Demonstrate knowledge of the floor and wall tiling industry within a BCATS environment

Unit Standard – 25325

Level 2, Credit 2

Name: _____

What you need to do

By the end of this module, you should be able to demonstrate knowledge of the floor and wall tiling industry covering:

- major industry sectors
- industry work processes
- industry clients, supply and inter-trade relationships
- the impact of regulatory and trade bodies on the industry and
- industry jobs and their training requirements.

How you will be assessed

Your teacher/tutor will give you a worksheet that you need to complete, which your teacher/tutor will mark.

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Glossary of Terms

Term	Meaning
Adhesive	A material that is used to fasten one surface to another.
AS	Australian Standard
AS/NZS	Australian Standard/New Zealand Standard. A standard that applies in both Australia and New Zealand.
Building code	The set of national compulsory standards for building work.
Building consent	A document issued by a Building Consent Authority to allow building work to begin.
Cladding	The external weather resistant surface of a framed building
Curing time	The time taken for the adhesive to reach its full strength.
Grout	A thin mixture of fine sand, cement and water.
Industry bodies	Organisations that play a role within an industry in a regulatory, support or advisory capacity. This includes regulatory bodies, industry training organisations and trade or professional associations.
ITO	A tertiary education organisation which develops qualifications and arranges training for a specific industry.
NZS	New Zealand Standard
Working drawings	All the documents (including plans and specifications) that identify the scope of the proposed building work to be constructed.
Solvent	A liquid that dissolves another material producing a solution.
Substrate	A term used in building to describe the base material onto which another construction material is to be fixed.

Introduction

The use of tiles as a way of covering and decorating floors and walls goes back in time hundreds if not thousands of years. Historically tiles were one of the few ways to make floors solid, waterproof and decorative.

Floor and wall tiles are generally made from ceramic products, which are made from clay and other similar materials used also to make pottery and bricks. In terms of their appearance they:

- are available in a variety of colours;
- are available in a variety of different sizes; and
- may be finished with a polished (glossy) or matt (not glossy) surface.

Sectors

The placing, fixing and finishing of tiles is done in the same way regardless of whether the tiles are used for walls or for floors. This is also true of whether the tiles are installed in commercial or residential buildings.

Commercial versus residential

The biggest difference between the commercial and residential sectors of the floor and wall tiling industry is scale (or size). The jobs are done in the same way but a bathroom in a private house is going to take fewer tiles than a public swimming pool.

Because they have to tile larger areas:

- commercial jobs may (on average) use tiles larger than those used in the average residential house/kitchen/bathroom;
- commercial tilers may have to have more expensive machines and equipment to deal with the much larger quantities of tiles they use; and
- the tiles used may need to be more durable because they are in public places and could be more susceptible to damage

Waterproofing

Tiles are often used as a hard wearing, waterproof covering as they are durable and easy to keep clean. This is why they are often used in residential bathrooms and where hygienic surfaces are vital. (Such "hygienic" commercial application areas could include operating theatres in hospitals, commercial kitchens, and public toilets and showers.)

Installing a waterproof tiled surface requires more skill than non-waterproof tiled surfaces. The extra skill comes in the preparation and checking of the surface that is to go under the tiles (called the substrate), installing a waterproofing system designed to have tiles adhered to its surface, and keeping waterproof any places where services must pass through the tiles (drains, pipes etc.).

Preparing a waterproof base and installing a waterproofing system for tiles must be done to the same standard for both residential and commercial installations.

Work Processes

The quality of a finished tiling project relies on careful planning and preparation before the job is started. Care must be taken to select the most appropriate type of tile and the method of laying for the area to be tiled. This will ensure that the finished product meets the requirements of the plans and specifications.

Floor and wall tiling can be described as a three step process:

1. Surface preparation.
2. Setting out the tiles.
3. Fixing or laying the tiles.

Preparation of surfaces

A sound, stable and rigid surface is an essential pre-requisite for all tiling projects. Poor surface preparation will be reflected in the quality of the finished tiled areas.

The method of surface preparation used will depend on a number of factors including:

- location – floor, wall, internal, external;
- use – residential, commercial, light or heavy traffic;
- environment – wet, dry, commercial or residential;
- substrate – timber, concrete;
- any contamination such as grease, paint etc that will need to be removed; and
- unsuitable surface conditions including uneven or out of level surfaces that may need to have a levelling compound applied to them.

The surface on which the tiles are to be laid and its underlying supporting structure needs to provide a solid and rigid backing that supports the weight of the tiles, the weight of the bedding material and the loads that will be applied to the finished tiled surface.

It is important that the working drawings, specifications, and tile manufacturer's installation instructions are carefully read and fully understood. They will specify the method of surface preparation that that will be required for the project.

This is especially critical where tiles are to be installed in wet areas (such as bathrooms and showers) or where tiles could be subject to water splash. The Building Code contains specific requirements relating to the ability of interior linings and exterior claddings to resist moisture.

As part of the preparation process, a Tiler needs to consult with other trades to ensure that any services that need to be installed or any work that needs to be done is identified and completed before the tiling process is started. This sequencing of work will avoid any damage to the tiles after they have been laid.

The Tiler also needs to take appropriate steps to ensure that any work completed by other trades is suitably protected from damage before they start undertaking their job.

Setting out tiles

There is no single correct way to set out a tiling project as each one will depend on a number of factors including:

- the size and shape of room or area;
- the position of doors and major fixtures such as benches; and
- the chosen pattern and design.

The working drawings and specifications, tile manufacturer's installation instructions, and discussions with the client – along with the experience of the tiler - will provide all the information to successfully complete a set-out.

Calculations will be needed to determine exactly where the tiling will start and end and also where tiles need to be cut.

Where there are special features, patterns and borders, these will need to be worked out in terms of placement at the set-out stage. It is important to check and re-check all measurements before any tiling commences as accurate measurements at this stage will result in an attractive and symmetrical finish.

Pre-installation checks

There are a number of checks that need to be carried out before tiles are laid. These include:

- the correct type and quantity of tiles have been delivered;
- the correct adhesive is available;
- all tools and cutting equipment required for the job are assembled;
- any tiles damaged during delivery are identified and, if necessary, replaced;
- cartons of tiles are stacked carefully in a clean, dry and convenient location;
- all preparation work done by other trades is checked for completion and to the required standard;
- the tiling specifications and manufacturers instructions are re-read and confirmed; and
- the area to be tiled is clean and dry.

Installing tiles

The laying process can start once checks have been completed. While there is wide range of tiling products available, the laying process will generally follow these steps.

- Step 1: From the starting point, the adhesive is spread evenly over a small area using a notched trowel.
- Step 2: The first row of tiles are then laid on the adhesive and separated from each other with spacers.
- The process is repeated until the row has been completed.
- Continue with the row adjacent to the starting line and then complete all the full tiles required for the area.
- Where a tile needs to be cut, this can be done using a manual tile cutter or a wet saw.
- After 24 hours, the spacers between the tiles can be removed and grout applied to fill the joints.
- Leave for a further 24 hours to allow the grout to harden before use.

Health and safety precautions

Many different chemicals and solvents are used in the manufacture of the adhesives and sealants used by the tiling trade. These can present serious health risks to people who use these materials on an on-going basis. It is essential that effective controls are put in place to manage the hazards associated with adhesives and sealants, and that they are used safely and responsibly. When using adhesives and sealants, tilers should always:

- obtain, read and apply the information contained in the relevant Material Safety Data Sheets and manufacturers' instructions provided with the products they use;
- wear the recommended personal protective equipment;
- avoid contact with the skin;
- work in well ventilated spaces;
- use safe handling and storage procedures; and
- use safe transportation and storage methods.

Client Base

Subcontracting

A tiling subcontractor is a tradesperson, company or business contracted by a main contractor to do the tiling work that is part of an overall project.

The subcontractor will take instructions from, is paid by, and is responsible to the main contractor or their on-site representative.

Example – A builder is building a new house and engages a tiler to do all the tiling work for the bathroom, kitchen and patio floors. The builder will generally have an existing relationship with the tiler as they will with other subcontractors (such as the plumber, electrician, concrete placer etc) but will probably still ask them to quote for the job and the negotiated price will be included in their tender price to the client when determining the cost for the whole job.

In this example, the builder is acting as the main contractor and is managing all the different relationships with subcontractors.

Another example – A tiler bids for the installation of tiles for a new shopping mall. The tiler has the responsibility of ordering all the required tiles and then laying them according to the working drawings and specifications. The tiler will work with (and around) other tradespeople and will report to whoever is managing the project for the large construction company who are the main contractors. The tiler will be paid for their work by the large construction company.

Direct to client

Many tilers (sole traders, companies or businesses) may also have clients who aren't "in the trade" – but are clients who choose to manage the building process themselves and engage directly with the trades or professions whose skills they need to hire.

In this situation, they are working direct for the client and will take instructions from, be paid by, and be responsible to them.

Example – A homeowner is re-furbishing the kitchen in their house and wants to have the floor and the walls around the stove tiled. They get a local tiler to do the work and agree on the provision of materials and the timing of the job. The tiler will work directly with the client on all matters of the job.

In the floor and wall tiling industry, the average tiler will do both subcontracting and direct-to-client jobs.

Supply Relationships

Trade accounts

This is where a manufacturer or supplier agrees to sell trade goods to approved customers on the basis that the customer promises to repay on or before a stipulated date in the future (generally the 20th of the month following invoice).

Trade accounts allow tilers requiring materials the ability to get those materials without having the money up-front – therefore benefiting from the credit given to them by the supply company. Suppliers have the benefit of selling more of the products they supply over those same or similar products that may be supplied by their competitors. Realistically, the relationship has to be mutually beneficial for it to work and so by and large, both the contractor and the supplier need to work together to ensure that they both get what they need out of it.

Trade discounts

Most suppliers reward their loyal customers with a discount – and this is certainly true of those suppliers to the floor and wall tiling industry. From a supplier perspective, they want repeat business and the ability to be able to sell larger quantities than your average retail shopper might buy.

Trade discounts are usually expressed as a percentage of the retail price and may vary depending on the type of product and quantity ordered. For example, with a 10% trade discount, goods worth $100 would be reduced to $90.

There is no guarantee that the trade discounted price will always beat "specials" or other discounts that may be available from time to time on standard retail stock.

Manufacturer guarantee systems

Manufacturer guarantee systems are written assurances from manufacturers that their goods or services meet a certain standard of quality and durability.

- Sometimes the manufacturer guarantees only their products/systems to be **manufactured** to a specific quality level.
- Sometimes the manufacturer also guarantees the use of their products/systems in their **installed state** by a contractor whose work they are prepared to stand behind.

Either way, manufacturers have a vested interest in ensuring their good name remains at the forefront of people's minds when thinking of purchasing their products.

Manufacture guarantee example: This is where a tile manufacturer will guarantee that when the tile was made and sold to you that it was a certain size and thickness, could withstand certain weight or pressure, and was suitable for a certain purpose eg as a decorative tile. There would be no guarantee if the tile's colour changed (possibly because an incorrect gout was used and that

affected the tile's surface), or if the tiles cracked because they were used on a floor instead of a wall.

Installed state guarantee example: An installed state guarantee would go further than the example above, and a manufacturer might guarantee certain tiles would last 10 years provided the approved adhesive and grout were used and it was installed by a tradesperson who they were confident was a skilled tiler and knew how to work with their products.

Accredited supply networks

Many manufacturers and suppliers have accredited supply networks whereby a manufacturer or supplier of products and systems is prepared to stand by certain contractors work provided they satisfy the manufacturer's accreditation criteria.

There are no set criteria when it comes to the various accredited supply networks of the different manufacturers associated with the tiling industry, but by and large they develop long-term relationships with those contractors who have a good standing in the industry and are known for the quality of their workmanship.

Example – A large tiling supplier (like the Tile Warehouse) has a network of tilers whom they recommend to the customers who purchase their tiles directly from them.

Example – A manufacturer of waterproofing systems for tile application (such as would be used in a shower) has an accredited network of installers (many of whom are tilers) who they have personally trained in the use of their products and systems.

Product training

Many modern tiling products and systems have become more complex over time and require specialist knowledge and skills in order to ensure that the finished job meets the required quality standard.

Because manufacturers have a vested interest in ensuring that their products and systems are installed correctly, the larger companies offer technical training (often free) on the use of their products and systems to ensure that they are used and installed the way they were designed to be. (The example used above on waterproofing systems for accredited supply networks could be used again here.)

Sometimes this training is delivered by a specialist technical training team and sometimes the manufacturer's sales representatives lead the training as a part of their role. Depending on the size of the manufacturer, in-house engineers and designers can also be involved in training – although this type of training is generally limited to designers and specifiers within the industry who want to incorporate the manufacturer's products and systems in the buildings they are creating.

Relationships with other Trades

The successful completion of any construction project, large or small, relies on bringing together people with a wide range skills and expertise along with good organisation, quality control, coordination and clear lines of communication. All trades have a duty of care to respect and avoid damage to the work of other trades that have preceded them.

The responsibility for organising and coordinating all construction operations for a project will usually fall upon the main contractor – who for a large project may have a team of people working for them in overseeing roles and for a small project may just be them as the builder. Clear avenues of communication need to be established to ensure that everyone involved in the project is fully aware of their specialist roles and responsibilities and also the roles of other trades that they will be associated with. The complex task of planning and organising the various construction trades working cooperatively together to produce a quality completed project requires the coordination and cooperation of all construction trades working on the project, plus their material suppliers and all other companies and individuals associated in any way with the project.

Floor and wall tiling contractors tend to be involved in projects towards the end of a construction project because of the very nature of their work. If we look at a large commercial building, the tilers come into the job when the floors and walls are ready for their final surface covering. If we look at a smaller residential job, the tilers come into the job after the linings and flooring is complete and the carpenter is focusing on the finishing touches of their work and about to get the decorators, kitchen installers and carpet layers involved.

Working to tight timeframes is also very much a reality. If there have been any hold-ups earlier on in the project, these will impact on the time allowed for the finishing trades coming in towards the end of the project.

Along with a good relationship with the main contractor (generally the builder) floor and wall tilers need to consider the trades that come immediately before them and those that follow immediately after them.

Trades that come before and the relationships with them

Tilers need to make sure that all services are in place before they start tiling and that the surfaces they are about to tile are in a suitable condition. This means having a relationship with the fixers (and stoppers, if appropriate) of lined areas, plumbers and electricians. Some jobs may have variations to this. For example if the job is to install tiles as an up-stand (or splash-back against a wall) on a bench, the bench will need to have been either installed or very accurately measured up. This could involve liaising with the joiner. A tiler will also require assistance from the main contractor (the carpenter) to "make ready" for them – which may mean some additional carpentry work needs to be done so that they can do their job. This will be particularly important for getting the substrate (the base) ready for surfaces that need to be watertight.

Trades that come after and the relationships with them

The trades that follow the tiling contractor tend to be those that come before them (such as carpenters, plumbers, electricians) to finish off the work that they started and can only complete once the surface is tiled.

The other trade that follows immediately are the painters and decorators. In fact, the tiler can often be thought of as the first "decorator" on site as the surfaces they leave are complete or decorated. Other contactors must be careful of the tiler's finished work.

It's possible that where the tiling tasks on a particular job are not very complex (and do not involve watertight surfaces – eg laying small floor areas) the tiler may come after a painter/decorator/joiner. In this case it is the tiler who will have to take care to protect the work of other trades from any damage or mess they could make (especially when it comes to grouting!).

Requirements of Industry Bodies

Construction and building work in New Zealand is primarily governed by the following legislation:

- the Building Act 2004; **and**
- the Building Regulations (which includes the Building Code).

All new building work must comply with the Building Code. Its purpose is to ensure that buildings are safe and healthy for the people who use them and identifies the minimum requirements to be met to guarantee this.

WorkSafe New Zealand (WorkSafe)

WorkSafe is the work health and safety regulator and is responsible for implementing the Health and Safety at Work Act 2015.

WorkSafe's functions include:

- Monitoring and enforcing compliance with work health and safety legislation
- Providing guidance, advice and information on work health and safety
- Fostering a co-operative and consultative relationship between the people who have health and safety duties and the persons to whom they owe those duties and their representatives.
- Collecting, analysing and publishing statistics and other information relating to work health and safety.

The main safety issues that WorkSafe will look out for in the floor and wall tiling industry include:

- manual material handling (safe lifting);
- safe use of plant, equipment and tools;
- working at heights (ie above ground level, ladders and scaffolds;
- chemical hazards (adhesives, sealants and grouts); and
- noise.

Ministry of Business, Innovation and Employment

The Ministry of Business, Innovation and Employment (MBIE) administers the Building Act and Building Code and also oversees a range of other building and housing related acts and regulations (including occupational licensing in the building trades).

While some industries require licensing or registration, this is not the case for the tiling industry at this time. However, all work done by tilers must conform to the Building Code.

Building Consent Authorities

A Building Consent Authority (BCA) is an organisation or individual accredited to administer building control functions. This is most commonly done by Territorial Authorities (local authorities or councils).

BCAs administer the requirements of the Building Code. They make sure that the work that has been done meets the Building Code.

They have to check the work before it starts, while it is underway and when it is finished. This is shown in the table below.

What the BCA does	When	What they are checking
Issue building consents	Before any building work starts	Checking that the details shown on drawings meet the Building Code
Perform inspections	As building progresses	Checking that construction, insulation, lining, bracing, weather tightness, plumbing, and electrical work complies with the Building Code
Issue Code Compliance Certificates	When the building is completed	Checking that all the requirements of the Building Code are met.

While the work of the floor and wall tiling industry does not require an individual building consent, the jobs they do and the specifications they must meet form part of the working drawings that make up a building consent.

Furthermore, when it comes to waterproof surfaces, their work will often be subject to prior and post inspection by the BCA because if leaks can occur they can rot materials and cause a structural weakness to the building.

Standards New Zealand

Standards New Zealand is the operating arm of the Standards Council, an organisation set up under the Standards Act 1988. The Standards Council is the governing body for Standards New Zealand.

What is a Standard?

Standards are agreed specifications for products, processes, services, or performance. New Zealand Standards are used by a range of trades, including that of floor and wall tiling, to enhance their products and services, improve safety and quality, and meet industry best practice.

What are Standards for?

- Standards help to keep homes, buildings, playgrounds, and health services safe. They help to prevent accidents and injuries in a broad range of areas.
- Standards minimise the impact of potential disasters such as earthquakes, or fires and electrical hazards, and also improve the quality of goods and services. They help to protect the environment, and they boost the countries economic growth and our trade opportunities.

Building Research Association of New Zealand (BRANZ)

BRANZ is an independent and impartial research, testing, consulting and information company providing services and resources for the building industry.

Their two main areas of activity are to:

- research and investigate the construction and design of buildings that impact the built environment in New Zealand
- enable the transfer of knowledge from the research community into the commercial building and construction industry.

Their core purpose is to improve people's lives through our research and to inform, educate and motivate those who shape the built environment**.**

BRANZ produce a series of Good Practice Guides (GPG) to the industry and the title that relates to this industry is *GPG – Tiling.*

Trade or professional associations

The tiling industry has had an association with the solid plastering industry for many years and as such, their trade associations are generally Master Plasterers and Tilers Associations. While there was a national federation for a number of years, there are now a series of regional industry associations. You can Google these.

The Canterbury Master Plasterers and Tilers Employers Association (www.cmpt.co.nz) has been around for over 110 years probably the strongest of all the regional associations in New Zealand with members covering the South Island from Timaru to Nelson.

Industry Training Organisations

Industry training organisations (ITOs) set the skill standards and arrange training for people employed in the industries the ITO is responsible for. Almost all apprentices in New Zealand are enrolled with an ITO.

The ITO that serves the construction sector is the Building and Construction industry Training Organisation **(BCITO).** Aside from Exterior Plastering, the BCITO is the ITO that serves:

- Interior Systems
- Flooring
- Tiling
- Frame and Truss Manufacturing
- Cement and Concrete
- Joinery
- Painting and Decorating
- Kitchen and Bathroom Design
- Brick and Block Laying

Job Roles and Training

The floor and wall tiling industry offers a range of jobs and a progressive career structure so you can grow and develop with experience.

We list most of them below, starting from the more junior roles and working upwards towards those that require more qualifications and experience but have subsequently greater rewards.

Unskilled labourer

This is the most junior position in the trade. The labourer does a lot of the general basic "lifting, carrying, loading and unloading" sort of jobs and is not expected to have a qualification although if they remain on the job long enough they can pick up good experience.

The labourer will report to the main tradesman, foreman or leading hand.

Often their job may be on a casual contract basis and they can be easily out of work if the industry goes through a lean time.

Apprentice

To become qualified, floor and wall tilers complete a formal apprenticeship, which usually takes between two and three years. An apprentice is a person who has signed into a Training Agreement with an employer to learn the range of knowledge, skills, and competencies that are required for a career in the plastering industry.

Apprentices receive on the job training and are assessed for a range of theory and practical plastering work. Apprenticeships are "competency based" which is all about demonstrating the ability (both in terms of knowledge and skill) to complete a range of tasks to a recognised industry standard.

The BCITO offers a National Certificate in Floor and Wall Tiling (Level 4) is designed for people wishing to work in the construction industry as floor and wall tilers, and provides a means of recognising current competence for those already in the industry.

Floor and wall tiling tradesperson

Once apprentices graduate, they are able to successfully complete, without supervision, all facets of work involved in floor and wall tiling in the workplace to a professional standard.

Once qualified, there are a variety of career paths to choose from - some requiring further experience and extra training including;

- Specialising in the residential (housing) or commercial sector.
- Working for a large construction company.
- Starting up in business as a sole trader.

Depending on the area of the trade that the tradesperson has chosen to work, they may report to different people.

If they are working on a large commercial site they will generally report to the construction foreman (leading hand), although if they are a contractor they may report to the construction supervisor or project manager.

If the tradesperson is an independent business person (sole trade) he will be responsible for his own work performance but will have to perform to the contract and/or expectations of the home owner/building manager or the owner/architect if working in a residential or commercial structure.

Foreman/Supervisor

A foreman/supervisor is usually a tradesperson with years of experience and specialist knowledge who is charged with the day to day organisation of a gang/team generally made up of qualified tradespersons and labourers. He will probably spend a reasonable amount of time still doing floor and wall tiling tasks.

Foremen/supervisors report to the project manager on large sites or to the main contractor/builder on smaller sites.

The National Certificate in Construction Trades (Supervisor) (Level 4) is designed to recognise the skills and knowledge required to be a supervisor/foreman in the construction industry

Training enquiries

If you are interested in a career in the floor and wall tiling industry contact the BCITO:

Phone: 0800 4BCITO
0800 422486

Web: www.bcito.org.nz
getacareer@bcito.org.nz

For more experience at school contact your school Gateway supervisor or careers advisor.