FLOORING SYSTEMS

Forbo Installation Guidance Note:

Marmoleum jute, decibel (cork backed) or acoustic (polyolefin foam backed) sheet

General Advice

The appearance, performance and durability of the installed floorcovering will be determined to a large extent by the quality of the prepared subfloor and the conditions in which they are laid.

The installation of Marmoleum jute back and acoustic decibel with polyolefin foam back sheet should be carried out in accordance with the national standard and best practice for the installation of resilient floor coverings. Areas to receive flooring should be clean, free from other trades, fully enclosed and weather tight. Subfloors need to be clean, smooth, sound and permanently dry in accordance with NZ 1884-2013 and FloorNZ best practice Guidelines-Resilent 2019.

Adhesive recommendations and application

When installing Marmoleum jute backed sheet (standard and Marmoleum Acoustic), Inzide recommends using either 414 Euroflex Lino Plus (using a V2, 2.4mm x 2.4mm 'V' notch trowel) or UZIN KE2000S, Ardex 2365 or equivalent.

Important note: When installing Marmoleum Decibel with **polyolefin** acoustic foam back the adhesive must be **polyolefin compatible.**

Marmoleum Ohmex must be adhered using a conductive low emission adhesive. (See separate guidance note for priming and earthing requirements).

Note: Trowels will wear during use, check the trowel both before and during use to ensure that the proper, specified trowel notch is used and maintained.

Note: the adhesive must be spread evenly over the entire floor area with particular attention to edges – this will ensure that the sheet is fully bonded at the perimeters

Install one length of sheet at a time, making sure to place the material into wet adhesive and roll afterwards with a 68 kg roller, rolling in all directions to ensure a firm bond. It is important to only spread sufficient adhesive that can be covered within the open time of the adhesive.

Areas that cannot be rolled with the large roller e.g. abutments such as door frames or skirting boards should be rolled with a hand roller or pressed into the adhesive with a rubbing hammer.

Always clean away excess adhesive with a damp cloth before it is allowed to dry.

The open time of the adhesive will depend on site conditions and porosity of the base. It is best practice to conduct an adhesive bond test before starting the installation. Bond testing will assist in identifying both the working characteristics of the adhesive (waiting and working time) for the site conditions, and also any potential bonding problems.

Always conduct moisture and alkaline tests on all subfloors and substrates as required in according to the recommendations of NZ 1884-2013. All on grade and below grade concrete subfloors/substrates must have an effective moisture barrier.

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Definitions as per "1884-2021"

Areas to receive flooring shall be adequately lit to allow for proper inspection of the substrate, installation and for final inspection.

It is essential that the laying area is at a steady temperature of minimum 18°C, 48 hours before, during and 48 hours after installation. The material and adhesive should be conditioned in the same environment for at least 48 hours prior to the installation.

Ensure that all recommendations for substrate and job site conditions are met prior to beginning the installation. Beginning the installation is an implied acceptance of site conditions by the parties involved and liability for any failure directly related to inadequate site conditions becomes the responsibility of the installer and/or flooring contractor.

Take the Marmoleum® rolls off the pallets.

Prior to installation rolls are to be checked to ensure that the correct colour, batch number and quantity have been received and that the material is in good condition. No claim will be accepted for incorrect colour, pattern or obvious damage if the material has been fitted.

Use material from the same batch/dye lot and install in roll number sequence. The use of different production batches will always result in visible shade differences. The batch number is clearly marked on the material packaging and must be checked before commencement of installation.

Marmoleum sheets are to be laid in the same direction for seaming.

Note: As with all newly installed floor coverings Marmoleum should be protected from heavy traffic, particularly high point load wheeled traffic, for 72 hours and must not be washed for 48 hours after installation.

Underfloor heating

Marmoleum sheet can be used in conjunction with under-floor heating systems. It is imperative that the underfloor heating systems have been commissioned and found to be functioning correctly prior to the floor finish being installed.

Ensure that the underfloor heating system is switched off 48 hours prior to the floor covering installation commencing and remains off for at least 48 hours after the installation is complete.

During this period, an alternative heating source should be provided, if required, to ensure that the area of installation is kept at a constant temperature of 18°C – 27°C.

When bringing the underfloor heating system back into service, gradually increase the temperature over several days by only a few degrees per day until the desired room temperature is reached.

For further guidance on installation over underfloor heating systems see Forbo Installation Guidance note: Installation over Underfloor heating,

Installation

Forbo recommends that Marmoleum® sheet flooring be installed one sheet at a time. Always install all Marmoleum® sheets in the same direction. It is recommended that each sheet be scribed to fit and that the factory edge be properly removed before adhering (see below). Seams should always be under-scribed after the material has been placed into the adhesive and rolled. Following these recommendations will give the installer the best opportunity to manage the open and working time of the adhesive and ensure that the flooring material is placed into wet adhesive.

Cut the sheet material to the required lengths and then back roll each cut length before scribing to the long wall and length ends in order to release any roll tension from the winding of the sheet linoleum. Once the sheet has been back rolled stand the cut lengths upright in this state for approximately 15 minutes before unrolling for fitting.

Note: Whether seams are to be welded or not, they should be cut to leave a netfit (closed) seam. However, when cutting seams in linoleum sheet, allowance must be made for a fractional expansion in the width of the Hessian backed material as it picks up moisture from the adhesive. This expansion is minute and will be halted by the curing of the linoleum adhesive, but unless allowed for in cutting, tightly cut seams will peak and fail (this is not a product defect).

Fitting the first sheet

Once scribed to the walls cut a true edge along the factory edge of the sheet, a Forbo 'strip and seam cutter' is designed to carry out this operation in one cut (Fig.1). Alternatively, the factory edge can be trimmed using a straight edge and utility knives with straight and hooked blades. Place the straight edge approximately 2cm in from the factory edge and score the Marmoleum using a utility knife and a straight blade.

After scoring the material cut through the sheet using a utility knife and a hooked blade holding the knife at an angle to give a slight undercut along the seam (Fig. 2). After trimming the factory edge trace the line of the seam edge onto the subfloor with a pencil, this will serve as a guide line for spreading the adhesive.

Fig.1

Fig. 2

Pull the sheet back to approximately half of its length and spread the adhesive ensuring that the adhesive is spread right up to all perimeter edges and the marked pencil line Fig.3. Feed the sheet back into the adhesive and roll immediately first across the width of the sheet and then along the length to ensure that complete wet adhesive transfer is achieved. Again pay particular attention to the perimeters Fig.4.
A seam roller or rubbing hammer can be used to ensure the sheet is pressed into the adhesive around harder to reach areas such as door frames and overhangs from furniture of fittings.

Fig.3

Fig. 4

Pull the other half of the sheet back and repeat the above process.

As with bight marks (see below), to ensure the end of the linoleum sheet beds well into the adhesive, fold the end of the sheet back diagonally and feed the decibel foam backing down into the adhesive with a 'bouncing action as in the illustration below (Fig.5).

Do not make this so severe as to risk cracking the linoleum. This will ease the tension across the end of the length and the linoleum will have good contact with the adhesive. Roll thoroughly.

Fig. 5

Fitting the second (and subsequent) sheet/s
Unroll the next sheet and lay it on the floor overlapping the trimmed edge of the first fitted sheet by approximately 2cm. Trim the factory edge on the opposite side of this sheet as above and mark this edge of the sheet on the subfloor with a pencil. Scribe the ends of the sheet. Pull the sheet back halfway and adhere and roll the sheet as above.

Net fit seams
A correctly cut seam with a slight undercut will close during the curing of the adhesive and will not open up during the life of the linoleum. Nett fit seams are often considered to be aesthetically better than welded seams, so if the installer possesses the skills to achieve a good seam and if the application allows, welding of Marmoleum is not obligatory.

For further information on net fit seams visit: www.forbo-flooring.com.au/netfitseam or watch our net fit installation video: https://www.youtube.com/watch?v=vehbGLdmG7c.

This is particularly relevant in the case of plain colour Linoleums. Forbo recommends that plain coloured Linoleum such as the **Marmoleum Solid** collection, are fitted with nett fit seams unless the application determines that welded seams are required.

Cutting the seam
Immediately after rolling the sheet trace the seam with recess scribers (Fig.6) along the trimmed edge of the first sheet and cut through with a utility knife and hooked blade, again with a slight undercut. The Forbo Trimmer (Fig.7) or Wolff Linocut can be used to cut the seam in one operation.

Fig.6

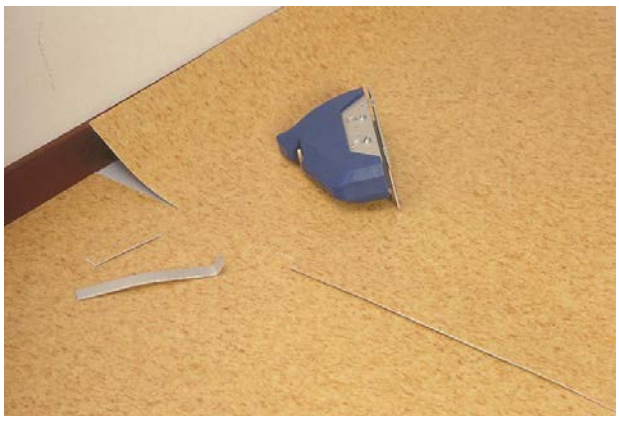
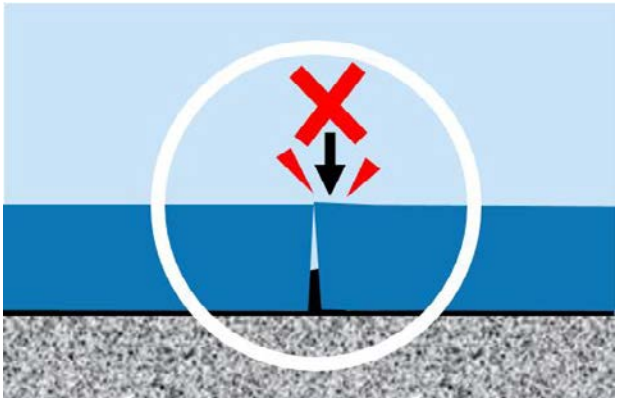
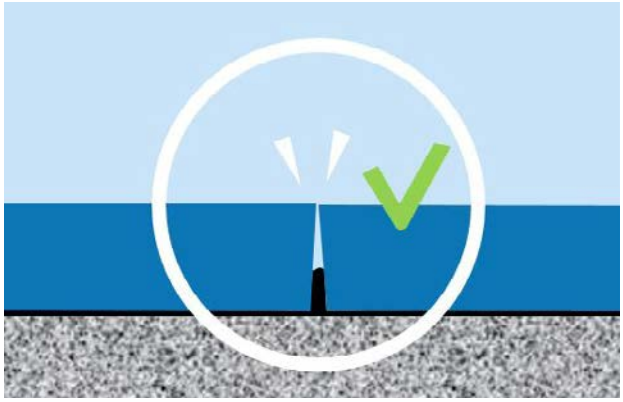


Fig.7

Once the seam is cut, the cut edge should just fall into place alongside the edge of the first sheet (if the sheet needs to be pushed against the previously stuck sheet the seam is too tight and will peak.





Roll the seam with a seam roller to ensure full contact with the adhesive. Remove any excess adhesive with a damp cloth.

Repeat the process for the second half of the sheet length.

Note: *it is important to cut and roll the seam whilst the adhesive is still wet (to avoid peaking seams). Remove any adhesive residues at the seam straight away with a damp cloth.*

Tip: If the guide on your recess scribers is too thick (fig. a) it could remove adhesive from the subfloor when scribing the seam. Sanding the bottom of the guide on the recess scriber to reduce its thickness (fig. b) will prevent this and will also help to keep the guide clean and free of adhesive contamination.

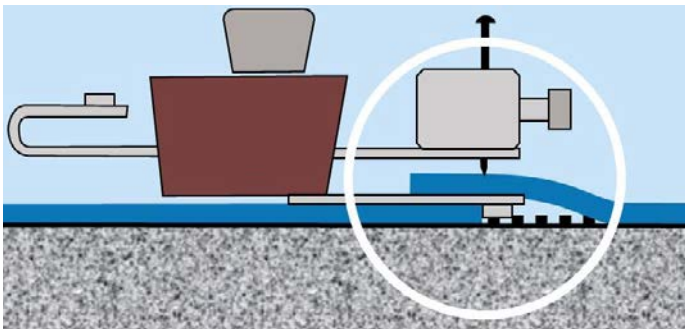
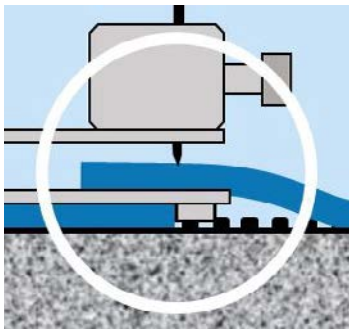


fig. a



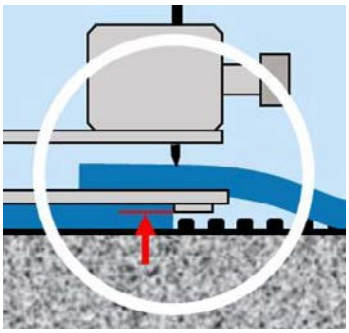


fig. b

Tip: check the quality of the seam on completion. If there are any **small, isolated,** gaps in the length of the finished seam these may be filled using the following technique:

1. *Clean the area of the repair paying attention to the removal of any loose linoleum fragments or dust.*
2. *Make up a paste by mixing fine shavings, ground or sanded to make a fine dust, from a piece of the original colour linoleum with a waterproof PVA adhesive.*
3. *Fill the area to be repaired with the paste using an appropriate tool such as a spatula, leaving the filler flush with the surface of the Marmoleum. Remove any excess with a damp cloth.*
4. *Smooth the finished repair with a spatula and allow to dry.*
5. *When the filler is completely dry, buff the surface to an even finish, applying a thin coat of diluted floor maintainer if required*

Tip: If applying floor maintainer use a small brush or similar to the filler only, thereby avoiding gloss variations in the flooring adjacent to the filler.

Note: *The procedures and actions described above are suggested to assist in resolution of minor installation related problems. They do not form part of any official Forbo Flooring installation recommendation, and Forbo cannot take responsibility for the long-term effectiveness of any such repairs, or warrant the repaired areas.*

As with any repair, the quality and effectiveness of the work, which includes visual acceptability, will depend on the skill of the operator. The final acceptance of any repair is at the sole discretion of the client/end user.

Welded Seams

General advice

Welding and trimming techniques for linoleum are the same as those used for vinyl products; however, the composition of linoleum weld cable requires a different welding temperature and speed. Problems encountered with welding are usually due to either welding at the wrong temperature and/or speed of application, or use of incorrect trimming techniques.

Seam forming and grooving

Seams for welding should be formed in the same manner as above. A net fit seam is still required.

Seams should be grooved out to just above the hessian backing for 2.5mm Marmoleum (Fig.10) and 2.5mm deep for 3.2mm thick linoleum. A 'P' Type groover (Fig.11) is recommended for manual grooving of seams, however, automatic or power groovers (Fig.12) may be more productive on larger installations. Fig 13 shows the Forbo Groover which uses a hot air to soften the surface of the sheet and built in grooving blades to cut the groove in one operation. If a grooving tool such as an electric grooving machine is being used a **small, consistent,** gap (<0.5mm) may be left to accommodate the guide wheels of the grooving machine.

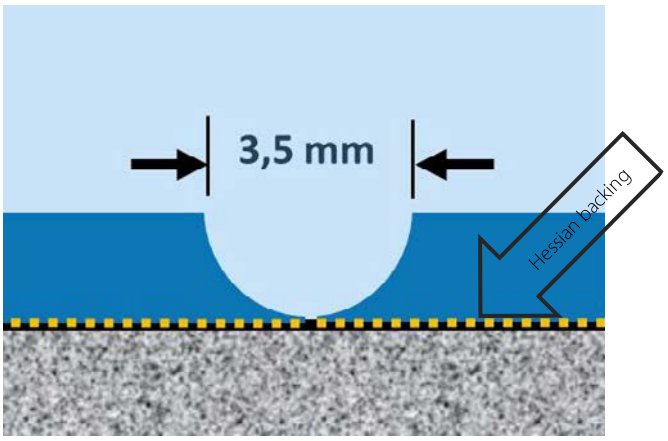
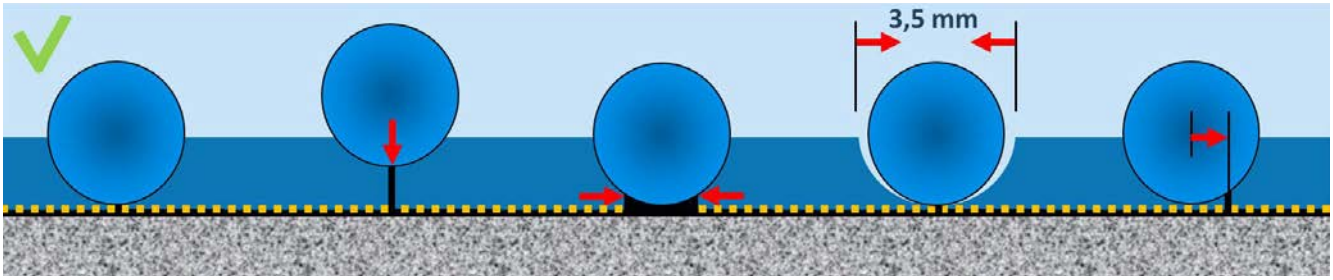


Fig.10

Fig.11

Fig. 12

Fig. 13 – Forbo groover



Proper depth groove centered	**Grove too shallow**	**Seam gapped too wide**	**Seam grooved too wide**	**Groove not centred**
Optimum strength weld	May "blow out" Weak weld	Hard to weld Weak weld	Hard to weld Weak weld	Weak weld

Welding

Switch on the hot air gun and allow 5 to 7 minutes for it to reach the selected temperature. Linoleum should be welded at a temperature of approximately 350ºC. (see weld gun manual for setting details). Fit the welding nozzle before switching on the hot air gun.

If the gun is resting on the floor ensure that the nozzle is not directed at the floor or anywhere dangerous.

Weld guns will vary, so it is always advisable to practice weld techniques first on a piece of waste material to match the correct air gun temperature with welding speed. Marmoleum should be welded with a 5mm Speed-weld nozzle.

Make sure the groove is thoroughly clean before beginning to heat weld. Make sure that all electrical cables are laid out without tangles and that there are no obstructions along the seam to be welded.

Cut the welding cable to a consistent and generous length or unwind sufficient weld rod from the reel and put the reel in a position where you are working towards it. Have the power cable ahead of you if possible.

Start at a wall. Thread the cable through and weld moving backwards, away from the wall, maintaining a slight downward pressure so that the weld nozzle will force the weld cable into the groove. Do not let the cable melt in the nozzle.

A good weld is obtained by the correct combination of temperature, speed and downward pressure. The weld cable should be allowed to melt enough so that the melted rod reaches the bottom of the groove. The top of the welding rod should flatten slightly and a small bead should form on either side of the welding tip (Fig. 10 and 14). After the first 30cm check the weld adhesion is good by gently pressing the cable in the welded section from side to side.

If the speed/heat/pressure combination is incorrect the weld will either come out or the cable will have melted over the sides of the groove, possibly with charred material either side of the groove. Fig 15 below is an example of a weld application that is too hot.

Fig.14

Fig.15

Trimming

While the cable is still warm trim off most of the top half of the cable down to approximately 0.5mm using a sharp spatula and slide or Mozart knife which fits over the cable. Shown in Fig. 16. This Enables the cable to cool more quickly and enables a quick first cut to be made without risk of gouging the material.

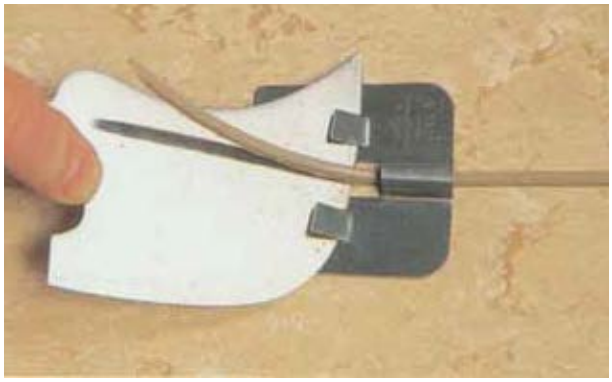


Fig. 16

The welding cable will dish slightly (concave downwards) as it cools. Wait until the material is completely cool before trimming flush with the surface of the sheet with a sharp spatula angled slightly across the line of cut or Mozart knife. Alternatively, trim flush with a flat profile 'X-acto' router blade. This blade is slightly concave, so blunt the corners to avoid scratches on either side of the weld. If trimming pulls out the weld this shows it is unsuccessfully adhered and the seam should be re-done with fresh welding cable.

Spatula

Slide plate

Motzart knife

Note: Making the final trim while the welding rod and material is still warm can result in the weld cable being pulled out of the groove and/or dishing of the weld cable. This may result in subsequent seam soiling problems or cause permanent damage to the surface of the flooring.

When Marmoleum and Linoleum products are installed adjacent to a vinyl flooring product, Marmoweld welding rod must be used to heat weld the seam if heat welding is specified. A vinyl welding rod will NOT bond to Marmoleum and Linoleum products, but Marmoweld will achieve an adhesive bond to most vinyl flooring products.

Joining up a weld

To join a weld in the middle of a seam trim off the loose ends and chamfer down the section to be overlapped with a hand groover. Ensure hot air gets into the groove and heats the cable. As the gun travels over the un- welded section apply pressure and carry the weld on over the section to be joined. Allow to cool and trim as normal (Fig.17).

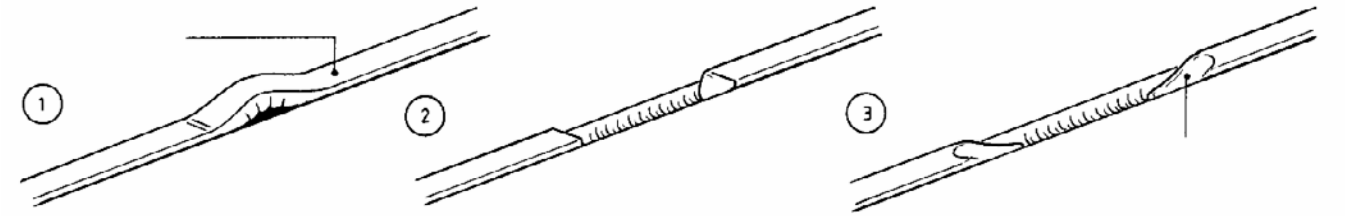


Fig.17

Bight marks in Linoleum

During the manufacture of linoleum, it is hung in large stoves in continuous festoons up to 16 metres high to mature. At the top, the linoleum passes over a pole, face inwards, and at the bottom forms a loop, or bight, face outwards. During the 2-3 week curing process the weight of the material causes the linoleum to mould a little to the pole causing a mark across the width (a pole mark) which is always cut out at the factory.

The fold or bight at the bottom is however more gentle, though sometimes detectable as a slight ridge across the sheet, about 15cm wide (known as a bight mark).

With modern flexible linoleum formulations, this can usually be stuck down in 2.5mm or 2.0mm linoleum using normal adhesive spreading techniques provided the site is warm and the bight mark area is well rolled, firstly across the sheet and then along it.

With 3.2mm material or if site conditions are unfavourable it may be necessary to adapt the installation technique. Some floor layers prefer instead to cut bight marks out (especially when using 3.2mm thick material).

When site conditions are good, bight marks should present no problems using Forbo Eurocol 414, 614 and 540 polyolefin compatible adhesives correctly spread with the specified serrated trowel – a little extra attention is all that is required.

Pull back the sheet approximately half its length and spread the adhesive. As the sheet is fed into the wet adhesive and the bight mark is reached lean gently on the bight mark to reduce the radius and rock in and out of the adhesive looking to make sure that complete wet transfer of adhesive is achieved on the hessian backing over the whole width of the bight mark. Once the remainder of linoleum still to be fed into adhesive clears the area of the bight mark roll immediately with a 68 kg roller as above, dealing with any bubbles or trapped air before moving on. Repeat the rolling of the bight mark at 15 minute intervals until fully bonded to subfloor.

An alternative method is to mark the subfloor where the bight mark falls (Fig.18), pull back the sheet and spread the adhesive on the subfloor stopping just short of the start of the bight mark. Feed the linoleum into the wet adhesive up to this point and roll in both directions as above. Next spread the adhesive over the area of subfloor to be covered by the bight mark (Fig.19). Lean gently on the bight mark to reduce the radius and rock in and out of the adhesive looking to make sure complete wet transfer of adhesive is achieved on jute

or polyolefin backing over the whole width of the bight mark. Roll the bight mark first across the width of the sheet and then lengthways. Spread the adhesive to the remaining area of the subfloor and roll the sheet as above, starting by re-rolling the area of the bight mark.

Fig.18

Fig.19

Perimeter sealing

If the purpose of specifying welded seams is to prevent the risk of moisture getting under the floorcovering then logically the specification must ensure that perimeters are also sealed, together with any areas where pipes, etc. come up through the floorcovering. This is usually done with a silicone sealer but in special areas, such as prisons, a hard-setting epoxy may be used.

On completion of the installation

First impressions may have more impact on the client than hours of skilled fitting.

The completed installation should be cleared of scrap material and debris, the floor swept or vacuumed and any traces of adhesive residues removed from the floor and skirtings.

If the floor covering is to be protected from other trades or site traffic prior to project completion, a protection product should be chosen that is appropriate for the type and level of traffic likely to be experienced and the potential for impact, scratching or indentation damage.

In many cases it is customary for the initial floor preparation to be left, or subcontracted, to a professional cleaning and maintenance contractor who will have the staff and equipment to do the job thoroughly. If the optimum performance of any new floor covering is to be achieved, it is important that the correct cleaning and maintenance procedures are used from day one.

Cleaning and maintenance guides for all Forbo Flooring linoleum products are available for download at:
www.forbo-flooring.com.au/marmoleum or www.inzide.co.nz/downloads

Cleaning and maintenance guides should be passed onto the main contractor, client or end user as appropriate on completion of the installation, and before any hand over clean is started.

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