BEST PRACTICE GUIDELINES FOR THE NEW ZEALAND FLOORING INDUSTRY

CARPET FLOOR COVERINGS PLANNING AND INSTALLATION

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First edition compiled in 2019 by Floor NZ, the flooring association for the flooring industry

ACKNOWLEDGEMENT

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EXPLANATORY NOTE

The Best Practice Guidelines for Carpet Floor Coverings Planning and Installing set out industry recognised methods for planning and installation that supports retail, supplier, installers and apprentice training.

The purpose is to make available flooring information for everyday flooring practices that are collectively supported by the flooring industry via the Floor NZ website. Where further information is needed a link with further direction is included.

The information provided are guidelines for best practice and do not replace or are a substitute for Industry standards, Government or local Legislative Acts, Codes or Manufacturer recommendations.

INDUSTRY STANDARDS

Floor NZ recommend flooring companies have a copy for their own reference of:

AS/NZS 2455.1:1:2007 Textile floorcoverings – Installation practice Part 1: General

AS/NZS 2455.1:1:2007 Textile floorcoverings – Installation practice Part 2 Carpet tiles

Industry standards are held by and are available online through Standards NZ.

Standards New Zealand is a business unit within Ministry of Business, Innovation & Employment (MBIE) Consumer Protection and Standards branch.

https://shop.standards.govt.nz/

INFORMATION

The writer has made every effort to ensure the information contained in this edition is reliable.

While the information covers situations in general, it is not possible for Floor NZ to guarantee the information will cover or provide solutions for every situation due to variable or unforeseen events that can occur during planning, installation or after care following installation.

Floor NZ may update the contents of this guideline at any time without notice.

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1

PLANNING FOR A CARPET INSTALLATION

IN THIS SECTION

1.1 SITE CONDITIONS

Having a system or checklist at the early planning or measuring stage will help to gather and process site information accurately so everything that is needed is pre organised before the installation takes place.

Experienced installers can provide valuable input when developing a system for pre checking site conditions.

Planning for an installation or carrying out an installation involves pre checking three key areas at a work site.

1. Site conditions.
2. The condition of the floor/walls.
3. Site measurements.

Pre checking a site is about having a good look at what is happening about the site that could affect:

- The choice of floor covering.
- Safety during the job.
- Time allowed completing the job.
- The quality of the installation.

Understanding the carpet type is also important in terms of selling:

- the correct carpet for the area;
- organising the installation; and
- the necessary installation techniques associated for the carpet type.

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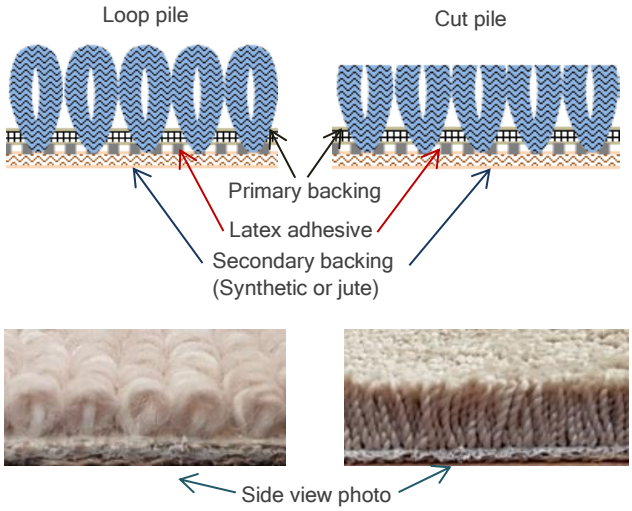
1.2 COMMON CARPET TYPES

Tufted carpet– the most common type used in both residential and commercial type areas.

- **Construction method**–carpet yarn sewn (tufted) into a fabricated backing (primary).

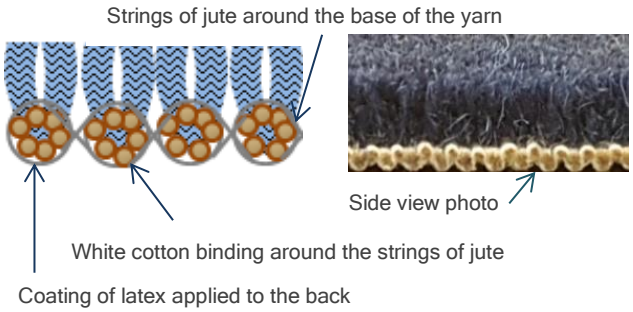
  Adhesive is then applied to the backing to lock in the tufts. A second fabricated backing (secondary backing) is then adhered to the primary backing to stabilise the carpet.



Woven carpet (Axminster)–used in high end residential and commercial type areas.

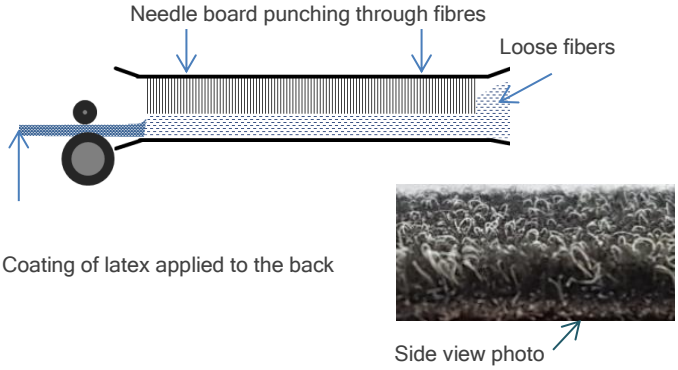
- **Construction method**– carpet yarn woven together with strings of jute and cotton.

  A coating of latex is applied to the backing to stabilise the backing.



Needle punch carpet–used as garage carpet and commercial/institution type areas.

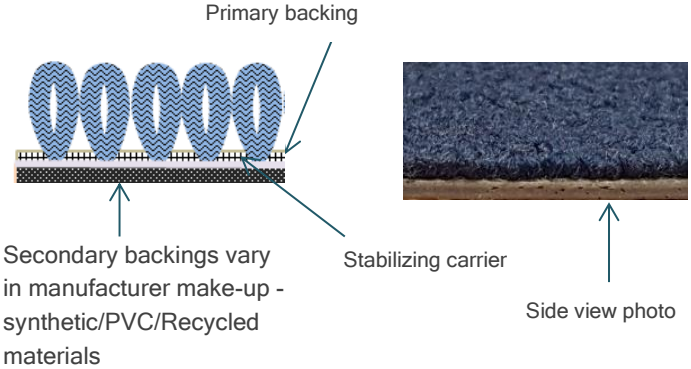
- **Construction method**–a needle board compressing fibres into a carpet.



Carpet tile–used in commercial/institution type areas.

- **Construction method**–carpet yarn sewn (tufted) into a fabricated backing (primary).

  A firm second fabricated backing is then adhered to the primary backing to stabilise and add strength to the carpet. The carpet is cut into a tile form.



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1.3 ACCESS TO THE FLOORING SITE

Flooring materials and equipment can be heavy or awkward to move around when unloading from vehicles or getting gear to the flooring site.

Examples to identify and plan for.

- A clear pathway is needed to avoid injury or damage to materials and equipment. Diggers/machinery operating on site and open drains, trenches are situations that are dangerous.
- Scaffolding used by other trades that may be in the way.
- The stairs are in place to move gear safely to different levels.
- Houses built on hills with steep drives and steps.
- Parking for vehicles.

1.4 HEAVY OR AWKWARD MANUAL LIFTING

The type and amount of materials and equipment to get to the work area.

Examples to identify and plan for.

- Materials and equipment for any surface preparation–grinding/sanding equipment, bags of resurfacing compounds, adhesive where needed.
- Installation equipment, power stretcher, heavy roller where needed, tool box.
- The length sizes, weight and amount of carpet and underlay.

1.5 THE WORK AREA

Needs to be clear and safe for flooring work.

Examples to identify and plan for.

- The flooring space should be clear of other people or workers about at the time of an installation.
- Areas are cleared out and cleaned up at the time of installation. In an existing building, planning where to start with the client is needed so they are able to arrange the furniture to be removed or shifted around during the installation.
- Often doors will need to be removed as part of the installation process. Trimming or adjusting door heights may need to be part of the discussion with the customer along with paint touch-ups.
- The customer's children and pets are kept away from the flooring work area.
- Arrangements made for smoke alarms that may be easily activated with any heat or dust created from the flooring work.
- The flooring work should be planned so it does not clash with other trades affecting the work area such as dust, flammable/toxic fumes, wet paint or noise.

To help mitigate paint damage, new paint needs sufficient time to set. As part of the installation process the carpet backing will brush against the skirting board and door architrave as it is trimmed and tucked in.

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1.6 FINISHING TO THE EDGES AND DOORWAYS

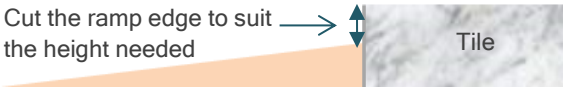
The condition at the edges of a room.

Examples to identify and plan for.

- The skirting edge should be square at the floor junction.
- If the existing floor covering is to be removed and is thicker than the new covering, the skirting may need to be painted or replaced.
- Floor window sills/doorframes are finished to the floor so the carpet can be cut and fitted neatly to it. See the photo below.

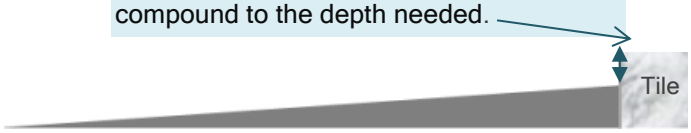
The spacers used under the frame will need to be cut back.

- A gap between the concrete and door-sill needs to be level and at a height that the carpet gripper/finishing bar finishes neatly and is able to hold the carpet tension. The carpet edge should also be well secured and in some situations the carpet edges sealed so it will not fray with future vacuuming.
- To prevent tripping, a preformed ramp edge can be fitted where carpet finishes to a higher timber or flooring tile floor. This work is identified at the pricing and planning stage and quoted accordingly.



- Alternatively, to reduce the gradient, a cementitious ramp can be formed to spread the gradient out over a longer distance.

Create a jig that slides across the top of the tile to consistently smooth the compound to the depth needed.



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1.7 NATURAL LIGHT AND TEMPERATURE

Possible cause of problems at the time of the installation and also after the installation.

Examples to identify and plan for.

- A high amount of window light may influence the decision on material/quality/colour, seam placement/direction or floor covering type to be used.

  For example, the seam placement will need to be planned away from areas that are exposed to intense heat. If the carpet's appearance retention or the seams are not able to withstand the environment then ceramic tiles or a laminate floor covering may be a more suitable option.

- Identifying if there is underfloor heating; including the type of heating system. The heating should be off during the installation.

- The installer should be informed of underfloor heating conditions so they are prepared before arriving to site on how they are going to fix the carpet gripper and bars.

- Appropriate room temperature at the time of installation–in cooler temperatures the adhesive in the backing makes the carpet stiff and awkward to handle. As a consequence the appropriate/even tensioning needed may be difficult to achieve; which will also slow down the installation time.

- If the appropriate tension is not achieved when the carpet is first installed, the carpet is prone to soften and lose tension.

1.8 MOISTURE ISSUES

Be on the lookout for any signs of moisture that could affect the installation at the time or the future.

Examples to identify and plan for.

- Damp odours, mould on the carpet or floor surface, swelling skirting boards or discouloration of the substrate.

  Bringing moisture related problems to the client's attention allows the time for these problems to be fixed before the installer arrives to the site.

Mould on carpet.

Water damage to the carpet gripper and the floor.

Swollen skirting.

Mould growing on the back of the carpet.

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1.9 THE CONDITION OF THE FLOORING SURFACE

When organising a carpet installation, or preparing a surface for an installation, the five key areas below can be used to work through and identify what is needed to appropriately prepare the flooring surface.

1) Clean	The floor surface needs to be clean of dust and grit. Where carpet is to be adhesive-fixed in a commercial setting or garage, all surface contaminants–any paint/spray, oil residue will need to be mechanically removed. Any paint residue will need to be mechanically removed at the edges where carpet gripper is to be adhesive-fixed to a concrete floor.
Reason	Adhesive-fixing to a contaminated flooring surface will affect the bond. Carpet gripper adhesive-fixed at the edges on paint residue will not hold the tension when the carpet is stretched and hooked on to it.
2) Sound	The floor needs to be firm in that it will not crumble, move (springiness), crack or break up.
Reason	A surface that is not firm may result in the carpet lifting where it has been adhesive-fixed, floor boards squeaking or creaking.
3) Flat (Plane)	The floor surface needs to be flat/or level.
Reason	Uneven surfaces can cause issues with furniture, tables and chairs particularly in an adhesive fixed or a carpet tile installation where tile step out can also occur. The flatness can be measured with a metal straightedge. The tolerance for how flat or plane a surface should be is governed by the tolerance specified by the floor covering manufacturer. The general rule in New Zealand for sheet carpet where no tolerance is given is the U3 finish provided which is no gap greater that 5mm beneath a three metre straightedge and the surface.
4) Smooth	The floor surface must be smooth with no lumps/bumps or sharp lipping when you run your hand across it.
Reason	Anything beneath a carpet such as lumps of paint/plaster from decorating trades can be felt as a lump when walking across the floor. Carpet tile edges will not sit flat.
5) Dry	Apart from being no visible signs of any surface moisture, the floor substrate must be dry enough to install carpet on.
Reason	Carpet gripper pins can rust causing carpet staining and mould growth in the backing. Moisture can affect the adhesive bond resulting in the floor covering failing. New concrete that has not had sufficient time to dry can also have high pH levels that can affect the adhesive. This may cause adhesive break down and odour problems several months later. Measurement–with concrete floors the acceptable level is 75% RH or less when measured with a hygrometer using either the drill and plug or surface mount method. With timber floors the acceptable level is 16% MC or less when measured with a pin (resistance) test.

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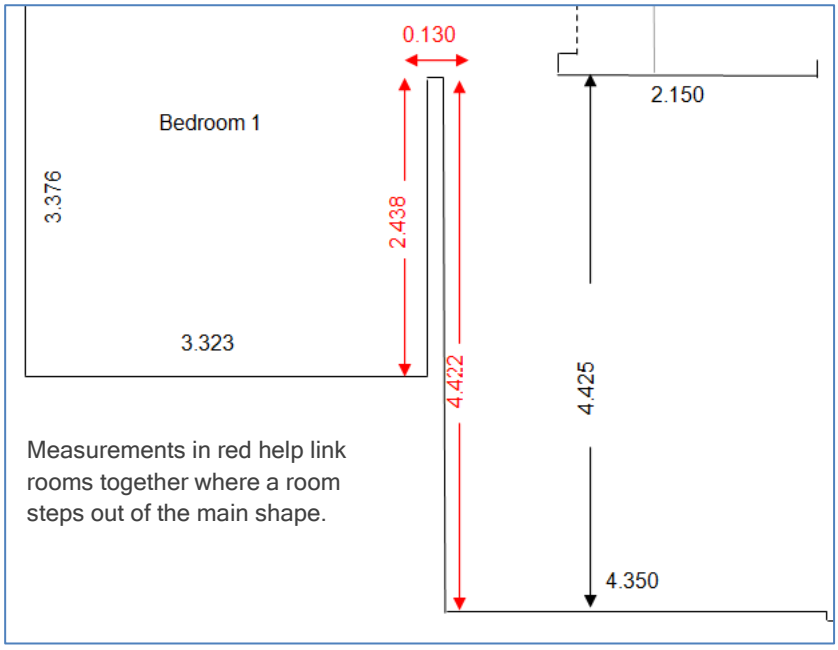
1.10 SITE MEASUREMENTS

Accuracy when confirming measurements or taking measurements to produce a scale plan is a critical part of the process.

Lack of attention or accuracy in this area can result in losing the job with over quoting or losing money with under quantifying.

As well as overall measurements of areas, incremental measurements along walls and door openings are also important to allow accuracy in quantifying floorcoverings, transition bars, plus coving when required.

Measurements that run along walls into adjacent rooms are also important to accurately link rooms together, particularly with digital software where rooms are formed in blocks then merged together.



VERIFYING A PLAN'S MEASUREMENTS

Before ordering materials, measurements should be checked on site to verify the plan's accuracy.

Before starting an installation, the plan's measurements should be verified before cutting any material. This includes verifying any cutting plans that are configured manually or digitally.

With installations that require multiple rolls, the cutting sequence should be checked before cutting into any material.

Plans received digitally or by fax need verification that the scale is correct.

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2

LEGISLATION

IN THIS SECTION

2.1 THE HEALTH AND SAFETY AT WORKPLACE ACT 2015

All flooring businesses (including contractors) are required by law to have, and put into practice their own health and safety manual of procedures.

- The person conducting a business or undertaking (PCBU) is often the flooring business who first measures and prices the job. The person representing the flooring business has a responsibility to assess and gather information around safety for the purposes of planning a possible installation.
- If the job goes ahead, any concerns around safety that can be sorted before the job begins should be communicated with the client and taken care of before the job begins.
- For building areas a Site-Specific Safety Plan may be needed. The SSSP is an agreement between businesses working on a specific site that determines how health and safety will be managed.
- Before the job is started, the flooring contractor (also a PCBU) or the flooring company's waged workers (not a PCBU) also have responsibilities to stay safe.

2.2 ARRIVING TO A FLOORING WORKSITE

- Report to the client/site foreman if onsite.
- Assess the worksite and be satisfied it is safe before starting any work.
- Complete a site assessment form (hard copy or electronic) to document that the assessment has been completed and anything that needs attending to has been taken care of. **Digital apps available** can make this process very easy.
  https://clockit.co.nz
- Communicate with other tradespeople onsite about anything that may not be safe.

2.3 RISK ASSESSING OVERVIEW

Two key changes in the Act that affects the flooring industry are around chemicals and dust; also monitoring workers' health. As an overview, the following procedure is a guiding framework to manage work risks.

Plan	Identify and assess anything that is dangerous.
Do	Use the following control system to eliminate or minimise the risk.
Check	Monitor the control process, any forms, paper work completed to support the processes, keep a regular check that everything is going okay, including monitoring workers' health.
Act	Review for continuous improvement.

Adapted from the WorkSafe Model of Risk Assessing Overview

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2.4 GENERAL RISK ASSESSING PROCEDURE

Adapted from the WorkSafe Model of Assessment Procedure

'If it is not possible to eliminate a risk then you must work down the process of minimising the risks'

	1. Eliminate	Completely removing from the work place, something that could be dangerous e.g. remove rubbish from a work area.
	2. Minimize	If eliminating is not possible then work down the minimize controls.
Most Effective	Substitute	Substitutions of products e.g. change from a flammable/high toxic product to water-base/less toxic product.
	Isolate	Isolate the worksite e.g. barrier off, prevent people from coming into contact with a hazard; switch off pilot lights where necessary.
	Engineering	Physical controls such as modify tools or equipment e.g. protection guards on equipment, use vacuum systems for dust, ventilation systems for fumes, set up signage etc.
	Administrative controls	Organizing a job differently, make a change in a way a task is done, documentation, training, following company policies, hazard site assessment, plans and procedures for work e.g. cleaning machines/filters etc.
Least Effective	Use personal protective equipment (PPE)	This is the last method for controlling hazardous situations after all of the other options are put in to place.

A risk assessing procedure will also need to be carried out where an unfinished jobsite is left over night and the customer/occupier is living in the building.

The area must be made safe and the occupier consulted with on the controls that are put into place, plus any responsibilities the occupier needs to be aware of.

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2.5 HEALTH AND SAFETY AT WORK (asbestos) REGULATIONS 2016

Asbestos in flooring can be found in older vinyl backings, vinyl tiles or old adhesives. The era of assuming asbestos in buildings or refurbishments is prior 1 January 2000 (**Duty 19** of the Health and Safety at Work (Asbestos) regulations 2016).

While the asbestos is bonded throughout the floorcoverings (Non Friable) it is in a safe state. When broken, or the vinyl wear layer is separated from the backing exposing the fibres it is in an unsafe state (Friable).

Photo 1 the area and tools used could be now contaminated with asbestos fibres. This situation requires the immediate advice and services of an accredited asbestos-specialist.

Photo 2 is a close-up view of an asbestos-backed vinyl.

Photo 3 is vinyl tile that has asbestos as part of the whole tile.

Photo 1 Vinyl wear layer separated from its backing

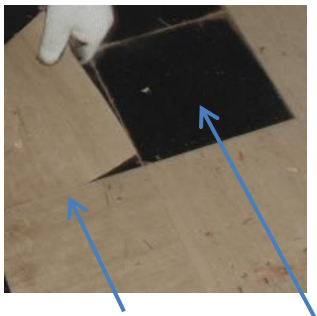

Photo 3 Vinyl asbestos tiles

Bitumen adhesive with asbestos fibres

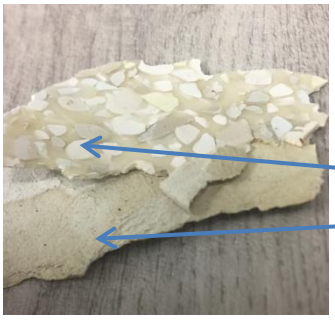

Photo 2

Vinyl wear layer

Cardboard type backing with asbestos fibres as part of the make-up.

See Worksafe Issues Inspectors Find on site presentation
https://www.youtube.com/watch?v=G4XvNPPzdQY

For further information on Asbestos visit
https://worksafe.govt.nz/topic-and-industry/asbestos/

https://worksafe.govt.nz/topic-and-industry/asbestos/management-and-removal-of-asbestos/

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2.6 DUTY TO PREPARE AN ASBESTOS MANAGEMENT PLAN (AMP)

Due to previous floorcoverings installed containing asbestos, flooring businesses are required to have an Asbestos Management Plan (AMP) in the workplace (**Duty 13** of the Health and Safety at Work (Asbestos) regulations 2016).

An Asbestos Management Plan sets out where any suspected asbestos or Asbestos-containing Material (ACM) is, plus the next steps to take (**Duty 10**).

Even if a flooring company that has no intended involvement with removing or encapsulating floorcoverings, an asbestos management plan is still needed to cover situations of providing advice to customers plus flooring contractors/workers that discover asbestos flooring materials hidden beneath floor covings (**Duty 26**).

It is advisable to use the assistance of an accredited asbestos professional to develop an AMP that complies with the Asbestos regulations.

2.7 DUTY TO ENSURE ASBESTOS IS IDENTIFIED IN THE WORKPLACE

As part of the plan, a flooring business must provide **training in asbestos awareness** for their staff that provide flooring advice to potential customers, visit homes or buildings as part of their flooring work (**Duty 10**, **Duty 17**, **Duty 25**).

It is not recommended by **Worksafe** or the **Ministry of Health** that a home owner/occupier removes asbestos containing flooring material. While home owner/occupier is not legislated by the Health and Safety at Work Act, there is a risk to:

- their own health;
- others in the house; also
- the flooring people who will be preparing the surface or installing the new floorcoverings.

The clean-up of a house that is contaminated with asbestos fibres is extremely expensive as all contaminated soft furnishings may need to be replaced.

Advice to the customer should be to engage the services of a **specialist in asbestos testing**.

2.8 DUTY TO CARRY OUT AIR MONITORING

Any work involving the removing of friable asbestos needs the services of a **Class A licenced operator** (**Duty 27**). On completion a clearance inspection is required by an **independent asbestos assessor,** who will supply a clearance certificate (**Duty 41**). A clearance certificate that validates an asbestos removal activity can only be issued by a licenced assessor to a licenced removal contractor.

No future flooring work should start until the flooring company has been supplied with a copy of the clearance certificate (**Duty 42**).

For a private homeowner that has chosen to the asbestos themselves, (not recommended) the private homeowner will need to provide evidence that an area is free of asbestos materials or airborne contamination. They will need to engage the services of an asbestos consultant/surveyor or accredited laboratory to produce a survey/inspection report.

The asbestos consultant will be able to visually identify any materials still present in an area/premise and also undertake air monitoring to quantify the level of any airborne asbestos fibres. The inspection report will not relate to any historical activities that have occurred, the report will simply be stating any observed materials or contamination on the day of the inspection.

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Flooring businesses (Person conducting a business or undertaking–PCBU) must ensure, so far as is reasonably practicable, that the health and safety of their workers or contractors are not put at risk from work carried out as part of the conduct of the business or undertaking (**Duty 36** Health and Safety at Work Act 2015).

Confirming that any asbestos is present can only be identified by an **accredited asbestos laboratory** (**Duty 11**). Using any other means of testing is subject to a fine up to $10,000.

2.9 ENCAPSULATING ASBESTOS BACKED FLOOR COVERINGS

For situations where it is not feasible or is difficult to remove the asbestos backed floor coverings, a procedure will need to be devised and included as part of the flooring companies Asbestos Management Plan. The procedure will need to comply with the Asbestos regulations. This will include identifying if the work is demolition, refurbishment or maintenance.

While **Duty27** (**2,3**) makes provision for unlicensed work as Minor contamination, the criteria of trained by a 'Competent person' applies and follows the **Worksafe** 'Approved Management and Removal Code of Practice'.

Examples that need a procedure as part of the Asbestos Management Plan.

Encapsulation –a timber substrate where the option is taken to overlay an asbestos contained vinyl floorcovering with board underlay.

Because the asbestos will remain in place beneath the new floorcoverings, a warning notice for people doing future flooring work is also recommended. This can be:

- placed on the existing floor covering; or
- a warning written in pencil on the board underlay. Pen or ink should not be used as it may show through a new vinyl floor covering at a later stage.

Sealing–where carpet is to be replaced or refitted over a suspected asbestos-backed floor covering and an installer finds an exposed damaged edge/doorway of the asbestos-backed vinyl. Asbestos-contaminated Dust or Debris (ACD) procedures should be put into place (from the Asbestos Management Plan) if sealing with an appropriate liquid is a feasible safe option for providing a protective coating to an exposed edge (**Duty 27** (**3**) along with **Duty 17**).

Applying a cementitious compound as an underlayment over an exposed asbestos backing is **not** a safe option. This will disguise the problem and endanger any people that are involved with the future uplift or grinding of the cementitious surface.

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2.10 HAZARDOUS PRODUCTS USED IN THE FLOORING INDUSTRY

Hazardous products used in the flooring industry contain hazard substances as part of their makeup.

WHAT IS A HAZARDOUS SUBSTANCE

The hazardous substance criteria in the Health and Safety at Work Act 2015 is any substance that has the following properties: 'Explosiveness, Flammability, Capacity to Oxidise, Corrosiveness, Toxicity or Eco Toxicity'.

WHAT IS A VOLATILE ORGANIC COMPOUND?

Most solvents used in flooring are Volatile Organic Compounds (VOC) that are refined from oil which is extracted from the earth. This type of oil originates from dead organisms deep beneath the earth's surface that have been subject to heat and pressure over many years.

ORGANIC SOLVENTS

Organic solvent-based adhesives have been one of the most common types of hazardous products used in the New Zealand flooring industry. Their main advantage over water-based adhesives is the solvent liquid that keeps the adhesive in a liquid state. This liquid evaporates quickly helping to speed up the installation. Solvents can evaporate in colder temperatures which is an advantage over water-based technology.

The main concern with solvent-based products is their potential to cause harm and damage to property. The immediate dangers of serious harm can be caused through high concentrations of fume inhalation or fire, plus the long term effects which can have adverse effects on the body's organs. The brain is most likely to be affected by long term exposure. Symptoms can range with mood changes, memory problems, concentration difficulties, tiredness and weakness.

Solvent vapour is heavier than air so it stays low to the floor.

The solvent carbon properties are also not helpful to the environment.

MONITORING WORKER'S HEALTH

Safety around dust and chemicals is a key part of the Health and Safety at Work Act 2015. The health monitoring of flooring workers that use solvent-based products or create dust in the workplace is one control intended to keep workers safe. More information on this process can be found at Worksafe.
https://worksafe.govt.nz/topic-and-industry/work-related-health/monitoring/health-monitoring-fs/

An awareness of hazardous products used as part of the installation process is needed at both the initial pricing/planning stage and the installation stage.

All parties involved with the process of planning and installation have a duty of care to recognize whether any intended hazardous products to be used are suitable for the floor covering; plus any impacts their use may have on the associated warranties for the floor covering.

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Examples to identify and plan for when working with flammable or hazardous products

- Create a workplace procedure to put into place at the initial pricing and planning stage of an installation where flammable or hazardous products are intended to be used.
- Consider if the hazardous products can be substituted (Wholly or Partly) with non-Volatile Organic Products (VOC).
- All people in the flooring business who are part of the process that are involved with planning, pricing, storage and installation should be familiar with the appropriate Safety Data Sheet of the Flammable or Hazardous product information.
- A site assessment will need to be carried out to identify:
  - any possible sources of ignition during the installation; e.g. electrical appliances/equipment, pilot lights, heat guns, gas bottles;
  - areas with confined spaces or areas with lack of ventilation;
  - how the area will be ventilated; and
  - how to notify and keep people/pets away from the affected areas until it is safe to return to the area.

Using the gathered site assessment information, a plan will need to be formulated and put into place to carry out the work.

HEADS UP ARTICLE FROM A FIRE RESAEARCH & INVESTIGSATION

Issue 16 - Vapour explosions during flooring preparation
Released 10th January 2014

Fire Research & Investigation Unit

Heads Up

PRODUCT WARNINGS

All warnings on appliances and the adhesive containers need to be read and understood prior to opening the adhesive.

Warning label on gas heated hot water cylinder.

WARNING This material may be harmful if swallowed or inhaled and may cause skin or eye irritation.
PRECAUTIONS Avoid breathing vapour. Use with adequate ventilation. Avoid contact with skin or eyes. Do not contaminate any water supply. Dispose of empty containers safely. Store in a cool, dry, well ventilated area.

FIRST AID
Get medical attention immediately.
SWALLOWED Give sips of water to clean the mouth. Do not cause vomiting.
SKIN Remove contaminated clothing. Wash skin thoroughly with soap and water.
EYES Hold open and flood with water for at least 15 minutes.
INHALATION Remove to fresh air.
FIRE Use foam, Carbon Dioxide, or Dry Chemical Powder.
SPILLS Use appropriate protective clothing. Absorb with sand or earth. Collect and seal in properly labelled containers. Do not allow to enter drains or run off into waterways.
For full product information see Technical Data Sheet.

USE: SYNTHETIC GRASS ADHESIVE

TRANSPORT
PROPER SHIPPING NAME **ADHESIVE** UN NO: 1133
HAZARD CLASS: 1133 HAZCHEM: 3[Y]E PACKAGING GROUP: III

CONTAINS: HYDROCARBON LIQUIDS 237ml

For further information contact or
The Poisons Information Centre 0800 764 766

Typical warning label on drum of adhesive.

Use extreme caution when using naked flames.

LESSONS LEARNED/RECOMMENDATIONS

- prior to opening any container of adhesive with a red 'diamond label' users should ensure that there are no flames or other likely ignition sources in the vicinity
- ask the client if there are any gas fuelled appliances in cupboards or near the room. Remember, some gas appliances have pilot flames while other use electrical ignition. Both systems may ignite flammable vapours. Walk around the building to see if there is a gas meter
- do not operate electrical appliances or flame producing equipment or restore power to the room until the area is adequately ventilated.

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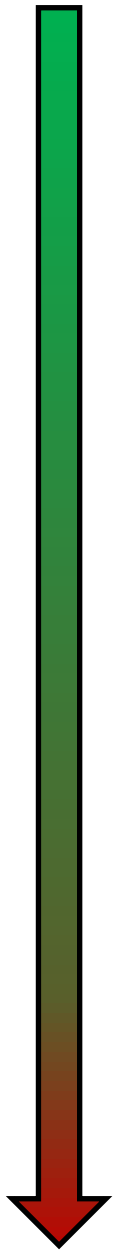
2.11 RISK ASSESSING PROCEDURE FOR USING AN ORGANIC-SOLVENT

Adapted from the WorkSafe Model of Assessment Procedure

'Before starting work using organic solvents, PCBUs must complete a risk assessment and review their controls'

1. Eliminate	Plan work so no flammable or hazardous substance is used as part of the installation.
2. Minimize	'If eliminating is not possible then work the minimizing controls'

Most Effective



Least Effective

Substitute	Substitutions (wholly or partly) of products/equipment. Two common flooring industry examples could be changing from a flammable/high toxic product to water-base/less toxic product or substitute gas bottles with heat guns where appropriate to the work. 'If risk remains'
Isolate	Isolate the worksite e.g. barrier/close off areas to prevent people from coming into contact with hazardous fumes. Investigate any sources of ignition. Examples being gas bottles, heat guns, vacuum cleaners (tools/equipment with an electric motor) and pilot lights/electronic devices that are used for gas fuelled appliances i.e. water heaters.
Engineering	Physical or mechanical controls e.g. ventilation, purpose designed extraction fans (that are not a source of ignition) to remove fumes, open doors and windows.
Administrative controls	Before starting work, carry out a site assessment. Identify work to be done in confined spaces or large spaces with lack of ventilation, identify pilot lights or possible sources of ignition (including gas bottles and heat guns). Other people/pets are cleared from the workspace until it is safe to re-enter. Organise the job appropriate to the situation. For example, make a change in a way a task is done, plan for two people to work on the job, set up signage. Companies are required to have policies in place for this type work. Flooring staff and contractors should be familiar with, and follow company policies. SDS information needs to be readily available and the users/handlers are familiar with the information that is appropriate to the situation.
Use personal protective equipment (PPE)	This is the last method to use as part of controlling hazardous situations after the above controls have been applied. Respiratory masks should be suitable for the substance and situation. They need to be regularly cleaned; filters changed and are stored in a closed container. The face needs to be clean shaven to provide a seal with the mask that prevents fumes entering through the side.

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2.12 CONSUMERS GUARANTEES ACT 1993

To provide consumers with realistic expectations, floorcoverings or associated products sold to the consumer must be appropriate to the situation. Both customer and site information gathered in the planning process should be used to match both an appropriate floor covering and the installation materials for the environment it is going in to.

In areas where the likes of heat, ultra violet light (UV), water or moisture will affect the performance of a floor covering, the appropriate adhesive, moisture treatment type and any surface preparation systems should be used in accordance to manufacturer's specifications.

The Consumer Guarantees Act gives consumers rights if the floorcoverings (products) or installation (service) does not meet guarantees that are set out in the Act.

Floor coverings should be of acceptable quality (durable, safe, fit for purpose, free from defects, acceptable in look or finish) and the installation carried out with reasonable care and skill.

More advice
https://www.consumerprotection.govt.nz/contact-us/

2.13 CONTRACTING OUT OF THE CGA

A retailer or supplier cannot state the CGA does not apply (contracting out of their obligations). The only exception to this is where products or services are acquired for a business purpose and:

- you as the buyer and the seller are in trade and agree to this;
- the agreement is in writing; and
- it is fair and reasonable to do so.

A business who tries to contract out of the Act in any other circumstances commits an offence under the Fair Trading Act.

More advice
https://www.consumerprotection.govt.nz/contact-us/

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3

MEETING CUSTOMER EXPECTATIONS

IN THIS SECTION

3.1 THE STARTING POINT

What does the customer expect from their floor?

Providing the customer with realistic expectations starts with the sales person.

While colour, design and price are at the forefront of a customer's mind, there are also three other key areas that need to be taken into account at the point of sale or specification.

1. The environment the carpet is going in to.

   →The sales person has a duty of care to propose a floor covering that is fit for purpose to the environment, plus the usage requirements.

2. The installation process.

   →The installer has a duty of care to carry out the installation in accordance to manufacturers' recommendations and Industry Standards; including manufacturers' recommendations for materials that are part of the installation process.

3. The ongoing care and maintenance for the floor covering.

   →The customer or end-user has a duty of care to carry out the recommended ongoing care and maintenance procedures for the floor covering so the floor covering remains fit for purpose over its life span.

3.2 THE SITE ENVIRONMENT

Examples of situations to consider when choosing floor coverings and providing care and maintenance information.

- Extreme heat, low humidity, UV light through windows or opened doors, holiday homes locked up for periods of time without ventilation.
- The type of traffic in terms of foot and wheeled traffic.
- The condition of the substrate.
- Site conditions at the time of installation

See previous section on **Site conditions** 1.1 → 1.2

Planning of the installation so the site environment, (particularly temperature) meets the installation criteria for carpet tiles/planks.

Room temperature–is relative to the specifications for the tiles which will be from the acclimatisation stage through to the adhesive setting time frame.

Starting point– the area or part of a room that the installation will start from will be determined by the plank/tile set up. The starting point should not be compromised or influenced by other trades that need to work in the area. The installer should be totally satisfied that the start point will give the best standard of finish.

Clear areas–during the installation the areas should be clear of other people until the adhesive sets. Any scaffolding or ladder work should be completed before the tiles are installed.

See section on **Site conditions.**

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3.3 FUTURE CARE AND MAINTENANCE

Future care and maintenance falls into three categories.

1. Preventative maintenance–measures taken to avoid damage.
2. Regular maintenance–regular vacuuming and spot cleaning.
3. Periodic maintenance–involves a more in-depth clean over a longer period.

Care and maintenance guidelines are available on manufacturer and retail outlet websites.

1. PREVENTATIVE MAINTENANCE

Providing the owner/occupier with care and maintenance information is an essential part of the process. It helps to prevent unnecessary damage after installation.

Use indoor mats or rugs in high traffic areas. For example; in entranceways, in front of chairs used for watching TV, beneath computer chairs, home office/office desks.

Regularly remove and clean underneath rugs and mats to help restore the carpet pile.

Any other finishing trades that need to work on the carpet after the installation should be made aware of keeping the new floor clean of the likes of tools, dust, wood shavings, chemicals or nails/screws.

Soiling and moisture that is tracked in from outdoors. Use appropriate outdoor mats and clean them regularly.

Do not cover carpet with plastic protection particularly with underfloor heating. This will cause sweating that will damage the carpet.

At the initial pricing/planning stages of a carpet purchase, the windows/doorways and light direction should be noted on the plan so advice on an appropriate carpet type, preventative maintenance measures or an alternative floorcovering for these areas can be discussed with the customer.

Over exposure to direct sunlight on carpet can cause fading and join shrinkage.

Examples of preventative measures used in areas that are exposed to direct sunlight are curtains, blinds, window tinting, awnings, keeping outside doors closed at the heat of the day.

Lift furniture when moving it about; do not drag it across the carpet. For heavy furniture or pianos place a board on the carpet to slide or wheel over.

Plane the bottom of doors if they are touching the carpet surface. Opening and closing doors on the carpet pile can cause the pile surface to mat/frizz.

Walking with wet feet from the bathroom/ ensuite can cause damage to the carpet surface particularly with a change of direction or where a foot may twist when walking through a doorway.

Humidity control– houses locked up for long periods creating an extremely dry indoor environment (low humidity), or houses not regularly aired to remove moisture build up can cause problems.

Regularly airing or humidity control is essential to prevent odours, mould growth, carpet bagginess or join shrinkage.

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2. REGULAR MAINTENANCE

Frequent and thorough vacuuming is the most important step in caring for carpet, particularly in high-traffic areas.

A good quality vacuum cleaner is essential to prolonging the beauty and life of your carpet. There are various types of cleaning heads that are suited for vacuuming both cut and loop pile carpets. The vacuum head type used is a critical part and must be recommended by the carpet manufacturer. Using incorrect vacuum heads can result in excess fuzzing/matting at the carpet surface.

Carpet should be thoroughly vacuumed at least weekly with three passes for lightly soiled areas and five to seven passes for heavily soiled areas.

Cleaning spills–remove as much of the spill as possible using a blunt knife or spoon for solids, blotting up liquids or using a wet/dry vacuum for large spills.

Never scrub or rub the carpet during the stain removal. Always work from the outside of the stain in towards the middle.

Follow the recommendation of stain removal from the carpet manufacturer or retail website

3. PERIODIC MAINTENANCE

Carpet should be professionally cleaned approximately every 12-18 months.

Steam cleaning should be carried out using a reputable carpet cleaner that will carry out the cleaning in accordance with Australian and New Zealand carpet cleaning and maintenance standard AS/NZS 3733:2018 Textile floor coverings - Cleaning maintenance of residential and commercial carpeting

DIY shampooing and steam cleaning methods are not a recommended substitute for a professional periodic clean as it may compromise the carpet manufacturer's warranties.

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4

INSTALLING CARPET TILES

IN THIS SECTION

4.1 CARPET TILE SET OUT

Time spent planning can save time spent with tricky cutting and also identify limitations caused with walls out of square. Discussing the set out and any limitations caused with walls out of square with the client/representative allows for any adjustments before the installation.

There are a lot of factors to consider at the set out stage so not all set outs and starting points will be the same. Setting out where to place the main gridline will vary with the complexity and size of the area/s. Tiles that will run through different rooms; also where tiles re-join around island benches, rooms or passageways.

- Staying parallel with the longest obvious walls.
- Avoiding where possible, very small pieces along main skirting edges in passageways.
- Allowing for the widest possible even sized tile at the edges in small areas or entrance ways.

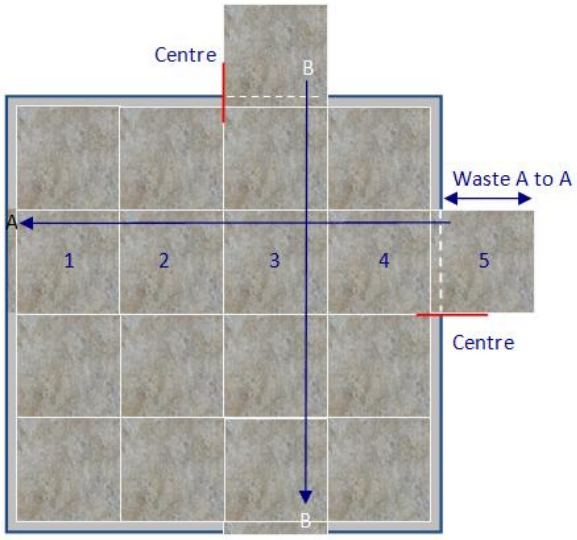

Illustration 1 is a tile set out from the centre providing a balance at each edge. See Illustration 2 for the solution that provides a larger cut tile at the edge.

- Having larger cut tiles at the edges makes cutting easier and in some situations can help disguise a tile edge that might not be parallel with the wall.
- Set out off long walls. Setting out off shorter walls and areas then working into larger areas can increase the risk of the tiles not staying parallel with longer walls.
- Setting out small areas or entrance ways to achieve the widest possible edge tile will not always work by starting at the exact centre of the room. This is because of the size of the tile width and its mathematical relationship with the area width.
- Moving the set out across a half tile as shown below in **Illustration 2** to allow for wider fill tile at the edges.
- The tile/pattern direction chosen for the installation.

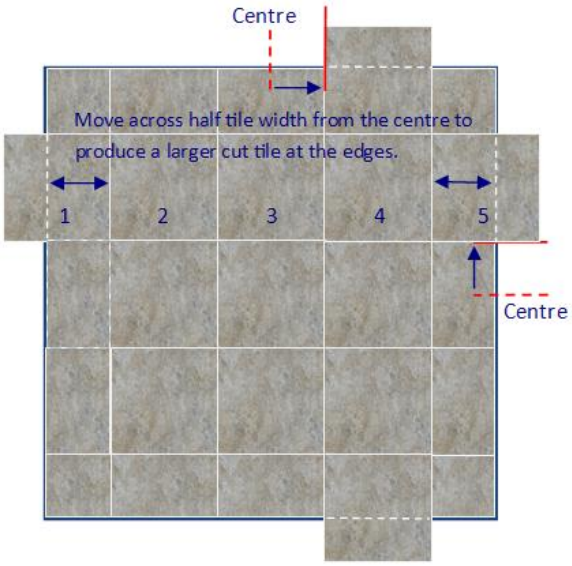

Illustration 2 shows how moving a tile set out across from the centre by half a tile width increases the size of edge cut tile. The same amount of tiles are used but with a wider edge tile.

The starting point should be controlled by the installer not through job conditions because of other trades working in the same area.

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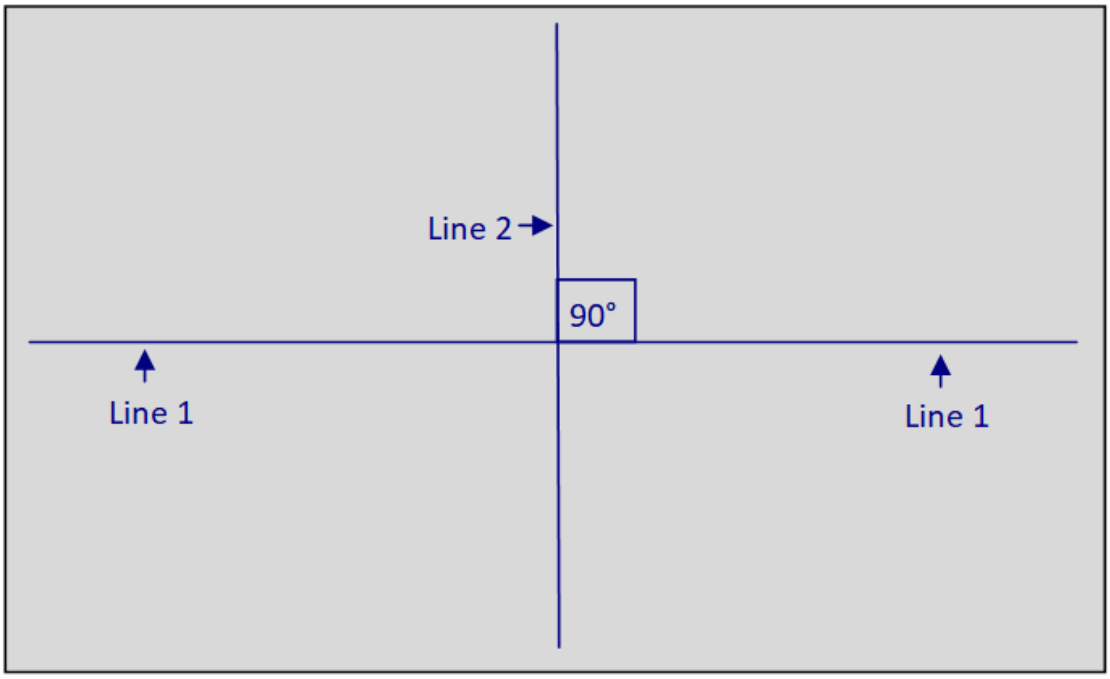
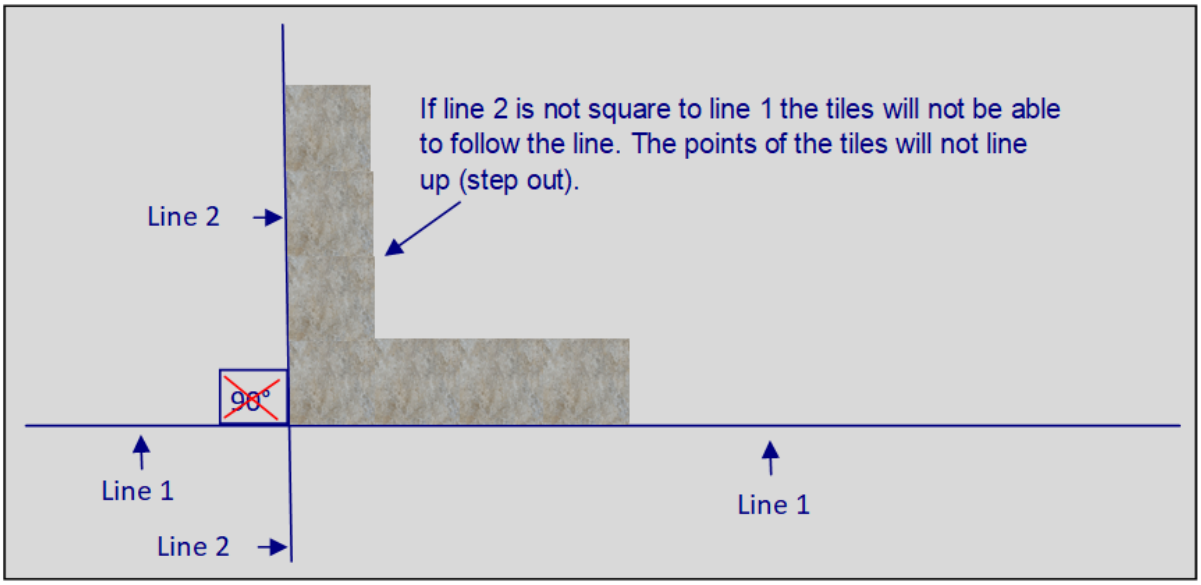
4.2 FORMING A SET OUT LINE

A square gridline must be formed on the floor surface to work from.

- Line 1 is formed parallel with the longest wall.



- Line 2 must cross Line 1 at exactly 90 degrees (perpendicular). It must be created from Line 1; not measured back parallel to the wall.



- Creating Line 2 by measuring off the wall does not guarantee an exact 90 degree right angle line to work from. Relying on the building to be exactly square is not recommended as it will cause tiles to step out.

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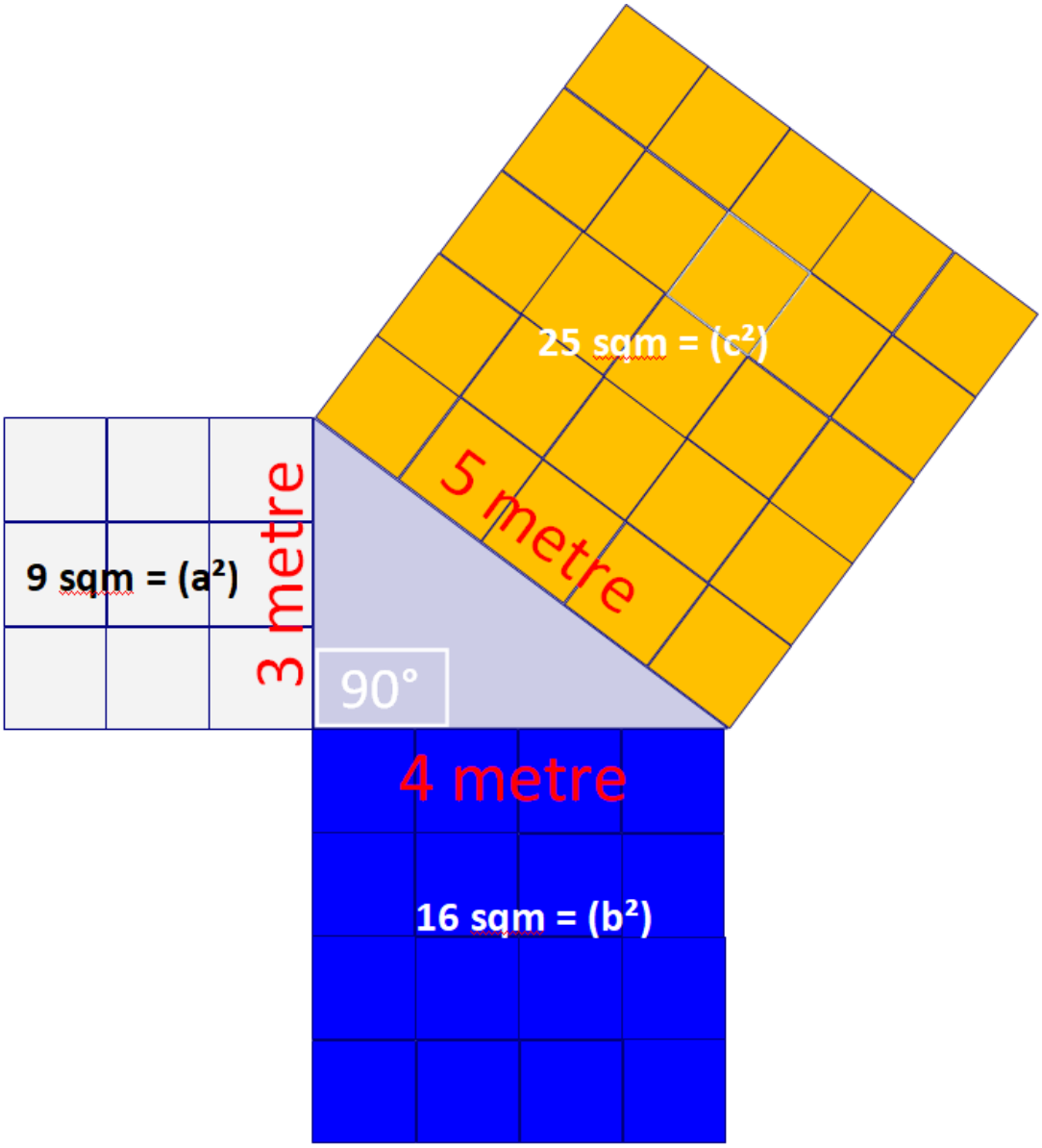
4.3 FORMING A RIGHT ANGLE LINE

A square gridline must be formed on the floor surface to work from.

- While a builder's square is useful in small areas and laser technology for large areas, a method still used in construction today and has been around pre 500BC for creating a right angle line is the 3-4-5 rule. Mathematically known as Pythagoras's theorem a ² +b ² = c ².



A simple way of applying this to flooring is to think of the 3-4-5 rule in metres. The 3 metre and 4 metre measurements are the right angle and the 5 metre measurement is always the longest side.

- If the area is bigger– double the measurements to 6 metre, 8 metre and 10 metre.

- If the area is smaller–half the measurements to 1.5 metre, 2 metre and 2.5 metres.

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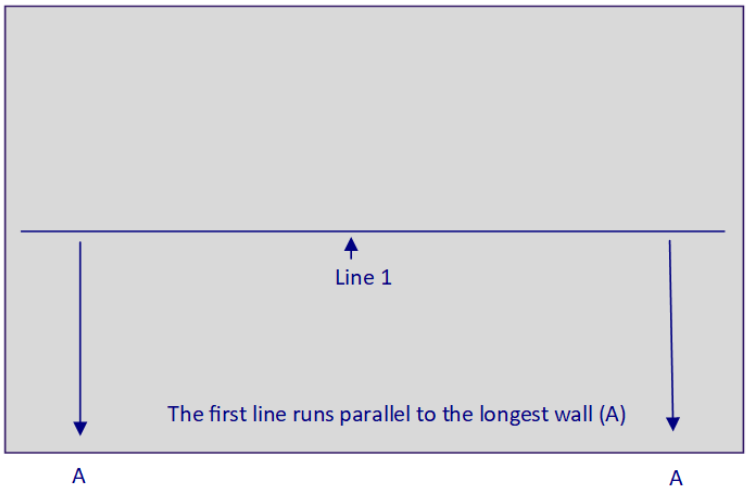
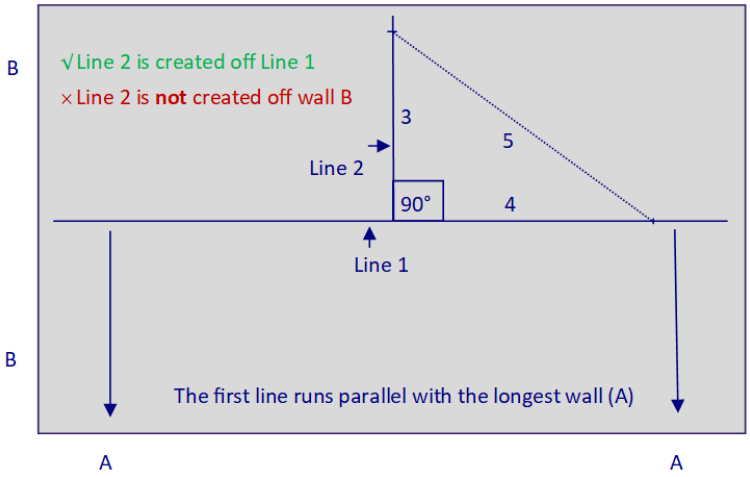
4.4 FORMING A SQUARE SET OUT LINE ON THE FLOOR

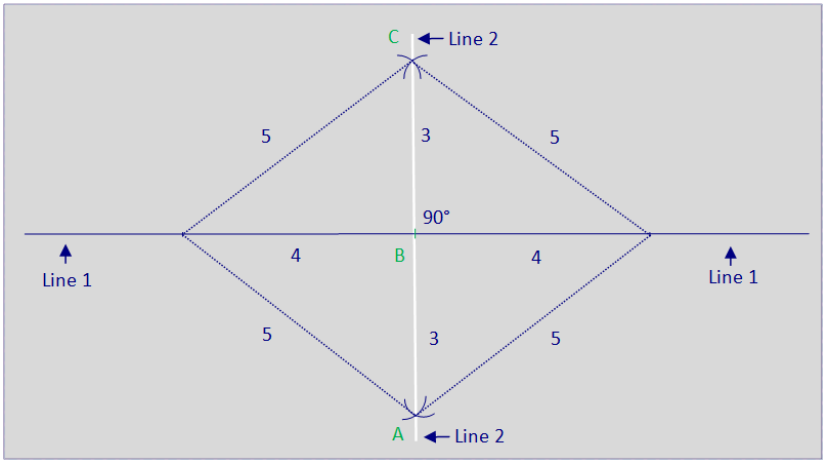
Step 1–measure off the longest wall at each end to create Line 1. When the line is marked on the floor, check sections along the line that the line is parallel to wall A.



Step 2–measure along Line 1 and mark the chosen start point. This may be the centre of the area or will be offset from the centre mark by half a tile width. Create Line 2 off line 1 using the 3-4-5 rule.



Step 3–repeating the 3-4-5 rule on the opposite side of Line 1 helps with accuracy when setting out larger areas. Points A, B, C should all line up exactly when a string line is laid over them.



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4.5 TILE STEP OUT

One of the challenges of a tile installation is keeping the corner points of tiles meeting up. Tile step out or tile creep is where the points of the tiles do not stay in line. This can happen gradually during an installation and is often a combination of a number of reasons.

Illustration 1: Tile points not lining up

Four key reasons that cause tiles to gradually step out are:

1. Surface
2. Set out
3. Installation
4. Tiles

1. Surface–humps and hollows in the surface will cause tiles to step out. **Illustration 2** provides an example of the distance covered of a tile on a flat surface and a hollow (undulated) surface.

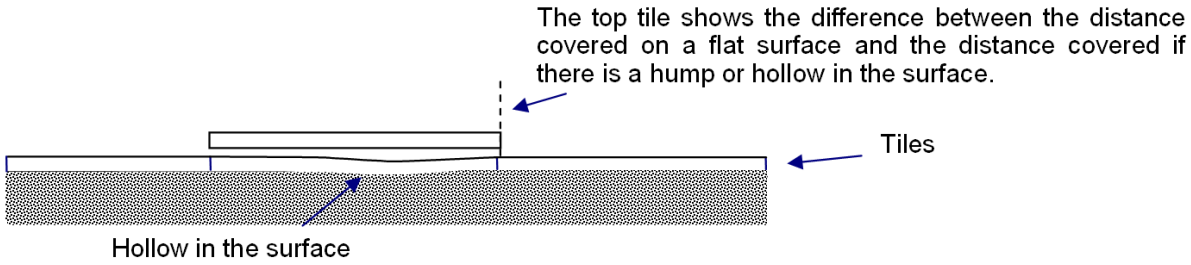

Illustration 2: Variations in surface causing tiles to step out.

- Manufacturers will have a recommended tolerance for the flatness of a surface for their tiles. They may also have a set measurement that an amount of tiles should fit into.

- The method used to identify an acceptable tolerance for how flat a surface is will involve placing a metal straightedge on the floor and checking for any gaps between the straightedge and the surface.

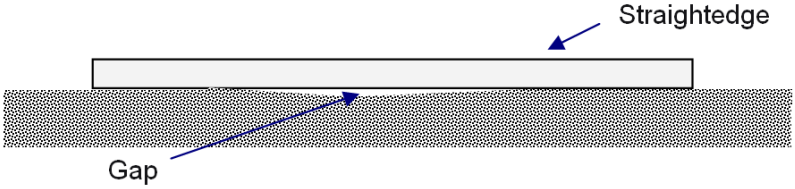

Illustration 3: Checking for gaps beneath a straightedge.

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New concrete surfaces–there are 11 classes of concrete finishes for a new concrete surface. Formed finishes are moulded or cast finishes. An unformed finish needs a method to finish a concrete surface before it hardens. Where floor coverings are to be installed, the finish used by the concrete industry is often U3 (unformed) which is set out in NZS 3114:1987.

The U3 finish class is a metal trowel finish with gradual changes specified as within 5mm over a 3m straightedge or where thin sheet or tiles are to be installed within 3mm over a 3m straightedge. The 3 mm over 3m tolerance is extremely difficult to achieve consistently from a practical sense when placing concrete. In most cases further remedial work will be required to meet the acceptable tolerance for the floor covering. Recommendations and accurate pricing for remedial work is best achieved at a site inspection prior to the floor covering installation.

Refer to Section 5 PREPARATION FOR CONCRETE SURFACES in the Best Practice Guidelines for Resilient Planning and Installation for more information on concrete, moisture and moisture treatment systems

- A finished concrete surface might meet the concrete standard but may not meet the level of flatness specified for the tile by the manufacturer. Both the person pricing the work and the installer have a duty of care to make themselves familiar with instructions for the tiles that are to be installed regarding the tolerance for flatness using a straightedge.

2. Tile set out–must involve a grid that is square (90°) to the main line. The tiles must be installed to the lines and not allowed to wander off. Installing to a line that is not square will eventually cause tiles to step out.

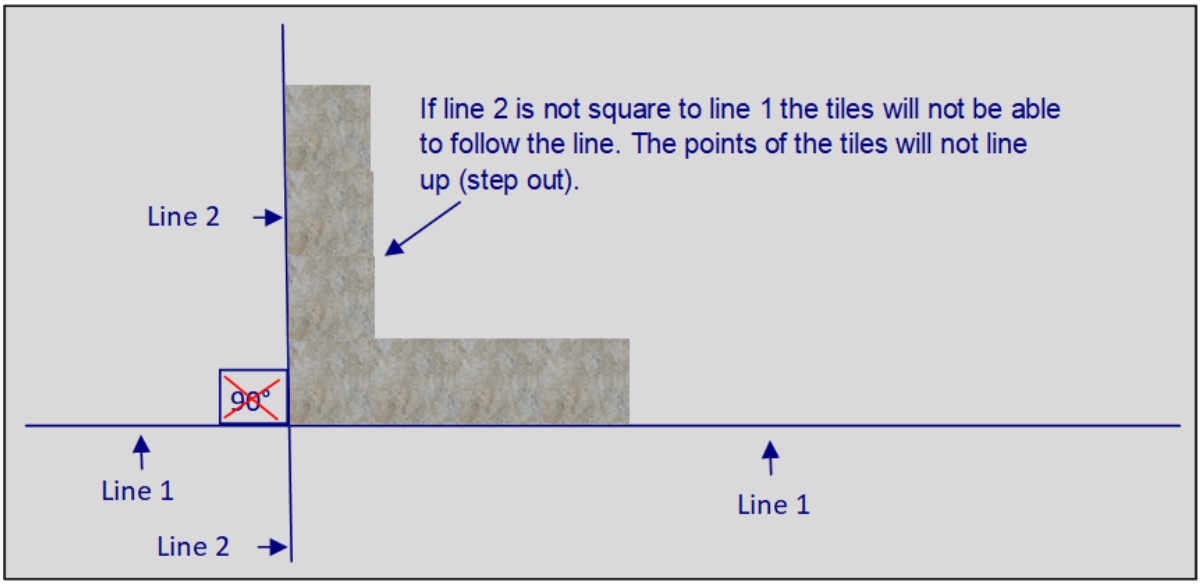

Illustration 4: Out of square line that will cause stepping.

Adhesive–there are many carpet tiles brands on the NZ market with varying backing types. Where adhesive is specified for a carpet tile installation it is crucial to use the recommended type and follow the application method; including the recommended spread-rate.

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3. Installation technique–work out the best start point for the area; this may be from the edge of a room or the centre. If possible in larger areas, starting from the centre if the area allows it halves the problems that can contribute to tiles stepping out.

- Different people involved in the same installation may have different hand pressure or have left handed verses right handed strengths. This can also contribute to stepping out over a large area.

- The standard laying tile technique is to install the field of tiles in a stepped formation. This method helps to keep the tiles on the right angle gridlines. At regular stages during the installation placing a tile that allows two edges to line together and running fingers across the joins will indicate at the early stages if tiles are starting to step out. See **Illustration 5** below.

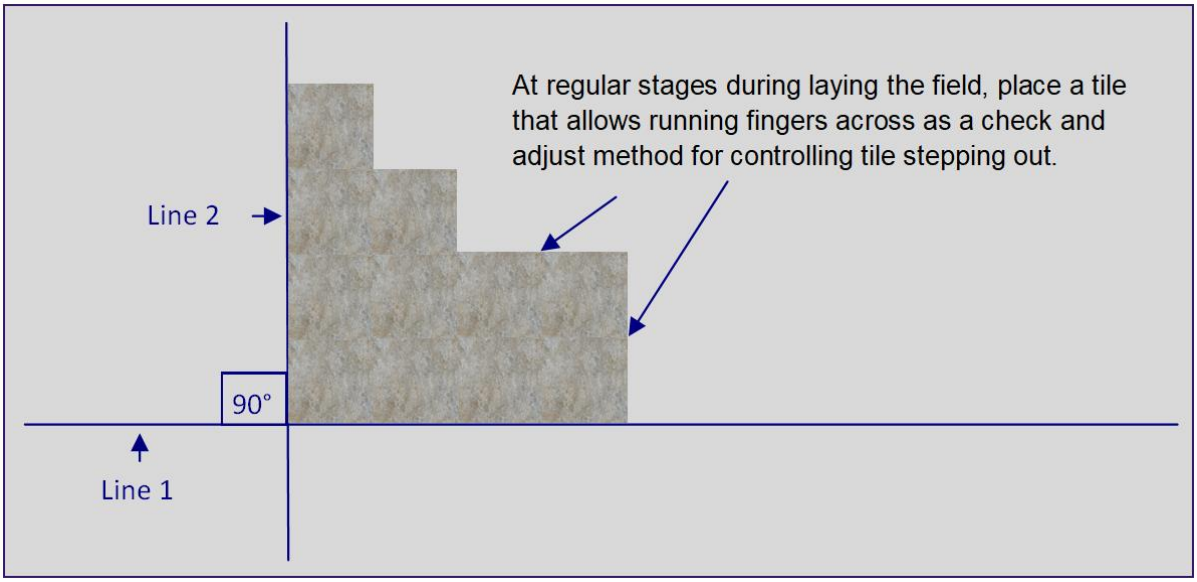

Illustration 5: Installing tiles in a step form.

4 Tiles–manufacturers of carpet tiles have a tolerance for slight size variation for the tiles.

- Over a large area a very small variance in size can also contribute to stepping.

- When inspecting tiles at the unpacking stage if there is any concern or visual signs that tiles are not square or vary in size, then the supplier should be notified before the installation starts.

- Similarly if there are any issues during the installation with tile size then the installation should stop and supplier notified.

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5

INSTALLING CARPET BY CONVENTIONAL METHOD

IN THIS SECTION

5.1 INSTALLING CARPET GRIPPER

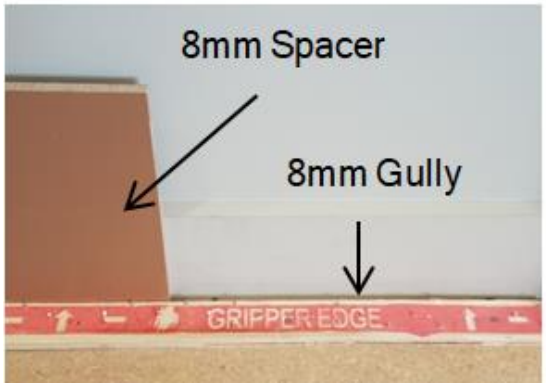
The conventional method of installing carpet is the system predominantly used in a residential setting and involves carpet stretched over a soft underlay pad or carpet cushion. The carpet is held taut on sharp gripper pins that are attached at the skirting edges.

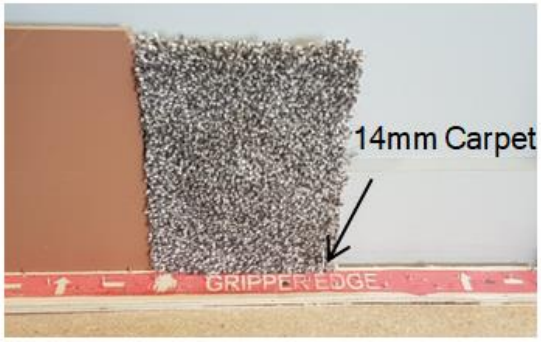
Carpet gripper is often referred to by brand names Smoothedge or Tackless strip.

- The choice of carpet gripper is determined on the type of carpet that is to be installed. Heavy carpets may be better suited to 3 pinned carpet gripper whereas thinner carpets may work better with two pinned gripper. The type of backing may also determine the pin type needed. A soft backed carpet may be better suited to a 3 pinned carpet gripper.

- The gulley between the gripper and skirting plays an important part in maintaining carpet tension. The gully should be no more than 60% of the carpet thickness. As a visual gauge the gully should be just under 2/3rds of the carpet thickness.

- This can be achieved by measuring the carpet thickness and using a spacer to help keep the gully as close as possible to the correct spacing as it is being fitted.





If the existing carpet gripper is to be used the installer must be totally satisfied that it will be fit for use in terms of holding the tension for the new carpet and backing type, plus the gully needed for the new carpet is suitable.

At the point of sale the customer should be made aware that the existing carpet gripper may not be suitable and could need replacing.

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- Methods of fixing carpet gripper depend on the floor type.

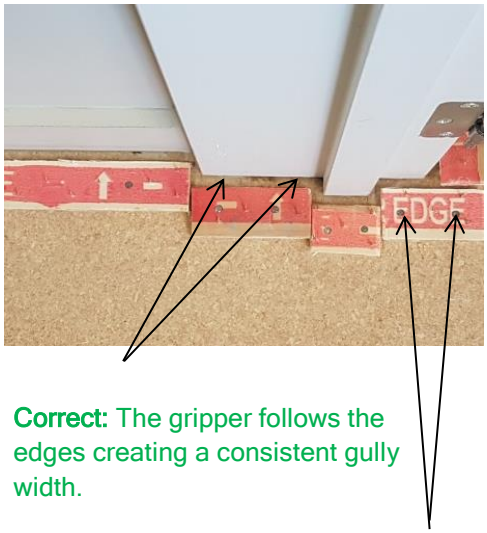
  Timber floor–nailing with appropriate ring nails designed for fixing to timber.

  Concrete floor–nailing with hardened steel nails designed for fixing to concrete; or

  →adhesive fixing where concrete is too hard; or

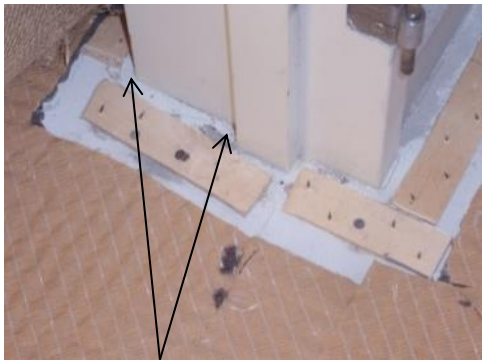
  →drill and plug where the concrete is too hard.

- Gripper is fitted parallel to all edges. This includes around doorjambs with two nails in each piece where fixing by nail is the method used.



Correct: The gripper follows the edges creating a consistent gully width.

The gripper is fixed with two nails.



Bridging carpet gripper across doorjambs is not a recommended practice as the carpet is not securely fixed and therefore allowing the carpet edge or loose yarn and backing strands to be sucked up with future vacuuming.

- Adhesive fixing with a fast setting moisture cure adhesive around door jambs is an alternative option where the concrete is getting too hard to nail. Wiping the floor first with a damp cloth will remove any dust plus speed up the adhesive setting-up process.

Whenever using moisture cure adhesive, always refer to the Exposure Controls/Personal Protection and Toxicological information section in the Safety Data Sheet.

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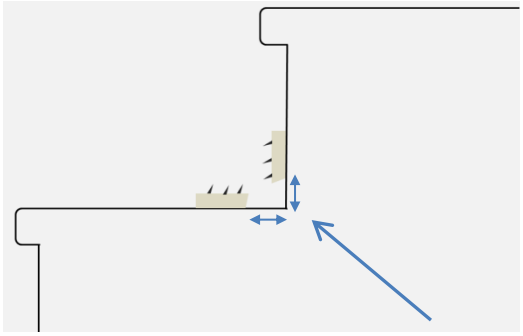
5.2 INSTALLING GRIPPER TO STAIRS

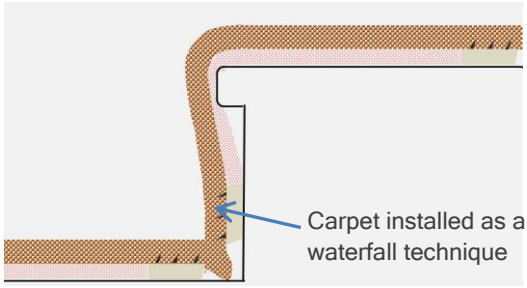
- The gully set for a stair installation on stairs is approximetely1.5 times the carpet thickness.

  As an example14mm carpet = 21mm out and up from the stair tread/riser junction.

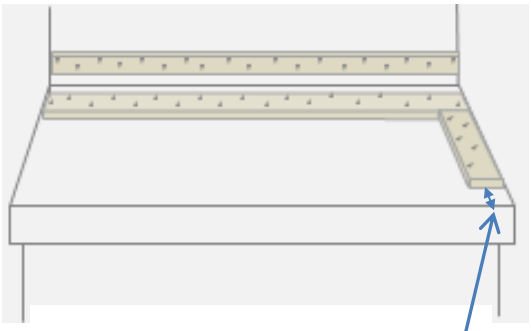
  'Always trial with a scrap of carpet first and adjust for thicker or thinner carpets'.



As a gauge, the gully can be set at approximately 1.5 times the carpet thickness out from the junction between the tread and riser.



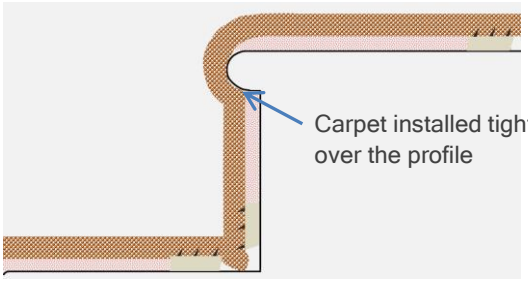
- Depending on the carpet type, if necessary carpet gripper can also be fitted to the edges.



Option to fit gripper on both sides of the tread if it is needed.

The finish is approximately 25mm short of the step.

Another technique with a bull nosed profile is to fix the carpet underneath the profile to provide an upholstered appearance.



This technique is helpful where the bottom sides of the step are exposed.

Where the waterfall technique is used, cutting out the excess carpet as it wraps around the curve then sewing it back together may also be another option.

With this option the type of carpet will need to be first taken into consideration as textured carpets could have a noticeable directional change where the joint is sewn together.

The backing type will also need to be taken into consideration.

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5.3 INSTALLING UNDERLAY

Also referred to as carpet cushion, choosing a good quality underlay will add to the life of a carpet.

As part of a carpet manufacturer's warranty plus Industry Standard AS/NZS 2455.1:2007, new carpet should always be installed on new underlay. The underlay quality should also meet the criteria of standard AS 4288-2003 (R2016) – Soft underlays for textile floor coverings.

- Room temperature should be as recommended by the manufacturer. The cooler the temperatures the slower the carpet underlay recovers. Typically the optimum range is between 15-25 degrees.

- Check the carpet seam placement on the plan before installing the underlay. The underlay joints should fall at least 300mm away from any carpet seams.

- All underlay joints should be close fitting and covered with 48mm paper tape. Plastic tapes should not be used as they can break down overtime and make crinkling noises when walked over.

Timber floors–stapling to prevent underlay movement should be sparingly and no closer than 300mm from underlay joints. Stapling too close to joints can cause puckering at the joints that can be visible in some carpets.

Concrete floors–if adhesive is applied to a concrete floor to prevent underlay movement during stretching; it should be releasable adhesive/tackfier and applied very sparingly. Overuse or incorrect adhesive will create a lot of extra work with future underlay replacement.

- The underlay should finish 3-5mm from the carpet gripper. Larger gaps may result in a void/gully appearing between the carpet underlay and gripper. Cut too tight and the underlay may ride up on the gripper during the stretching process.

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5.4 PREPARING A TUFTED CARPET SEAM

Understanding how the carpet is made is a key part of the seaming process.

- How the carpet yarn is stitched into the primary backing to create the pile can influence how the seam will be cut.

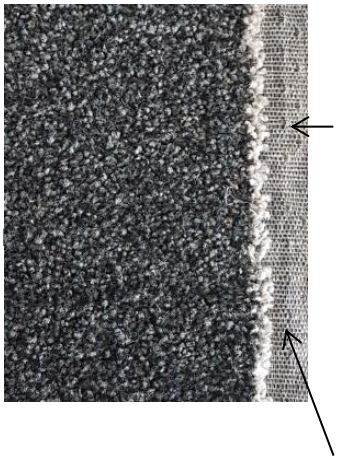
Loop pile

The yarn is stitched in a straight line

Loop pile (shift stitch)

The yarn stitch moves back and forth sideways as the needle bar moves along the carpet.

Cut pile

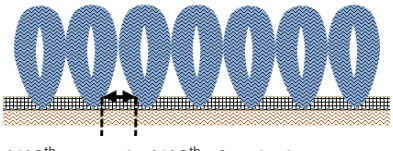


The yarn is stitched in a straight line. The loops are then cut to produce a cut pile.

Loop pile (slight shift stitch)

The yarn is not stitched in a straight line. It moves slightly in and out sideways as the needle bar moves along the primary backing.

- The thickness of the gaps between the pile will depend on the carpet that is being made. This gap is referred to as the gauge and is often measured in fractions of an inch; distance between needles over an inch. The finer the gap (gauge) the closer the yarn is together.



1/12th gauge is 1/12th of an inch distance between the needles.

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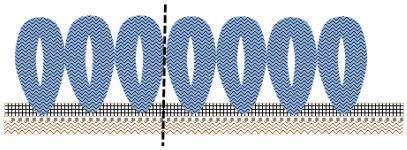
5.5 CUTTING A TUFTED CARPET SEAM

Depending on the carpet

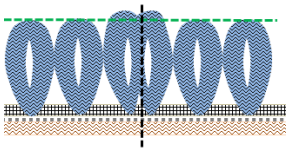
- Cutting between the pile is the recommended practice for cutting a tufted carpet seam.



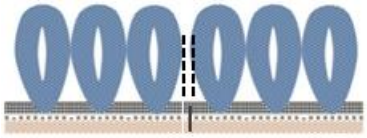
- Finding the row to cut through on a fine gauged carpet may require the use of a thinner row-finder tool.

- When cutting wider gauged carpets, the gap between the pile should be cut to allow each cut edge to replicate the gaps between the pile across the carpet when the carpet is seamed together.

- Avoid cutting the edge too close to the pile. When the two edges are seamed together it will compress and raise the pile at the seam.

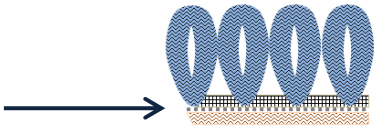


- Avoid leaving too much selvedge when cutting between the pile. This will create a visible gap between the pile when they are seamed together.



- The edge should be cleanly cut with enough backing overhang to support the yarn bond at the base.

- Avoid cutting into the base of the pile. This will weaken the pile bond at the edge.



- With future vacuuming and foot traffic the pile and primary backing will eventually sprout upwards.

Various gauged carpets will often require a change in row-finder tools and cutting techniques.

When choosing the row to cut, come in to a point where the backings are firmly adhered together and are not delaminating. Check also that the pile height is the same before seaming the carpet together.

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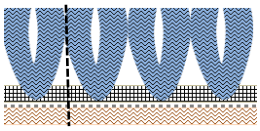
- Cutting through the row of a cut pile tufted carpet is also the best practice technique.

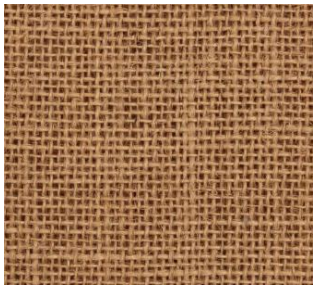


- In some situations this may not always be the best option if a carpet has a slight shift stitch or it may be a heavy carpet with a stiff backing that is not consistently straight along the edge.

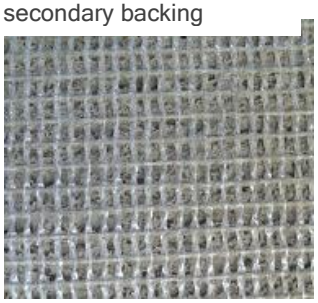
  If the alternative option to use a straightedge and cutting through from the back is selected, this method must be acceptable to the carpet manufacturer as cutting across rows may not suit the way the yarn is stitched into the backing.

- When using this method, place the metal straight edge as close as possible to a row and cut through the backing with a knife that has a well secured sharp blade.

Aligning the straightedge with the backing strands of the secondary backing does not guarantee it is aligned with the row of a pile. The backings are often cross hatched and are adhered to the carpet after the rows of pile have been sewn into the primary backing.



Cross hatched woven jute secondary backing



Cross hatched woven synthetic secondary backing

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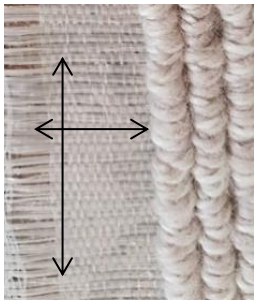
5.6 SEALING THE EDGES OF A TUFTED SEAM

A tufted carpet is a textile made up of interlaced backings and yarn. Latex adhesive is used to bind it all together. When carpet is cut along the edge, the interlaced strands are weakened making the cut edge at risk of unravelling, delamination and tuft loss.

Sealing the cut edges of a tufted carpet re-binds together both the primary and secondary backings along with the tufts into the backings. It is a requirement in AS/NZS 2455.1:1:2007 and carpet manufacturers' worldwide.

- Primary backing is often cross hatched strands of polypropylene.

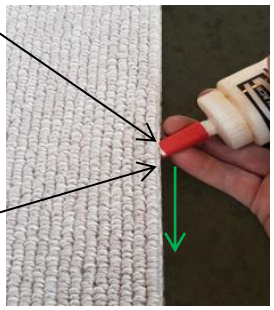


- Latex adhesive is applied over the backing to hold the yarn and backing together.

Both cut edges of a tufted carpet are to be sealed–the amount of sealer applied should be just enough to bind together the primary and secondary backings of each cut edge. After applied, the sealer should be wiped into the edge so there are no loose strands standing up and importantly the two cut edges can butt tightly together.

Applying too much seam sealer adds no benefit to the seaming process. It only increases the risk of excess sealer contacting or spilling onto the base of the pile, plus it can prevent the cut edges from butting tightly together.

- The type of bottle above is very effective if used correctly.
  - The back of the tip pushes the sealer into the edge as it is pulled along the edge. The lip governs the sealer on the backings so it does not touch the yarn above the backing.
  - The tip with a slight open angle will allow the sealer to flow out.
  - After the sealer is applied, wipe the sealer into the carpet edge making sure any loose primary backing strands are removed or sealed back into the edge and allow the two cut edges to butt tightly together.



√

Holding the bottle angled the opposing away will allow the sealer to flow out with little control and risk excess adhesive on the edge and spillage over the floor.

✗

Block off the tip end as soon as the adhesive is applied to prevent clogging; and clean regularly.

By the nature of friction created between the carpet backing and the tip, the tips do wear down and will need replacing when they are no longer effective.

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5.7 SEAM PLANNING

Carpet seams will always be visible. How noticeable they will be is influenced by the type of carpet, installation system, where the seams are placed, the number of seams, the natural light, the colour and design of the carpet, the size and shape of an area and the quality of the seaming process.

Because of the varying shapes and sizes of buildings, planning the seam placement is a process of elimination.

- Seams where possible should run with the length of a room.
- Natural light should run with the seam rather than across the seam.
- Cross joins should be minimised where possible. It should be first determined at the planning stage if cross joining the carpet is recommended by the manufacturer.
- Cross joins (T joins) are not placed in doorways.
- Seam placement avoided where there will be turning/pivoting foot traffic.
- Where possible the pile direction should face away from natural light and run towards the main entry of an area.
- Fills in a room should be placed on the opposing side of a door. If there is a situation where it is better suited in terms of quality to place the join on the door side of a room, an agreement with the customer should be obtained before the installation starts.

Apart from a requirement of AS/NZS 2455.1:1:2007, making the plan available to the customer before the installation begins, will clarify the areas to be installed, carpet type, colour, approximate seam placement, transition bars, underlay (if applicable) and a description of the work.

‘

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5.8 SEAMING CARPET

One of the most challenging tasks for a carpet installer is to make perfect carpet seams on a consistent basis. It is a craft that takes great care, skill and knowledge with virtually little room for error.

Visible seams are normal, they are not a fault. Some carpet types, designs and colours will be more noticeable than others. Natural light casting a cross the seam will also highlight a seam. In some situations natural light across the seam can cause a shadowing effect at the seam.

Tips for seaming!

- Seam with the carpet nap direction. Seaming against the pile may stand the pile up which can reflect the light differently to the rest of the carpet making the seam look discoloured.

'Low and slow with the heat iron'. The adhesive must be fully melted, evenly spread and well transferred into the carpet backing. Setting the heat too hot can cause discolouration at the seam and damage to synthetic-backed carpets.

- The two carpet backing edges should finish flush and butt neatly together without the backings overlapping or gapping. The pile should stand freely and not get trapped between the backings.

Textured loop piles or piles with a slight shift stitch should be meshed together like a zip.

- Use of a roller can help disperse the adhesive into the backing.
- The smooth surface roller is less harsh than the spikey roller.
- The spikey roller is more suited to low level loop pile carpets on adhesive bonded installations.
- Rollers with spikes may cause damage to cut pile carpets that cannot be repaired.

Smooth surface roller Spikey roller

- Seam weights used should be able to absorb and release heat and moisture as the heat tape cools. Metal or plastic tool box trays can prevent the heat and any moisture created during seaming from dispersing. This can cause seam discolouration, pile reversal or release the pre-set pile twist.
- Regularly removing the excess adhesive from the iron bottom will prevent the build-up of old burnt adhesive that can create a barrier between the bottom plate and the heat tape adhesive. Plus, a clean iron will release less smoke during the seaming process.

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Peaking seams are normal and are explained by physics. They are not a fault. Conventional installation requires the carpet to be stretched in both directions. If the carpet is not sufficiently stretched across the width of the carpet, wrinkles may start to appear at a later stage; often along the length of the carpet first.

The seam is the weakest point and when stretched across the carpet it will naturally rise at that point.

Where possible:

- ✓ Plan the seams so the light casts along the seam rather than across it.
- ✓ Stretch the carpet tighter along the seam rather than across it. This will reduce the pressure at the seam.
- ✓ Plan the stretching sequence to avoid as much as possible the stretcher head being placed close to the seam when stretching across it.
- ✓ Use high quality heat tape.
- ➢ Heat tape will not stretch at the same rate as the carpet. Where possible, pre-stretching the carpet edges before seaming helps with the tensioning process. It can also help straighten and pull the edges together.

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5.9 STRETCHING CARPET

Using a power stretcher with the conventional gripper system is a requirement of AS/NZS 2455.1:1:2007 plus carpet manufacturer's specifications world-wide.

The knee kicker is an assist tool (not a power stretcher) used to first attach the carpet to the carpet gripper before stretching. Also to assist the power stretcher in confined spaces where it is not possible to use a power stretcher.

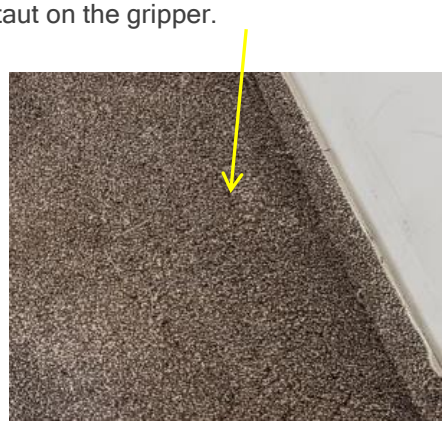
Installing carpet to AS/NZS 2455.1:1:2007 and manufacturer's specifications are a point of reference for the 'fit for purpose' criteria in the Consumer Law which all flooring businesses are obliged to meet.

While there is a basic approach to the stretching process, a lot of forward thinking is needed to plan for the starting point, change of shapes, angles, identifying and stretching away from fiddly areas.

- Before stretching the pin plates for both the power stretcher and knee kicker should be adjusted for the type of carpet to be installed.

- When attaching the carpet to the gripper, tension created with the knee kicker should allow the carpet to hook the carpet over the gripper pins.

- Be careful **not to flatten the pins** when attaching the carpet. The carpet should be taut on the gripper.



- Power stretching in both directions is part of the process and a requirement in AS/NZS 2455.1:1:2007. While joins will be more visible with tension on the width as they rise, if the carpet is not sufficiently stretched across the width of the carpet, wrinkles may gradually develop along the length of the carpet at a later stage (carpet tends to relax more in the width that the length).

  Wrinkles can also develop over time if the area is regularly exposed to wheeled traffic e.g. wheel chairs. The installation system in this situation may be better suited for a bonded or double-bonded method.

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- If recommended by the carpet manufacturer, a re-stretcher can also be used as an assist tool to the power stretcher in situations where a power stretcher will not fit or there is part of a room that has no sound support to power stretch from.

- Because of the different backing types and heaviness of carpet, the amount of stretch needed should be in line with the carpet manufacturer instructions. Where there is no recommendation 1% in length and width as a gauge is often used.

- In situations with long stretches and/or heavy carpets, a smaller stretch taken first can help maximise the tension when the full length stretch is taken.

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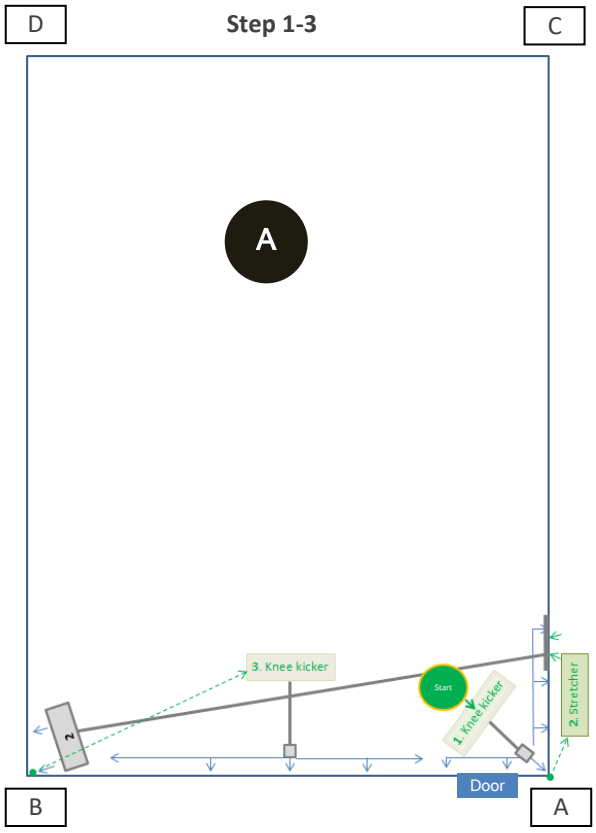
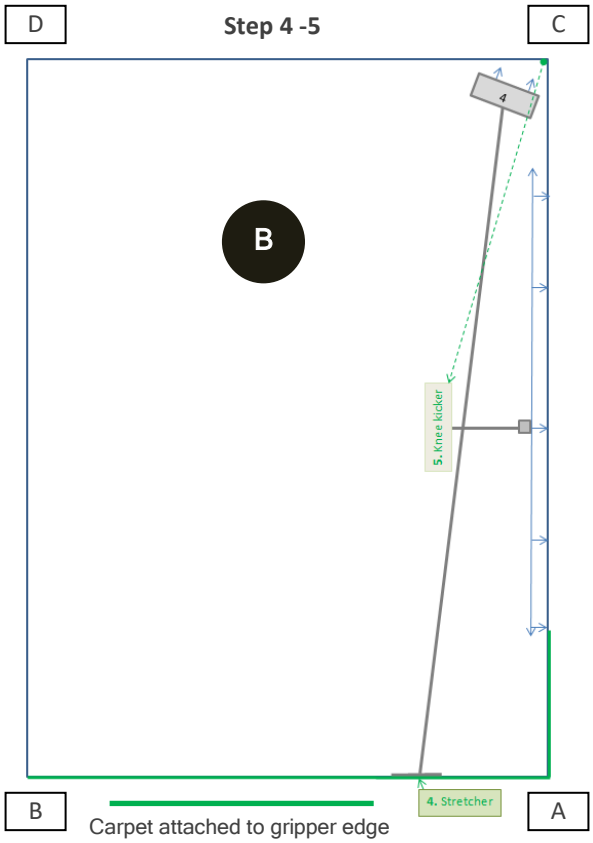
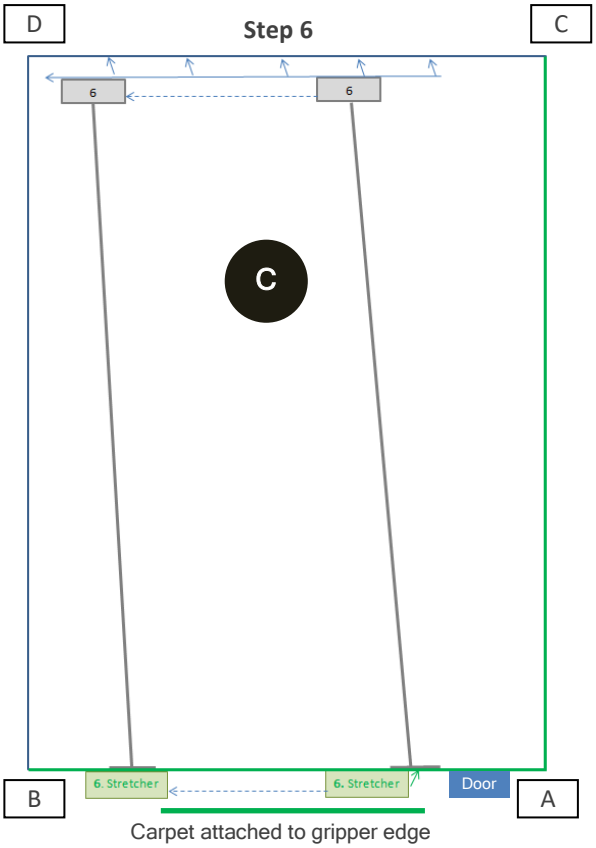
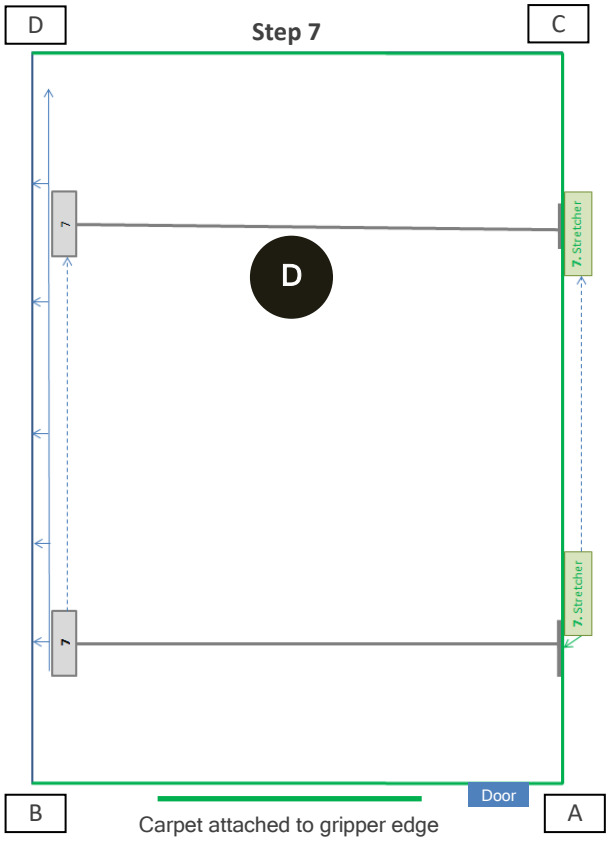
The size and shape of a room will determine the stretching sequence. The following two way power stretch guide is a common method used if there is no recommendation from the carpet manufacturer. A rule of thumb when planning where to start is to stretch away from the tricky areas where possible.









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5.10 TRIMMING AND TUCKING

Accurate consistent trimming at the edges is an important part of the carpet gripper method. A small surplus of carpet is needed as an allowance to tuck over the gripper pins and lock the carpet into the gully.

Too much allowance when trimming and the carpet will struggle to fit into the gully and cause the carpet to double back on itself leaving an untidy finish.

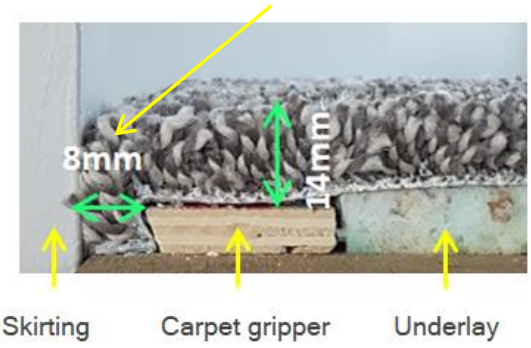
With no allowance to tuck over the gripper, the carpet will soon ride off the gripper and allow the carpet to lose tension. It will also unravel at the edges.

- Trimmer setting is approximately to the carpet gripper thickness riding up the skirting; approximately 7mm up from the crease point.

Both the trimming and tucking process involves brushing against the skirting. It is quite possible that paint touch ups could be needed after the installation particularly where paint is fresh and has not had sufficient time to cure. This should be discussed with the customer at the planning stage.

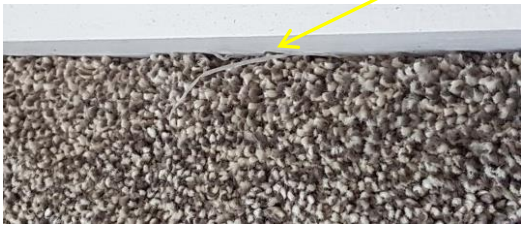
√ Tucking carpet in at the edge should lock in over the gripper pins.

Gripper gap allowance to skirting is no more than 60% of the carpet. Example is an 8mm gap for a 14mm carpet height.



✕ If the carpet is cut short or flush, the backing is not locking over the pins. Over time with foot traffic and vacuuming the carpet can work loose on the pins and lose tension. Fraying at the edge may also occur.

- Any loose strands should be trimmed off and removed. If not, over time with vacuuming they will continue to reappear.



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- **Finishing to a tile edge** –depending on the carpet type and manufacturer instructions, trimming and tucking carpet into a tile edge may need the cut edge of the carpet sealed before tucking into the edge. Sealing will help protect the cut edge and prevent future unravelling or backing strands sprouting caused with foot traffic and vacuuming.

- Heavy backed carpets may be more suited or recommended by the carpet manufacturer, to use a pinned carpet-to-tile transition bar up against a tiled edge.

Tile edging trim–Trim the carpet into end.

- **Finishing to a tile edge trim** –Trim the carpet so the cut edge reaches into the back of the bar beyond the top edge.

- **Finishing to a naplock bar** - Trim the carpet so the cut edge reaches into the back of the bar beyond the top of the fold.

Naplock bar–Trim the carpet into end.

Any transition bar should be securely fixed and follow a straight line. Long lengths should be set to a laser or string line.

- Use a rubber mallet or place a round edged block of wood on the bar to tap down with a mallet.

- Up against doorjambs where the mallet will not reach use a block of wood and tap down with the mallet.

Vacuuming on completion not only enhances the professional image of a flooring company to the customer, it also provides the opportunity for the installer to check and tidy up any loose tufts and backing strands at the skirting and doorjambs.

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6

INSTALLING CARPET BY BONDED METHOD

IN THIS SECTION

6.1 DIRECT-STICK METHOD

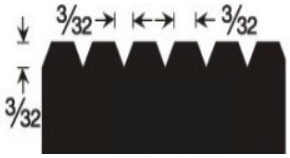
Fixing carpet by adhesive method direct to the substrate. This method is used in commercial/institutional type areas where traffic is heavy or wheel traffic is common e.g. garage carpet, shops, airports, schools, movie theatres, rest homes etc.

- Preparation for cutting tufted carpet seams is the same process as set out in the section–
  Preparing a tufted carpet seam 5.3
- **Sealing**–for both woven and tufted carpets, each cut edge that is to be a seam is sealed. A bead of approved adhesive is also applied to one side just before the seams are carefully placed together.
- Sealing is not necessary for needle punch carpets (garage carpet) as the construction method is not the same as tufted carpets.
- The trowel must be clean and have sufficient notches to apply the adhesive spread rate that is recommended for both the adhesive and carpet backing.
- Keeping the trowel clean during the day is also crucial to prevent the notches from clogging up and reducing the adhesive spread rate.
- This can be achieved by soaking the trowel in water when not in use. Using a plastic bag and bucket the water can be easily disposed of at the end of the day by tying a knot in the plastic bag and removing it from the job site.

- If using a wire brush to remove dried adhesive, check thoroughly that all of the adhesive residue is removed from the notches.

To cope with the demands of high foot traffic and wheeled traffic, Textile backings need a high spread rate of adhesive to securely bond the backing to the flooring surface.

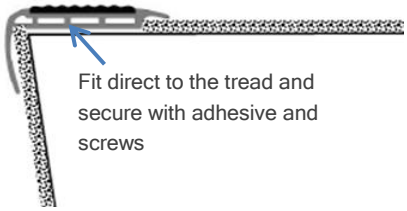
The trowel notch type and size should be in line with both the adhesive supplier and carpet manufacturer. Good consistent adhesive transfer between the floor surface and the carpet backing is essential when bonding carpet.



- The solid content of the adhesive must be suitable for the carpet backing and the area the carpet is to be installed in to.

'If in doubt check it out. Contact the supplier first'.

- Carpet is rolled both ways after placement into the adhesive. The time frame before rolling should be within the recommended open (tack off) time to ensure the adhesive is well bedded into the carpet backing. Over rolling should be avoided.
- Transition bars are securely fixed and follow a straight line; work to a laser or string/chalk line.
- **Stair nosings**–fix nosings by both screw and adhesive directly to the tread. The adhesive will help secure the nosing and prevent it from rocking loose.



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6.2 TIPS FOR CHANGING FROM (ORGANIC) SOLVENT-BASED ADHESIVE TO NEW ADHESIVE TECHNOLOGY

Adhesive technology has made huge advances over recent years and more and more NZ flooring companies are making the change away from (organic) solvent-based adhesives. There are a number of solvent-free or low solvent adhesive types available including water-dispersed (water-based) and reactive adhesives.

'Overcoming the barrier of change'

- Change often puts people outside of their comfort zone so initial resistance to change is a normal human trait.
- When making change focus your energy on how to make it work rather than comparing to what you are changing from.
- When we get used to things, we get back into our comfort zone and the change becomes easier and normal.
- When pricing work, allow any extra costs for the adhesive and any extra time needed for the installation. After completion of a number of jobs carry out a back-cost analysis. Include compliance costs as in health monitoring, record keeping, training, safety gear, mask filters, planning/managing labour resources.
- Talk to other companies who have made the change.
- Flooring companies who have made the change find that when the process is normalised, the increased costs are not as much as was first thought.

TIPS WHEN INSTALLING GARAGE CARPET WITH WATER-DISPERSED (WATER-BASED) ADHESIVE

- One of the key reasons flooring installers develop a liking to their favourite adhesive is they get used to the time it takes to develop a tack (open time) and how long they have to work with the material before the adhesive sets firm, losing its tack properties (working time).
- Knowing the tack-up time helps an installer set the pace of the installation.

Illustration 1: Initially the adhesive when first spread will have no initial tack

Illustration 2: Depending on temperature and humidity, the adhesive will soon start to develop a tack. Sometimes referred to as 'growing legs'

- Warmer temperature will help the water evaporate out of the adhesive faster. Where possible, plan garage carpet installations for later in the day in areas where temperature is a concern in the cooler months.
- Humidity (the amount of water vapour in air) will affect the tack-up rate. If it is a warm, humid day the tack up rate will take longer as it will if the temperature is lower.
- Air flow–fans or heat pumps will move air across the adhesive allowing the water to move out of the adhesive (similar to drying the washing, a windy day will dry the washing faster).
- Solid content. Adhesives with more adhesive than water tend to tack up faster as there is less water to move out of the adhesive.

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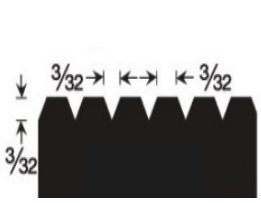
Trowel notch size. Good consistent adhesive transfer between the floor surface and the carpet backing **is essential** when bonding carpet.



- The reason for this is carpet backings will vary with texture along with the latex applied to the backing as stability. Backings that are heavily covered with backing adhesive can be stiff, particularly in cold temperatures.
- Adhesive recommended spread rates are either square metres per kg or litre. Common spread rates for fibre backings or heavy backings are close to 2sqm a litre or kg.
- When pricing and planning adhesive for installing garage carpet, the spread rate should be taken into consideration as a typical 6mx6m garage may require more than one pale of adhesive.
- Double-dropping the carpet into the adhesive on cooler or very humid days can help speed up the tack off rate.
- This technique involves first placing the carpet into the wet adhesive then gently pushing a broom, hand roller or piece of timber over the carpet to transfer the adhesive to the back of the carpet (a roller might be too heavy at this stage).

Illustration 3: Adhesive transferred to the carpet backing

- **Do not** leave the adhesive open too long otherwise the adhesive will start to dry and skin off resulting in a weakened bond. The adhesive should always have a wet transfer when relaying the carpet back into the adhesive.
- Rolling (not over rolling) with a heavy roller as soon as it is possible will help bed the carpet backing into the adhesive.
- At the completion of the installation roll over the total area plus check all edges and tuck back down as necessary.

Pre plan tasks to do in situations where a little tack off time is needed. Start working on the next sheet rather than standing around waiting for adhesive to tack up. Watching adhesive tack off is comparable to the saying ‘a watched pot never boils’.

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6.3 DOUBLE-BOND METHOD

Fixing carpet by adhesive method to a soft slab underlay adds comfort to carpet installations in commercial/institutional type areas where traffic is heavy or wheel traffic is common e.g. shops, hotels, schools etc.

- Preparation for cutting tufted carpet seams is the same process as set out in the section:

  Preparing a tufted carpet seam 5.3

- **Sealing**–for both woven and tufted carpets, each cut edge that is to be a seam is sealed. A bead of approved adhesive is also applied to one side just before the seams are carefully placed together.

- **Heat seaming**–a carpet seam created on a soft underlay is continuously placed under pressure with high foot and wheeled traffic when moving across it.

  Refer to carpet manufacturers and adhesive supplier instructions regarding supporting the seams with double-bond heat tape.

- The trowel must be clean and have sufficient notches to apply the adhesive spread rate that is recommended for the adhesive, underlay and carpet backing.

To cope with the demands of high foot traffic and wheeled traffic, textile backings need a high spread rate of adhesive to securely bond the backing to the slab underlay.

The adhesive notch type and size should be in line with both the adhesive supplier and carpet manufacturer.

- The underlay must be removed from its packaging and fully unrolled for a period of not less than 3 hours for conditioning purposes - ideally overnight.

- The adhesive used for the underlay should be specified and warranted by the adhesive supplier. Often this will be pressure sensitive in nature to help with future replacement.

- The solid content of the adhesive must be suitable for the carpet backing and the area the carpet is to be installed into.

- The underlay should run to the opposing way/direction of the carpet or joins fall at least 300mm away from any of the carpet seams. The underlay joins are to be close fitting when positioned.

- The adhesive type between the underlay and carpet is typically permanent/dead set. The installation business must be totally satisfied that:

  - The adhesive type to be used is suitable to the situation and is approved by the manufacturers of the carpet, underlay and adhesive.

'If in doubt check it out. Contact the supplier first'.

- Carpet is rolled both ways after placement into the adhesive. The time frame before rolling should be within the recommended open (tack off) time to ensure the adhesive is well bedded into the carpet backing. Over rolling should be avoided.

- Transition bars are securely fixed and follow a straight line; work to a laser or string/chalk line.

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6.4 WORKING WITH PATTERNED CARPET

Patterned carpets need careful thought, planning and often more time allowed for installing.

Because of its textile nature, carpet when rolled up will have a variation of pressure from the core of the roll through to the beginning of the roll. Along with a pile that moves with foot traffic, different pattern types can cause challenges with matching patterned carpet.

With areas that require multiple rolls, the bale/role numbers should be installed in sequence or as close as possible.

- Take the tension out of the carpet by unrolling or pre-cutting lengths and allowing the recommended time for relaxing.
- With bonded installations:
  - Match and straighten patterns before applying the adhesive.
  - Use a string line to help align the pattern.

6.5 CLEANING UP

From both a professional image and safety perspective the best practise for keeping a worksite tidy is removing rubbish and adhesive residue during the installation process rather than the end of the installation.

- Water-based adhesives are soluble with water before they set. Any residue that is on a skirting is easiest removed during the installation.
- The more time the adhesive has been allowed to set the more difficult it is to remove. The consequence being:
  - The need for stronger chemicals or solvents; which increases exposure for the installer.
  - Damage to the surface/paint.
  - More time spent on the job.
  - Unprofessional appearance to the customer.
- Flooring businesses are required to provide a safe workplace for their workers and contractors.
- As part of workplace health and safety is the obligation for flooring businesses and their workers/contractors to be familiar with the Safety Data Sheet (SDS) of any chemicals or solvents used as part of a flooring installation.

  Exposure controls/personal protection and toxicological information are specific sections in all Safety Data Sheets.
  - Examples for products that are used for removing adhesive are organic solvents, floor polish strippers, paint stripper, mineral turpentine and alcohol based cleaners/wipes.

Glove up is a website set up to provide basic information on the dangers of using organic-solvents. As well as inhalation, chemicals also enter the body through skin contact.

While chemical/organic-solvent products used for breaking down adhesives may be seen as non-toxic in the short term (acute toxicity). It is the long term exposure (chronic toxicity) that may cause serious harm.
https://www.gloveup.co.nz

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