HardiFence PaneLock system to support the bottom of the HardiFence sheets. The capping is available in either pre-painted or raw finish. Selling unit lengths: 3000mm</td>
</tr>
<tr>
<td>PaneLock fence post</td>
<td>Used in the PaneLock system to core drill a 80mm diameter hole, 525mm deep into the retaining wall. 50 x 50 x 3.0mm SHS fence post</td>
</tr>
</tbody>
</table>

### TABLE 3

<table>
<thead>
<tr>
<th>COMPONENTS NOT SUPPLIED BY JAMES HARDIE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>GENERAL</strong></td>
</tr>
<tr>
<td>James Hardie recommends the following products for use in conjunction with its HardiFence sheets. James Hardie does not supply these products and does not provide a warranty for their use. Please contact the component manufacturer for information on their warranties and further information on their products.</td>
</tr>
</tbody>
</table>

**ACCESSORIES**

**EASYLOCK SYSTEM**

<table>
<thead>
<tr>
<th>HARDIFENCE PROFILE</th>
<th>HARDIFENCE CAPPING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rubber mallet</td>
<td>Used to tap HardiFence sheets into position.</td>
</tr>
</tbody>
</table>

**PANELOCK SYSTEM**

<table>
<thead>
<tr>
<th>HARDIFENCE PROFILE</th>
<th>HARDIFENCE CAPPING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Post hole digger (optional)</td>
<td>Used to dig fence post holes for the PaneLock system in-ground option.</td>
</tr>
<tr>
<td>Core drill with 80mm diameter bit</td>
<td>Used in the PaneLock system to core drill a 80mm diameter hole, 525mm deep into the retaining wall.</td>
</tr>
<tr>
<td>Metal cutting drop saw</td>
<td>Used to cut fence post if needed and steel accessories.</td>
</tr>
<tr>
<td>Cordless drill</td>
<td>Electric drill with torque adjustment to drill holes and screw. Used in the PaneLock system to pre-drill the HardiFence top capping and HardiFence sheet before fixing fastener.</td>
</tr>
<tr>
<td>5.5mm tungsten drill bit</td>
<td>Used for pre-drilling HardiFence sheet before fastening screws into the PaneLock top rail.</td>
</tr>
<tr>
<td>Hex head screw 45mm long</td>
<td>12-14 x 45mm - metal cutting tip hex head screw Class 3 (min). Used in the PaneLock system to fix the HardiFence sheets and into the fence posts.</td>
</tr>
<tr>
<td>Hex head screw 16mm long</td>
<td>10-16 x 16mm metal-cutting tip hex head screw Class 3 (min).</td>
</tr>
<tr>
<td>Tin snips</td>
<td>May be used to cut metal accessories.</td>
</tr>
</tbody>
</table>

† denotes a registered mark from OneSteel
4 SAFE WORKING PRACTICES

WARNING - DO NOT BREATHE DUST AND CUT ONLY IN WELL VENTILATED AREA
James Hardie products contain sand, a source of respirable crystalline silica which is considered by some international authorities to be a cause of cancer from some occupational sources. Breathing excessive amounts of respirable silica dust can also cause a disabling and potentially fatal lung disease called silicosis, and has been linked with other diseases. Some studies suggest smoking may increase these risks. During installation or handling: (1) work in outdoor areas with ample ventilation; (2) minimise dust when cutting by using either ‘score and snap’ knife, fibre cement shears or, where not feasible, use a HardiBlade® saw blade and dust-reducing circular saw attached to a HEPA vacuum; (3) warn others in the immediate area to avoid breathing dust; (4) wear a properly-fitted, approved dust mask or respirator (e.g. P1 or P2) in accordance with applicable government regulations and manufacturer instructions to further limit respirable silica exposures. During clean-up, use HEPA vacuums or wet cleanup methods - never dry sweep. For further information, refer to our installation instructions and Material Safety Data Sheets available at www.jameshardie.com.au. FAILURE TO ADHERE TO OUR WARNINGS, MATERIAL SAFETY DATA SHEETS, AND INSTALLATION INSTRUCTIONS MAY LEAD TO SERIOUS PERSONAL INJURY OR DEATH.

WORKING INSTRUCTIONS
Refer to recommended safe working practices before starting any cutting or machining of product.

Fibreshear
An electrically powered, fast, clean and effortless way of cutting James Hardie building products, especially around curves such as archways. Make fibreshear cut on the ‘off-cut’ side of the line to allow for the thickness of the shear.

HardiBlade® saw blade
The HardiBlade® saw blade used with a dust-reducing saw and HEPA vacuum extraction allows for fast, clean cutting of James Hardie fibre cement products. A dust-reducing saw uses a dust deflector or a dust collector which can be connected to a vacuum system. When sawing, clamp a straight-edge to the sheet as a guide and run the saw base plate along the straight edge when making the cut.

JAMES HARDIE RECOMMENDED SAFE WORKING PRACTICES

CUTTING OUTDOORS
1. Position cutting station so wind will blow dust away from the user or others in working area.
2. Use one of the following methods based on the required cutting rate:
   - Best
     ▪ Fibreshear
   - Good
     ▪ Dust reducing circular saw equipped with HardiBlade® saw blade and HEPA vacuum extraction.

CUTTING INDOORS
- Cut only using score and snap, hand guillotine or fibreshears (manual, electric or pneumatic).
- Position cutting station in a well-ventilated area.

DRILLING/OTHER MACHINING
When drilling or machining you should always wear a P1 or P2 dust mask and warn others in the immediate area.

IMPORTANT NOTES
1. For maximum protection (lowest respirable dust production), James Hardie recommends always using “Best” - level cutting methods where feasible.
2. NEVER use a power saw indoors.
3. NEVER use a circular saw blade that does not carry the HardiBlade® logo.
4. NEVER dry sweep - Use wet suppression or HEPA vacuum.
5. NEVER use grinders.
6. ALWAYS follow tool manufacturers’ safety recommendations.

P1 or P2 respirators should be used in conjunction with above cutting practices to further reduce dust exposures. Additional exposure information is available at www.jameshardie.com.au to help you determine the most appropriate cutting method for your job requirements. If concern still exists about exposure levels or you do not comply with the above practices, you should always consult a qualified industrial hygienist or contact James Hardie for further information.

STORAGE AND HANDLING
To avoid damage, all James Hardie building products should be stored with edges and corners of the sheets protected from chipping.

James Hardie building products must be installed in a dry state and protected from rain during transport and storage. The product must be laid flat under cover on a smooth level surface clear of the ground to avoid exposure to water, moisture, etc.

QUALITY
James Hardie conducts stringent quality checks to ensure any product manufactured falls within our quality spectrum. It is the responsibility of the builder to ensure the product meets aesthetic requirements before installation. James Hardie will not be responsible for rectifying obvious aesthetic surface variations following installation.
5 DESIGN

WIND LOAD DESIGN
The fences have been designed to comply with the Building Code of Australia (BCA) and Australian Standard AS 1170.2 ‘Wind Actions’. The following points should be noted:

- In accordance with AS 1170.2, the designer may consider what the terrain may be like in five year’s time. This usually means that some significant degree of shielding is likely to occur by then, making the fences suitable for both Terrain Categories TC2.5 and TC3.

- At freestanding ends of the fence, there is a localised increase in design pressure of between 50% and 100% due to wind turbulence. These effects need to be accounted for in the design and installation process.

- With both types of fence, it is important that there are no adverse localised topographical effects that might increase the wind speed, causing the resultant pressure to exceed the pressures for which the fences are designed. For example, the fence should not be exposed on the crest of a hill or be installed on the edge of large, open agricultural areas.

- If in doubt as to the suitability of the fence for your application, or if you need a fence in higher wind conditions outside the scope of this manual, you must consult the James Hardie Technical Supplement on fencing design or else seek professional engineering assistance. For further information, Ask James Hardie™ on 13 11 03

HARDIFENCE EASYLOCK SYSTEM
With its local design wind speed of 36m/s (130km/h) and pressure of 0.93kPa, the in-ground fence system satisfies Region A Terrain Categories TC 2.5 and TC 3 without any requirement for shielding from surrounding structures or obstructions.

All freestanding ends of the fence must be raked down as shown on page 11 of this literature.

HARDIFENCE PANELOCK SYSTEM
Cardno engineers of Gordon NSW have certified that the post-and-rail fence system satisfies Region A Terrain Categories TC 2.5 and TC 3 provided that there will be some moderate degree of shielding from surrounding structures or obstructions within the next five years, namely that it will be in reasonably established suburbia. The local design wind speed is 30m/s (108km/h) equating to a pressure of 0.65kPa.

At freestanding ends the pressure may rise to about double the basic design pressure and hence some additional support is required in the end zones as per the rules below:

Design rules for freestanding end of HardiFence PaneLock system:
1) If the fence is to be situated between two existing houses and all three of the following conditions are met, then the freestanding end may be installed by raking down the final 3m bay as shown in Figure 3:
   a) the top of the fence is below the eaves height of both buildings (regardless of the projection height of the retaining wall);
   b) the gap between the fence and either of the buildings does not exceed 3m (see Figure 4);
   c) the freestanding end of the fence does not project by more than 1m past the end of either building (see Figure 4);

2) Otherwise, for all cases where the retaining wall’s projection height does not project by more than 1500mm above the finished ground on either side of the fence (see Figure 5), posts must be provided for the first 6m from the end such that the spacing from the end is nominally 1m, 1m, 2m and 2m and thereafter back to 3m (see Figure 6). Posts are installed at the sheet overlaps. The top rails are to be trimmed and installed in three lengths of 2m over this area.

For aesthetic purposes the last 1m end bay may be raked down to 900mm.

For convenience, the Panelock system bottom rail has been pre-punched with fence post locators, if needed. This allows fence posts to be fixed at intermediate intervals within a 3m bay.

3) If the retaining wall projection height is more than 1.5m above the ground (see Figure 6), then the fence falls outside the scope of this manual and is subject to special design. For guidance, consult the James Hardie Technical Supplement on fencing design.

For further information, Ask James Hardie™ on 13 11 03.

FIGURE 3 FREESTANDING END CONFIGURATION WHERE FENCE IS BETWEEN TWO CLOSELY SPACED HOUSES
FIGURE 4 REQUIREMENTS FOR FREESTANDING END CONFIGURATION BETWEEN TWO CLOSELY SPACED HOUSES

FIGURE 5 PROJECTION HEIGHT OF RETAINING WALL

FIGURE 6 FREESTANDING END CONFIGURATION - RETAINING WALL PROJECTION HEIGHTS UP TO 1500MM

EMBEDMENT DEPTH OF POSTS FOR HARDIFENCE PANELOCK SYSTEM

The post must be embedded into the retaining wall or different soil types as per Table 4.

TABLE 4

<table>
<thead>
<tr>
<th>FOUNDATION TYPE</th>
<th>FOUNDATION MATERIAL</th>
<th>POST EMBEDMENT LENGTH (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retaining wall</td>
<td>Stone or masonry</td>
<td>525</td>
</tr>
<tr>
<td>Soil</td>
<td>Gravel</td>
<td>700</td>
</tr>
<tr>
<td></td>
<td>Sand</td>
<td>750</td>
</tr>
<tr>
<td></td>
<td>Silty sand</td>
<td>850</td>
</tr>
<tr>
<td></td>
<td>Stiff clay</td>
<td>900</td>
</tr>
<tr>
<td></td>
<td>Soft clay</td>
<td>1050</td>
</tr>
</tbody>
</table>

For top of retaining wall installation, use a 80mm diameter core drill to form the embedment hole.

For in-ground installation, dig a 300mm diameter hole into the soil, position the post and backfill with 20MPa concrete. The end of the embedded steel post must have a minimum 50mm of concrete cover.

To prevent water from ponding around the fence post, taper top of concrete away from post with a 15mm high nominal mound. For in-ground installation, ensure the underside of the PaneLock bottom rail is 50mm clear of the ground.

NOTE

It is the responsibility of the designer to determine the suitability of the retaining wall to support the HardiFence PaneLock system.
6 HARDIFENCE EASYLOCK

PREPARATION
The HardiFence EasyLock system is designed to create a finished fence height of 1.8m. To achieve this, HardiFence sheets of 2.4m in height are embedded 600mm into the ground. The HardiFence sheets must:

- not be finished at a height greater than 1.8 metres above the ground level.
- be capped with HardiFence capping, and rigidly mitred at corners and intersecting fence junctions to prevent sideways movement, see page 15.
- be embedded into the ground as specified in Table 5 below.
- NOT be bolted through the side laps.

Depending on the wind load on the fence it may be necessary to rake down the end of the fence, see the Design section on page 6.

The use of an angle grinder to cut the HardiFence capping is NOT recommended.

NOTE
Brick paving, concrete paths and edges should not be constructed closer than 50mm to the fence.

TABLE 5
<table>
<thead>
<tr>
<th>HARDIFE</th>
<th>SHEET GROUND EMBEDMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOTE: Nominal effective sheet coverage is 1 metre</td>
<td></td>
</tr>
<tr>
<td>SHEET HEIGHT</td>
<td>MAX. FENCE HEIGHT</td>
</tr>
<tr>
<td>1800mm</td>
<td>1400mm</td>
</tr>
<tr>
<td>2400mm</td>
<td>1800mm</td>
</tr>
</tbody>
</table>

TRENCH
- must be backfilled with sand, rounded gravel or sandy loams
- must not be filled with concrete, clay or soil
- must not have more than 150mm difference in soil levels on either side of the fence.

PRE-PAINTED FENCE INSTALLATION
When handling pre-painted panels, care should be taken to minimise sliding of panels across each other. This will minimise any potential scratching of the surface.

During installation remove the inter-sheet protective packaging and peel the protective film from the capping. Please dispose of waste thoughtfully.

James Hardie discourages touch up of painted sheets. Any touched up areas will weather and fade at a different rate to the original factory applied paint, resulting in a patch appearance over a long time period. If absolutely necessary there are suitable colour matched paints available for touch up. Ask James Hardie™ on 13 11 03 for advice.

RETAINING WALLS
- Do not erect freestanding HardiFence sheets flush against a retaining wall. Consider using the HardiFence PaneLock system installed on top of the retaining wall. Refer to the relevant section in this manual for more information.
- Do not use HardiFence sheets as a retaining wall.
STEP 5
Before you start digging, mark the recommended minimum buried depth on the trenching shovel so that you can check the trench depth with your shovel.

NOTE
Check where you intend to dig for underground electricity, telephone, gas or water mains.

STEP 6
Dig a trench the full length of the boundary, using the mark on the shovel as a guide.

STEP 7
Deposit soil evenly on both sides of the trench.

STEP 1
Start installing sheets from a back corner of the block, placing sheets into the trench with the underlap (branded) corrugation in the direction the fence is being erected.

STEP 2
Use a spirit level to ensure that the sheet edge is vertical.

STEP 3
The sheet should be on a line parallel to both top and bottom string lines, and 5mm clear.

STEP 4
Using a softwood timber piece and a rubber mallet, gently tap the sheet down about 30mm into position, just below the top string line, and partially back-fill.

STEP 5
Check again to ensure that the sheet is vertical.

FIGURE 9 MARK BURIED DEPTH ON SHOVEL

FIGURE 10 DIGGING TRENCH FOR HARDIFENCE SHEETS

FIGURE 11 INSTALL SHEETS INTO TRENCH

FIGURE 12 GENTLY TAP THE SHEETS DOWN
STEP 9
Leave the HardiFence clips in position and push the HardiFence capping down firmly on top of the fence sheets.

STEP 10
Join adjacent top rails together by sliding into one another.

STEP 11
Back fill the trench on both sides of the HardiFence sheets.

SLOPING GROUND
The HardiFence EasyLock system can be installed on sloping sites by gradually stepping each successive sheet as shown in Figure 15. Sheets must be installed vertically on sloping ground. If the variation in sheet height exceeds 40mm, cut off the protruding sections to an even line parallel with the average fall of the ground. This can be done with a dustless circular saw fitted with a HardiBlade® saw blade, see Figure 16. HardiFence capping can then be fitted on top.
FINISHING
The final step is to secure the ends of the HardiFence sheets to protect them against sideways movement. There are four methods as shown below. In Figure 18, the designer must determine the suitability of the abutting wall to carry the imposed wind load by the fence. Raking down of the freestanding end as in Figure 19 may be avoided in Terrain Category 3 situations by installing an end post or stake.

Construct a Tee junction from HardiFence capping and fix with pop rivets or tek screws.

Cut the top edge of the last two metres of fence at an angle to a maximum height of one metre at the end. If a rake down over one metre is required then an end post support must be used.

Where the HardiFence sheets butt up against a wall, you must secure it by fixing 50mm x 50mm x 400mm treated timber blocks to the wall on both sides of the sheet.
7 HARDIFENCE PANELOCK SYSTEM

PREPARATION
Before installing the PaneLock HardiFence system, refer to the Design section in this manual.

The PaneLock HardiFence system must be no greater than 1825mm high, measured from the top of the retaining wall on which it is installed, or 1850mm from the natural ground, if there is no retaining wall underneath.

The HardiFence PaneLock system must NOT be used within 1km of a marine or corrosive environment. Care must also be taken when installing the fence system near a swimming pool. Pool water splashed onto the steel components may cause damage over time.

The use of an angle grinder to cut the top and bottom metal rails is not recommended as it can damage the protective coating on the cut edges. Use a metal cutting drop saw or metal cutting tin snips.

Before installing the HardiFence PaneLock system refer to the Design section of this manual.

Do not use HardiFence sheets as a retaining wall.

PRE-PAINTED FENCE INSTALLATION
When handling pre-painted panels care should be taken to minimise sliding of panels across each other. This will minimise any potential scratching of the surface.

It is important that the protective film on the pre-painted capping is removed immediately after installation.

James Hardie discourage touch up of painted sheets. Any touched up areas will weather and fade at a different rate to the original factory applied paint resulting in a patch appearance over a long time period.

If absolutely necessary there are suitable colour matched paints available for touch up. Ask James Hardie™ on 13 11 03 for advice.

The HardiFence PaneLock system installation steps are shown in Figures 20 – 30.
FIGURE 22 BOTTOM RAIL MALE AND FEMALE ENDS

STEP 4
Fold post support flap
up to form post hole.

STEP 5
Insert bottom rail ends
together. Ensure male
flap is under female end.

STEP 6
Fold male post support flap
up through fence post hole.

FIGURE 24 MARK FENCE POST POSITIONS

STEP 7
Mark fence post
position with pen
marker at fence
post holes.

STEP 8
Move bottom rails
out of the way to
allow for core drilling.

FIGURE 23 INSERT BOTTOM RAIL ENDS TOGETHER

FIGURE 25 CORE DRILL FENCE POST HOLES

STEP 9
Core drill a 80mm
diameter hole to a
nominal depth of
550mm into
retaining wall.
STEP 10
Fill core drilled hole with concrete slurry. Concrete strength to be min. 20 MPa.

NOTE: Fence post end must be 1825mm high above the retaining wall.

STEP 11 Fix fence posts through bottom rail post hole and into concrete filled hole.

STEP 12 Plumb fence post.

STEP 13 Taper top of concrete away from post with a 15mm high nominal mound.

STEP 14 Allow concrete to cure as per the concrete manufacturer’s specifications.

STEP 15 To minimise bottom rail from sagging, insert a packer under the bottom rail in the middle. Packer is to be of a suitable durable material.

STEP 16 Fasten hex head screw (10-16x16mm) though post flaps.

NOTE: Depth gauge markings can be marked onto the fence post. This will tell the installer how far to push the fence post into the hole.

NOTE: Lateral support may be provided to fence posts if needed.

STEP 26 Fill core drilled hole with concrete

STEP 28 Fix bottom rails to fence posts
FINISHING

The HardiFence PaneLock system is completed by finishing the top of the sheets with the HardiFence capping as shown in Figures 30.

NOTE

Remove protective film on HardiFence sheets and on pre-finished top and bottom rails after installation.

FIGURE 29 INSERT HARDIFENCE SHEETS INTO BOTTOM RAIL

FIGURE 30 FIX TOP RAIL OVER HARDIFENCE SHEETS

STEP 17
Insert HardiFence sheets into bottom rail beginning at fence post and working across.

STEP 18
Clip HardiFence sheet to fence post with HardiFence clips.

STEP 19
Clip lapping HardiFence sheets together. Where sheets rest on fence post ensure HardiFence clips over fence post. At every fence post location, ensure the fence post is positioned directly in the middle of the sheet over and under laps. If not, the sheets may become out of alignment.

NOTE

When installing the sheet infills, ensure the sheet underlaps and overlaps are fitted neatly over each fence post. This can be achieved by slightly shifting the location of previously installed sheets. If care is not taken, neat fitting together of subsequent sheets in the next bay will be compromised.

STEP 20
Insert the top rail over the top edge of the HardiFence sheets. Join adjacent top rails by sliding into one another.

STEP 21
Fasten hex head screw (12 - 14 x 45mm) through top rail and fence post.

STEP 22
Fasten hex head screw (12 - 14 x 45mm) through top rail, HardiFence sheet and into fence post. Pre-drill top rail and sheet with 5.5mm drill before fixing screw.
L JUNCTION
The 90° junction of two adjacent HardiFence PaneLock bottom rails should be fixed together as follows.

FIGURE 31 STEP 1 - LAYOUT

FIGURE 32 STEP 2 - PREPARATION

FIGURE 33 STEP 3 - FOLDING

FIGURE 34 STEP 4 - JOINING

FIGURE 35 STEP 5 - FINISHED
TEE JUNCTION
The Tee intersection of HardiFence PaneLock bottom rails at 90° should be fixed together as follows.

**FIGURE 36 STEP 1 - LAYOUT**

**FIGURE 37 STEP 2 - PREPARATION**

**FIGURE 38 STEP 3 - FOLDING**

**FIGURE 39 STEP 4 - JOINING**

**FIGURE 40 STEP 5 - FINISHED**
STEP DOWN CONNECTION DETAIL

If the retaining wall has a step down of less than 600mm, the following may be used to detail the HardiFence sheets around the retaining wall step.

**FIGURE 41 STEP 1 - CUT / FOLD / JOIN**

Cut two slots parallel to bottom rail sides the length of the bottom rail overhang. Fold flap down.

Cut section out of bottom rail.

Cut and fold to create a 90° upstand.

**Max. Height 600mm**

**FIGURE 42 STEP 2 - FIX INTO PLACE**

Fix vertical bottom rail to retaining wall rise with two chemset bolts. Fasteners must have appropriate level of durability required for the intended project, especially in corrosive environments, refer to fastener manufacturer on suitability.

25mm
MAINTENANCE

General
Ensure that the fence is not retaining any soil. A regular wash down of the fence is required to resist staining and ensure that the long-term durability of the steel componentry and fence sheet is not compromised.

Brick paving, concrete paths and edges should not be constructed closer than 50mm to the fence. Harmful chemicals, garden or lawn cuttings must never make contact with both the HardiFence EasyLock and PaneLock systems.

With the HardiFence PaneLock system check that the bottom rail of the fence is 25mm above the top of the retaining wall. If installed in-ground, the gap between the PaneLock bottom rail must be 50mm. Ensure that the drainage holes in the bottom rail are not blocked. Both top and bottom rails can be painted on site, refer to a paint manufacturer for suitability. The paint applied to the HardiFence sheets must be maintained according to the paint manufacturer’s specifications.

Pre-painted HardiFence
The home owner must wash the fence surface periodically, or as necessary to avoid the build up and resist staining of dirt, salt or any other unwanted foreign matter. The fence surface should be washed with a mild detergent using a soft rag or sponge and then rinsed well with clear fresh water. Under no circumstances are abrasives or harsh detergents to be used during the washing process.

PRODUCT INFORMATION
HardiFence sheets are a cellulose fibre reinforced cement building product. The basic composition is Portland cement, ground sand, cellulose fibre and water. The underlap is branded with manufacturing details, which should not be visible when the completed fence is correctly installed. For Material Safety Data Sheets (MSDS) visit www.jameshardie.com.au or Ask James Hardie™ on 13 11 03.

PRODUCT MASS
Based on equilibrium moisture content the approximate mass of HardiFence sheet is 13.5kg/m².

RESISTANCE TO MOISTURE / ROTTING
HardiFence sheets have demonstrated resistance to permanent moisture induced deterioration (rotting) by passing the following tests in accordance with AS/NZS 2908.2:

- Water permeability (Clause 8.2.2)
- Warm water (Clause 8.2.4)
- Heat rain (Clause 6.5)
- Soak dry (Clause 8.2.5)

RESISTANCE TO FIRE
HardiFence sheets have the following early fire hazard indices (tested to AS 1530 Part 3):

<table>
<thead>
<tr>
<th>EARLY FIRE HAZARD INDICES</th>
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<tbody>
<tr>
<td>Ignition index</td>
</tr>
<tr>
<td>Flame</td>
</tr>
<tr>
<td>Heat evolved index</td>
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<tr>
<td>Smoke developed index</td>
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RESISTANCE TO TERMITES
Based on testing completed by CSIRO Division of Forest Products Report Numbers FP349 and FP274 James Hardie fibre cement has demonstrated resistance to termite attack.

James Hardie Australia Pty Limited ("James Hardie") warrants, subject to compliance with the conditions below, for a period of: (a)10 years from the date of purchase that the substrate fibre cement board of the HardiFence® sheet (the “Product”), will be free from defects due to defective factory workmanship or materials and, will be resistant to cracking, rotting, fire and damage from termites attacks to the extent set out in James Hardie’s relevant published literature current at the time of installation; (b)12 months from the date of purchase that the accessories supplied by James Hardie will be free from defects due to defective factory workmanship or materials; and (c)10 years from the date of purchase that the coating applied to the Product (the "Coating") will not peel, blister or chip as determined by applying the following test methods: Blistering: ASTM D 714-87 (reapproved 2000), Standard Test method for Evaluating Degree of Blistering of Paints. Peeling: James Hardie test method PL T-3 Test Method for Measuring Adhesion by Tape. Chipping: ASTM D772 -86 (reapproved 2000) Standard Test Method for Evaluating Degree of Flaking (Scaling) of Exterior Paint.

CONDITIONS OF WARRANTY
The warranty is strictly subject to the following conditions:

a) James Hardie will not be liable for breach of warranty unless the claimant provides proof of purchase and makes a written claim either within 30 days after the defect would have become reasonably apparent or, if the defect was reasonably apparent prior to installation, then the claim must be made prior to installation;

b) this warranty is not transferable;

c) the Product must be installed and maintained strictly in accordance with the relevant James Hardie literature current at the time of installation and must be installed in conjunction with the components or products specified in the literature. Further, all other products, including coating and jointing systems, applied to or used in conjunction with the Product must be applied or installed and maintained strictly in accordance with the relevant manufacturer's instructions and good trade practice;

d) the project must be designed and constructed in strict compliance with all relevant provisions of the current BCA, regulations and standards;

e) the claimant’s sole remedy for breach of warranty is (at James Hardie’s option) to have the affected product or pay for the cost of the replacement or rectification of the affected product;

f) James Hardie will not be liable for any losses or damages (whether direct or indirect) including property damage or personal injury, consequential loss, economic loss or loss of profits, arising in contract or negligence or howsoever arising. Without limiting the foregoing James Hardie will not be liable for any claims, damages or defects arising from or in any way attributable to poor workmanship, poor design or detailing, settlement or structural movement and/or movement of materials to which the Product is attached, incorrect design of the structure, acts of God including but not limited to earthquakes, cyclones, floods or other severe weather conditions or unusual climatic conditions, efflorescence or performance of paint/coatings applied to the Product, normal wear and tear, growth of mould, mildew, fungus, bacteria, or any organism on any Product surface or Product (whether on the exposed or unexposed surfaces);

g) all warranties, conditions, liabilities and obligations other than those specified in this warranty are excluded to the fullest extent allowed by law;

h) if meeting a claim under this warranty involves re-coating of Products, there may be slight colour differences between the original and replacement Products due to the effects of weathering and variations in materials over time.

DISCLAIMER
The recommendations in James Hardie’s literature are based on good building practice, but are not an exhaustive statement of all relevant information and are subject to conditions (c), (d), (f) and (g) above. Further, as the successful performance of the relevant system depends on numerous factors outside the control of James Hardie (eg quality of workmanship and design) James Hardie shall not be liable for the recommendations in that literature and the performance of the relevant system, including its suitability for any purpose or ability to satisfy the relevant provisions of the Building Code of Australia ("BCA"), regulations and standards.