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Red Seal Occupational Standard

Tilesetter

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Foreword

The Canadian Council of Directors of Apprenticeship (CCDA) recognizes this Red Seal Occupational Standard (RSOS) as the Red Seal standard for the Tilesetter trade.

Background

The first National Conference on Apprenticeship in Trades and Industries, held in Ottawa in 1952, recommended that the federal government be requested to cooperate with provincial and territorial apprenticeship committees and officials in preparing analyses of a number of skilled occupations. Employment and Social Development Canada (ESDC) sponsors the Red Seal Program, which, under the guidance of the CCDA, develops a national occupational standard for each of the Red Seal trades.

Standards have the following objectives:

- to describe and group the tasks performed by skilled workers;
- to identify which tasks are performed in every province and territory;
- to develop instruments for use in the preparation of Interprovincial Red Seal Examinations and assessment tools for apprenticeship and certification authorities;
- to develop common tools for apprenticeship on-the-job and technical training in Canada;
- to facilitate the mobility of apprentices and skilled workers in Canada;
- to supply employers, employees, associations, industries, training institutions and governments with occupational standards.

Any questions, comments, or suggestions for changes, corrections, or revisions to this standard or any of its related products may be forwarded to:

Trades and Apprenticeship Division
Apprenticeship and Sectoral Initiatives Directorate
Employment and Social Development Canada
140 Promenade du Portage, Phase IV
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Special thanks are offered to Éric Boulanger of Quebec, who provided expert advice in the initial review.

This standard was prepared by the Apprenticeship and Sectoral Initiatives Directorate of ESDC. The coordinating, facilitating and processing of this standard were undertaken by employees of the standards development team of the Trades and Apprenticeship Division and of Quebec, the host jurisdiction for this trade.

Structure of the Occupational Standard

This standard contains the following sections:

Methodology: an overview of the process for development, review, validation and weighting of the standard

Description of the Tilesetter trade: an overview of the trade's duties, work environment, job requirements, similar occupations and career progression

Trends in the Tilesetter trade: some of the trends identified by industry as being the most important for workers in this trade

Skills for Success Summary: an overview of how each of the skills for success (formerly called essential skills) is applied in this trade

Roles and Opportunities for Skilled Trades in a Sustainable Future: an overarching description of how in the context of climate change, skilled trades play a large role in implementing solutions and adjusting to changes in the world. In addition to highlighting the importance of this awareness, the standard may also contain more details on activities, skills and knowledge elements that are specific to the trade

Industry Expected Performance: description of the expectations regarding the level of performance of the tasks, including information related to specific codes, regulations and standards that must be observed

Language Requirements: description of the language requirements for working and studying in this trade in Canada

Pie Chart of Red Seal Examination Weightings: a graph which depicts the national percentages of exam questions assigned to the major work activities

Task Matrix and Weightings: a chart which outlines graphically the major work activities, tasks and sub-tasks of this standard and the national percentages of exam questions assigned to the major work activities and tasks

Harmonization of Apprenticeship Training: the aspects of apprenticeship training that participating provinces and territories have agreed upon to substantively align apprenticeship systems across Canada

Major Work Activity (MWA): the largest division within the standard that is comprised of a distinct set of trade activities

Task: distinct actions that describe the activities within a major work activity

Task Descriptor: a general description of the task

Sub-task: distinct actions that describe the activities within a task

Skills:

Performance Criteria: description of the activities that are done as the sub-task is performed

Evidence of Attainment: proof that the activities of the sub-task meet the expected performance of a tradesperson who has reached journeyperson level

Range of Variables: elements and examples (not all-inclusive) that provide a more in-depth description of a term used in the performance criteria and evidence of attainment

Knowledge:

Learning Outcomes: describes what should be learned relating to a sub-task while participating in technical or in-school training

Learning Objectives: topics to be covered during technical or in-school training in order to meet the learning outcomes for the sub-task

Range of Variables: elements and examples (not all-inclusive) that provide a more in-depth description of a term used in the learning outcomes and learning objectives

Appendix A – Acronyms: a list of acronyms used in the standard with their full name

Appendix B – Tools and Equipment / Outils et équipement: a bilingual non-exhaustive list of tools and equipment used in this trade

Appendix C – Glossary / Glossaire: bilingual definitions or explanations of selected technical terms used in the standard

Methodology

Development of the Standard

A draft standard is developed by analyzing existing industry-developed standards, including the National Occupational Analysis and provincial/territorial apprenticeship curricula. This draft standard breaks down all the tasks performed in the occupation and describes the knowledge and abilities required for a tradesperson to demonstrate competence in the trade. To assist in this drafting, a subject matter expert is consulted to provide technical guidance and advice.

Harmonization of Apprenticeship Training

An analysis of all provinces' and territories' apprenticeship programs is performed, and recommendations are made on harmonizing the name of the trade, the hours of training required and the number of levels of training. Provinces and territories consult with their respective industry stakeholders on these elements and revisions are discussed until consensus is reached. Following the development of the workshop draft of the RSOS, participants in participating provinces discuss and come to consensus on the sequence of training topics.

Online Survey

Stakeholders are asked to review and validate the activities described in the new standard via an online survey. These stakeholders are invited to participate in this consultation through apprenticeship authorities, as well as national stakeholder groups.

Draft Review

The RSOS development team forwards a copy of the standard to provincial and territorial authorities who consult with industry representatives to review it. Their recommendations are assessed and incorporated into the standard.

Validation and Weighting

Participating provinces and territories also confirm with industry the validation and weighting information to be included in the new RSOS. These are used for the purpose of planning the makeup of the Red Seal Interprovincial Examination for the trade. Validation and weighting of the major work activities (MWA), tasks and sub-tasks of the standard are defined as:

MWA	the percentage of questions to each MWA for an examination that would cover the entire trade.
Tasks	the percentage of exam questions to each task within each MWA.
Sub-tasks	for each province/territory, a "yes" or "no" indicates whether or not each sub-task is performed by skilled workers within the trade in each jurisdiction.

The national averages for MWA and task weighting guide the Interprovincial Red Seal Examination plan for the trade.

The validation of the RSOS is used to identify common core sub-tasks across Canada for the occupation. If at least 70% of the responding jurisdictions' industry performs a sub-task, it shall be considered common core. Interprovincial Red Seal Examination questions are limited to the common core sub-tasks identified through this validation process.

Definitions for Validation and Weighting

yes	sub-task performed by qualified workers in the occupation in that province or territory
no	sub-task not performed by qualified workers in the occupation in that province or territory
NV	standard Not Validated by that province or territory
ND	trade Not Designated in a province or territory
Not Common Core (NCC)	sub-task, task or MWA performed less than 70% of responding jurisdictions; these will not be tested by the Interprovincial Red Seal Examination for the trade
National Average %	average percentage of questions assigned to each MWA and task in Interprovincial Red Seal Examination for the trade

Provincial/Territorial Abbreviations

NL	Newfoundland and Labrador
NS	Nova Scotia
PE	Prince Edward Island
NB	New Brunswick
QC	Quebec
ON	Ontario
MB	Manitoba
SK	Saskatchewan
AB	Alberta
BC	British Columbia
NT	Northwest Territories
YT	Yukon Territory
NU	Nunavut

Description of the Tilesetter Trade

“Tilesetter” is this trade’s official Red Seal occupational title approved by the CCDA. This standard covers tasks performed by tilesetters.

Tilesetters cover, protect, repair and decorate exterior and interior walls, floors, ceilings, fireplaces, swimming pools, saunas, showers and other surfaces. Tiling materials include ceramic, mosaics, glass, quarry tiles, engineered stone, natural stone (slate, marble, granite), terrazzo and porcelain.

Tilesetters read and interpret architectural drawings and material specifications to determine tile layout, finish and installation requirements. They may also design patterns for the area to be tiled. They prepare surfaces for tiling which may involve applying a variety of products such as membranes, mortar beds and underlayments. They select, mix, apply and spread mortar, cement, mastic, epoxy or other adhesives to the surface to be tiled. They cut and fit tiles to a variety of surfaces and finish tiles using grout. Tilesetters may also lay and set mosaic tiles to create decorative wall, mural and floor designs. Some tilesetters cut, polish and install marble and granite which may involve setting stone mechanically. They may also mix, lay, grind and polish terrazzo surfaces. Tilesetters may install marble using plaster and wire methods.

Tilesetters use special hand and power tools like tile cutters and saws to cut tiles to the correct size. Hand tools such as trowels are used to apply setting materials to fasten tiles to a surface. Levels, squares, straight edges and grid lines are used to align and straighten tiles. Grinding and polishing machines are used for finishing certain surfaces. Heavy equipment such as cranes may be used to transport and install product. Industrial mixers and pumps may be used in various installation processes.

Tilesetters may be employed by companies working in the residential, commercial and institutional field. Tilesetters may work in the private sector, in a union or be self-employed. Tilesetters often work with designers, clients, architects, suppliers and manufacturers.

Tilesetters generally work indoors. Some work such as cladding and swimming pools may be performed outside, exposing workers to inclement weather. The work can be physically demanding, requiring bending, kneeling, reaching, heavy lifting and working at heights.

Some important attributes in this trade include a good knowledge of mathematics to calculate weights and angles, wall and ceiling measurements, and the amount of material required to complete the work. The ability to read blueprints, shop drawings and specifications is also important. Planning and visual skills are needed in the design stage. Tilesetters are required to have a good eye for colour and layout, since they may prearrange tiles to confirm a specific design. Aptitudes include manual and spatial dexterity, strength for heavy lifting, eye-hand co-ordination and good balance and vision. Good communication and interpersonal skills are also important.

This standard recognizes similarities with the work of bricklayers, stone masons, plasterers, drywall installers, floorcovering installers and carpenters. Experienced tilesetters may advance to foreperson, instructor or supervisory positions.

Trends in the Tilesetter Trade

Technology

Installation methods for in-floor heating and sound barriers are becoming easier due to advanced technology.

Technological advances enable tilesetters to estimate materials and supplies in a quick and concise manner through automated systems.

New cellular technology apps are being used by general contractors to manage projects, centralize documents, integrate with financial systems (time sheet and payroll) and give real-time view of how the projects are pacing in the field. This helps to ensure that the tradesperson is building from the correct versions of documents, drawings and safety requirements.

Tools and Equipment

Technology for finishing equipment and materials has improved. Equipment is safer, larger, lighter and faster, resulting in higher productivity for tilesetters. Equipment and materials are more environmentally friendly.

Products and Materials

Sound barriers are following in-floor heating in popularity and are now mandatory in some buildings. Product and material compositions are changing to increase efficiency.

A wider range of products such as large format tile are available. The availability of these products influences tile layout and may require the use of new tools and equipment to cut, handle and vibrate in place. The complexity of layouts is increasing due to unlimited colours and endless design possibilities of mosaic tile and digital designs.

Due to consumer preferences, size of tiles has increased. New lightweight engineered mortars have been introduced to eliminate sagging of these large format tiles on walls and lippage on floors. This new material is more environmentally friendly than previously used organic mastic.

Terrazzo is durable and economical. It makes an impact, particularly in the use of colour, decorative patterns and logo design. In a poured in place or precast form, it is used for floors, stairs, treads, countertops and wall treatments. It consists of chips of marble, quartz, granite, glass or other suitable materials, poured with cementitious/epoxy binders, or a combination of both.

Setting materials are being improved to meet more stringent environment standards such as volatile organic components (VOC) emission, antimicrobial control and Leadership in Energy and Environmental Design (LEED).

Environmental

LEED is now being taken into consideration when estimating and ordering materials.

Recycling of removed materials is compulsory in some jurisdictions and is being enforced in more and more regions.

Legislative and Regulatory

Responsibilities may vary depending if tilesetters are working for a general contractor or working independently. Building permits and building restrictions may vary depending on region.

Skills for Success Summary

Skills for Success are needed in a quickly changing world for work, learning and life. They are foundational for building other skills and important for effective social interaction. Everyone benefits from having these skills as they help individuals get a job, progress at their current job and change jobs. They also help individuals become active members of their community and succeed in learning.

Through extensive research and consultations, the Government of Canada launched the new Skills for Success model renewing the previous Essential Skills framework to better reflect the needs of the current and future labour market.

The summary presented here is based on existing Essential Skills profiles and will be updated to align with the new Skills for Success model over time.

Reading

Tilesetters require strong reading skills to read instructions and specification guides on installation procedures and the most effective way to use or apply a product. Tilesetters read work orders to learn about specific client requests and instructions from co-workers and forepersons to coordinate work activities.

Document Use

Tilesetters interpret shop drawings and blueprints to calculate measurements and determine pattern layout. Tilesetters also refer to provincial building codes and industry resources.

Writing

Tilesetters use writing skills to prepare work orders, timesheets and instructions for co-workers to co-ordinate work. They may keep personal logbooks on the details and status of tasks performed. On occasion, tilesetters may need to complete hazard or near-miss reports.

Oral Communication

Tilesetters interact with supervisors to receive directions and assignments. They communicate with co-workers, other trades and customers to coordinate work and schedule activities. Tilesetters may instruct apprentices and speak with suppliers when ordering product.

Numeracy

Tilesetters measure and calculate product quantities taking into consideration factors such as slopes, curves and pattern layout. They calculate mix ratios and convert measurements between imperial and metric systems.

Thinking

Tilesetters often have to use thinking skills to resolve problems like laying tile in rooms that are not square. They make decisions regarding the best way to complete a job and then plan and organize the implementation of that work. Tilesetters keep track of priorities, safety considerations, client instructions and job-specific installation details.

Working with Others

Tilesetters can work independently, as part of a team on larger projects or with an apprentice. They coordinate projects with co-workers and other trades. Tilesetters also maintain close contact with supervisors, forepersons and clients to discuss job details, address problems and perform quality control checks.

Digital Technology

Tilesetters may use computer software to design layouts, communicate with clients, for research, and develop work orders and other documentation.

Continuous Learning

Technical upgrading is offered by some manufacturers when new products or equipment are introduced. Provincial construction associations offer safety training courses. Tilesetters may upgrade or develop new skills through various means such as working with more experienced tilesetters or supervisors.

Roles and Opportunities for Skilled Trades in a Sustainable Future

Climate change affects all of us. Trades play a large role in implementing solutions and adjusting to changes in the world.

Throughout this standard, there may be specific references to tasks, skills and knowledge that clearly show this trade's role in a more sustainable future. Each trade has different roles to play and contributions to make in their own way.

For example:

- Construction tradespeople need to consider the materials they are using, building methods, and improvements to mechanical and electrical installations. There are important changes to codes and standards to help meet the climate change goals and commitments set for 2030 and 2050. Retrofits and new construction of low-energy buildings provide enormous opportunities for workers in this sector. Concepts, such as energy efficiency and regarding buildings as systems are foundational.

- Automotive and mechanical trades are seeing a shift towards the electrification of vehicles and equipment. As a result, new skills and knowledge will be required for tradespeople working in this sector. There are mandates for sales of new light-duty zero-emission vehicles (ZEV) in Canada, with the goal of achieving 100% ZEV sales by 2035. Due to this mandate, the demand for these vehicles is growing quickly among consumers and fleets. With this escalating demand, the need for skilled workers to maintain and repair these vehicles is also increasing.

- In industrial and resource sectors, there is pressure to move towards increased electrification of industrial processes. Many industrial and commercial facilities are also being upgraded to improve energy efficiency in areas such as lighting systems, and new production processes and technologies. There are also opportunities in carbon capture, utilization and storage (CCUS), as well as the production and export of low-carbon hydrogen.

- Trades in the service sector may also need to be aware of responsible sourcing, as well as efficient use of products and materials. New ways of working better are always a part of the job.

There are fast-moving changes in guidelines, codes, regulations and specifications. Many are being implemented for the purpose of energy efficiency and climate change. Those that affect specific trades may be mentioned within the standard. Examples of these guidelines and legislation include:

- The National Energy Code of Canada for Buildings (NECB).

- The Canadian Net-Zero Emissions Accountability Act (CNZEAA).

- programs that encourage sustainable building design and construction such as Leadership in Energy and Environmental Design (LEED) and the Zero Carbon Building (ZCB) standards.

- the Montreal Protocol for phasing out R22 refrigerants.

- energy efficiency programs such as ENERGY STAR.

- principles of the United Nations Declaration for the Rights of Indigenous Peoples pertaining to energy sector development.

Apprentices and tradespeople need to increase their climate literacy and reinforce their own understanding of energy issues and environmental practices. It is important for them to understand why these changes are happening and their effect on trades' work. While individual tradespeople and apprentices may not be able to choose certain elements like; the architectural design of buildings, building material selection, regulatory requirements, use of electric vehicles and technologies, they must understand the impact of using these elements in their work. Impacts include using environmentally friendly products and following requirements related to the disposal and recycling of materials.

In apprenticeship, as well as in ongoing professional development, employers and instructors should encourage learning about these concepts, why they are important, how they are implemented, and the overarching targets they are aiming to achieve.

All in all, it's about doing the work better and building a better world.

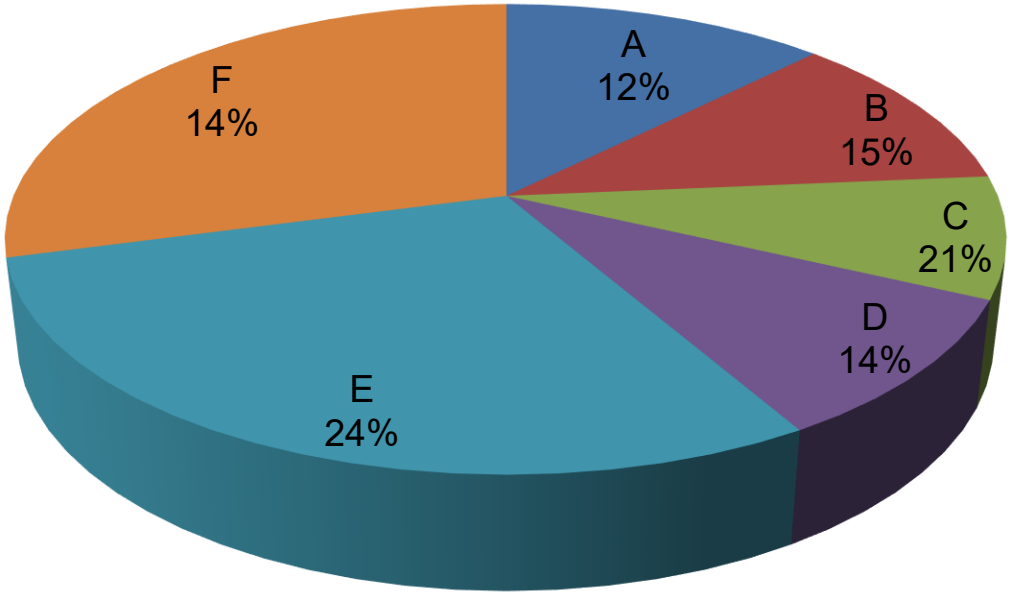
Industry Expected Performance

All tasks must be performed according to the applicable jurisdictional codes and standards. All health and safety standards must be respected and observed. Work should be performed efficiently and to a high quality without material waste or environmental damage. All requirements of employers, engineers, designers, manufacturers, clients and quality control policies must be met. At a journeyperson level of performance, all tasks must be done with minimal direction and supervision. As a journeyperson progresses in their career there is an expectation they continue to upgrade their skills and knowledge to maintain pace with industry and promote continuous learning in their trade through mentoring of apprentices.

Language Requirements

It is expected that journeypersons are able to understand and communicate in either English or French, which are Canada's official languages. English or French are the common languages of business as well as languages of instruction in apprenticeship programs.

Pie Chart of Red Seal Examination Weightings



MWA A	Performs common occupational skills	12%
MWA B	Prepares substrates	15%
MWA C	Prepares layout	21%
MWA D	Prepares materials	14%
MWA E	Sets materials	24%
MWA F	Finishes materials	14%

This pie chart represents a breakdown of the interprovincial Red Seal examination. Percentages are based on the collective input from workers from the trade from across Canada. The Task Matrix on the next pages indicates the breakdown of tasks and sub-tasks within each Major Work Activity and the breakdown of questions assigned to the Tasks. The Interprovincial examination for this trade has 100 questions.

Tilesetter
Task Matrix and Weightings

A – Performs common occupational skills — 12%

Task A-1 **Performs safety-related functions** **31%**	**A-1.01 Maintains safe work environment**	**A-1.02 Uses personal protective equipment (PPE) and safety equipment**	
Task A-2 **Uses and maintains tools and equipment** **31%**	**A-2.01 Uses tools and equipment**	**A-2.02 Uses access equipment**	**A-2.03 Uses rigging, hoisting and lifting equipment**
Task A-3 **Organizes work** **38%**	**A-3.01 Estimates materials, supplies and labour**	**A-3.02 Organizes materials, supplies and work site**	**A-3.03 Evaluates damages and deficiencies**
	A-3.04 Uses communication techniques	**A-3.05 Uses mentoring techniques**	

B – Prepares substrates — 15%

Task B-4 **Removes existing finishes** **29%**	**B-4.01 Removes surface coverings**	**B-4.02 Cleans surfaces**	
Task B-5 Evaluates and prepares surface **47%**	**B-5.01 Assesses existing substrate**	**B-5.02 Installs membranes**	**B-5.03 Installs mortar beds**
	B-5.04 Installs underlayments		

Task B-6 Installs specialty products **24%**	**B-6.01 Installs sound barrier products**	**B-6.02 Installs in-floor heating**	**B-6.03 Installs engineered products**

C – Prepares layout — 21%

Task C-7 **Lays out work area** **76%**	**C-7.01 Confirms site measurements**	**C-7.02 Determines tile layout for best visual effect**	**C-7.03 Lays out grid lines**
	C-7.04 Evaluates rise and run of stairs		
Task C-8 **Evaluates joints** **24%**	**C-8.01 Accommodates existing joints**	**C-8.02 Determines additional joint requirements**	

D – Prepares materials — 14%

Task D-9 **Inspects materials** **22%**	**D-9.01 Confirms material consistencies**	**D-9.02 Checks materials for damage**	
Task D-10 **Prepares material for installation** **43%**	**D-10.01 Prepares tiles**	**D-10.02 Prepares stone slabs**	
Task D-11 **Mixes materials** **35%**	**D-11.01 Mixes materials for tile and stone**	**D-11.02 Mixes materials for mortar beds**	**D-11.03 Mixes materials for terrazzo**

E – Sets materials

24%

Task E-12 **Installs tiles** **56%**	**E-12.01 Applies setting material**	**E-12.02 Sets tiles**	**E-12.03 Installs accessories**
	E-12.04 Installs expansion and control joints	**E-12.05 Installs tile trim**	
Task E-13 **Installs stone slabs** **29%**	**E-13.01 Installs anchors**	**E-13.02 Applies stone slab setting material**	**E-13.03 Mounts stone slabs**
	E-13.04 Sets stone slabs		
Task E-14 **Pours terrazzo mixture** **15%**	**E-14.01 Installs divider strips for terrazzo**	**E-14.02 Applies bond coat**	**E-14.03 Trowels in terrazzo mixture**
	E-14.04 Works surface		

F – Finishes materials

14%

Task F-15 **Finishes installed product** **67%**	**F-15.01 Installs grout**	**F-15.02 Caulks joints**	**F-15.03 Seals material**
Task F-16 **Finishes terrazzo and stone** **33%**	**F-16.01 Grinds terrazzo and stone**	**F-16.02 Grouts terrazzo and stone**	**F-16.03 Seals terrazzo and stone**

Harmonization of Apprenticeship Training

Provincial and territorial apprenticeship authorities are each responsible for their respective apprenticeship programs. In the spirit of continual improvement, and to facilitate mobility among apprentices in Canada, participating authorities have agreed to work towards harmonizing certain aspects of their programs where possible. After consulting with their stakeholders in the trade, they have reached consensus on the following elements. Note that implementation of these elements may vary from jurisdiction to jurisdiction, depending on their own circumstances. For more information on the implementation in any province and territory, please contact that jurisdiction's apprenticeship authority.

1. Trade name

The official Red Seal name for this trade is Tilesetter.

2. Number of Levels of Apprenticeship

The number of levels of technical training recommended for this trade is three (3).

3. Total Training Hours

The total hours of training, including both on-the-job and in-school training for this trade is 5400.

4. Sequencing Topics and Related Sub-tasks

The topic titles in the table below are placed in a column for each apprenticeship level for technical training. Each topic is accompanied by the sub-tasks and their reference number. The topics in the grey shaded cells represent those that are covered "in context" with other training in the subsequent years.

Level 1	Level 2	Level 3
	Context	Context
	Safety-Related Functions	Safety-Related Functions
	Tools and Equipment	Tools and Equipment
	Organizes Work	Organizes Work
		Surfaces (Evaluate and Prepare)
	Existing Finishes (Removes)	Existing Finishes (Removes)
Safety-Related Functions 1.01 Maintains safe work environment 1.02 Uses personal protective equipment (PPE) and safety equipment		
Tools and Equipment 2.01 Uses tools and equipment 2.02 Uses access equipment 2.03 Uses rigging, hoisting and lifting equipment		

Level 1	Level 2	Level 3
Organizes Work 3.01 Estimates materials, supplies and labour 3.02 Organizes materials, supplies and work site 3.03 Evaluates damages and deficiencies 3.04 Uses communication techniques		
Communication 3.04 Uses communication techniques		**Mentoring** 3.05 Uses mentoring techniques
Existing Finishes (Removes) 4.01 Removes surface coverings 4.02 Cleans surfaces		
Surfaces (Evaluate and Prepare)-Introduction 5.01 Assesses existing substrate 5.02 Installs membranes 5.03 Installs mortar beds 5.04 Installs underlayments	**Surfaces (Evaluate and Prepare)** 5.01 Assesses existing substrate 5.02 Installs membranes 5.03 Installs mortar beds 5.04 Installs underlayments	
	Specialty Products 6.01 Installs sound barrier products 6.02 Installs in-floor heating 6.03 Installs engineered products	**Specialty Products** 6.01 Installs sound barrier products 6.02 Installs in-floor heating 6.03 Installs engineered products
Work Area (Lay Out) 7.01 Confirms site measurements 7.02 Determines tile layout for best visual effect 7.03 Lays out grid lines 7.04 Evaluates rise and run of stairs	**Work Area (Lay Out)** 7.01 Confirms site measurements 7.02 Determines tile layout for best visual effect 7.03 Lays out grid lines 7.04 Evaluates rise and run of stairs	**Work Area (Lay Out)** 7.01 Confirms site measurements 7.02 Determines tile layout for best visual effect 7.03 Lays out grid lines 7.04 Evaluates rise and run of stairs
Joints - Introduction 8.01 Accommodates existing joints 8.02 Determines additional joint requirements	**Joints** 8.01 Accommodates existing joints 8.02 Determines additional joint requirements	
Material Inspection 9.01 Confirms material consistencies 9.02 Checks materials for damage	**Material Inspection** 9.01 Confirms material consistencies 9.02 Checks materials for damage	**Material Inspection** 9.01 Confirms material consistencies 9.02 Checks materials for damage

Level 1	Level 2	Level 3
Material Preparation for Installation 10.01 Prepares tiles 10.02 Prepares stone slabs	**Material Preparation for Installation** 10.01 Prepares tiles 10.02 Prepares stone slabs	
Materials (Mixes) 11.01 Mixes materials for tile and stone 11.02 Mixes materials for mortar beds 11.03 Mixes materials for terrazzo	**Materials (Mixes)** 11.01 Mixes materials for tile and stone 11.02 Mixes materials for mortar beds 11.03 Mixes materials for terrazzo	
Tile Installation 12.01 Applies setting materials 12.02 Sets tiles 12.03 Installs accessories	**Tile Installation** 12.01 Applies setting materials 12.02 Sets tiles 12.03 Installs accessories 12.04 Installs expansion and control joints 12.05 Installs tile trim	**Tile Installation** 12.02 Sets tiles 12.03 Installs accessories 12.04 Installs expansion and control joints 12.05 Installs tile trim
Stone Slabs - Introduction 13.01 Installs anchors 13.02 Applies stone slab setting material	**Stone Slabs** 13.01 Installs anchors 13.02 Applies stone slab setting material 13.03 Mounts stone slabs 13.04 Works surface	
Terrazzo Mixture - Introduction 14.01 Installs divider strips for terrazzo 14.02 Applies bond coat 14.03 Trowels in terrazzo mixture 14.04 Works surface	**Terrazzo Mixture** 14.01 Installs divider strips for terrazzo 14.02 Applies bond coat 14.03 Trowels in terrazzo mixture 14.04 Works surface	
Installed Product (Finishes) 15.01 Installs grout 15.02 Caulks joints 15.03 Seals material	**Installed Product (Finishes)** 15.01 Installs grout 15.02 Caulks joints 15.03 Seals material	
Terrazzo and Stone (Finishes) - Introduction 16.01 Grinds terrazzo and stone 16.02 Grouts terrazzo and stone 16.03 Seals terrazzo and stone	**Terrazzo and Stone (Finishes)** 16.01 Grinds terrazzo and stone 16.02 Grouts terrazzo and stone 16.03 Seals terrazzo and stone	

Major Work Activity A
Performs common occupational skills

Task A-1 Performs safety-related functions

Task Descriptor

Tilesetters integrate safety practices throughout every task included in the scope of their trade. They must be knowledgeable in safe work practices and use of PPE and safety equipment to protect self and other workers.

They maintain a safe work environment through the maintenance and use of their tools, equipment and materials. With experience, tilesetters develop the ability to evaluate damages and deficiencies through accurate assessment. They demonstrate organizational skills to ensure the project's successful development from start to finish.

A-1.01 Maintains safe work environment

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	yes	yes	yes	yes	ND	yes	yes	yes	ND	ND	ND

	Skills	
	Performance Criteria	**Evidence of Attainment**
A-1.01.01P	select and use tools and equipment	tools and equipment are selected and used according to task and manufacturers' specifications
A-1.01.02P	identify, correct and report potential and existing ***hazards***	potential and existing ***hazards*** are identified, corrected and reported to supervisor according to company policies, ***standards and regulations***
A-1.01.03P	maintain clean work area	clean work area is maintained
A-1.01.04P	set up ***barricades***	***barricades*** are set up to define work perimeters and contain contaminants or other hazards
A-1.01.05P	store materials and equipment safely	materials and equipment are stored safely
A-1.01.06P	dispose of or recycle materials and products	materials and products are disposed of or recycled as possible according to jurisdictional regulations and safety data sheets (SDS)

A-1.01.07P	identify and respect physical limitations of self and others	physical limitations of self and others are identified and respected
A-1.01.08P	set up or identify location of safety zone containing ***components***	location of safety zone containing ***components*** is set up or identified
A-1.01.09P	document ***information***	***information*** is documented according to ***standards and regulations***

Range of Variables

hazards include: dust, fumes, asbestos, obstacles, tripping hazards

standards and regulations include: Canadian Standards Association (CSA), Occupational Health and Safety (OH&S), building codes (National Building Code [NBC], local), site-specific (company or client), jurisdictional regulations

barricades include: caution tape, fences, barriers (dust, temporary), signs, hoarding

components include: first aid kits, Workplace Hazardous Materials Information System (WHMIS), fire extinguishers, SDS, eye wash stations

information includes: inspections, potential hazards, safety meetings, injuries, training

	Knowledge	
	Learning Outcomes	**Learning Objectives**
A-1.01.01L	demonstrate knowledge of procedures to maintain safe work environment	describe procedures to ensure clean worksite
		identify types of ***barricades*** and describe their characteristics and applications
		describe procedures to install ***barricades***
		describe procedures to store materials and equipment safely
		identify ***hazards*** and describe associated reporting procedures
		describe procedures to recycle and dispose of materials and products
		identify safe work procedures and describe their characteristics and applications
		describe procedures to locate safety zone containing ***components***
		describe procedures to document ***information***
A-1.01.02L	demonstrate knowledge of training requirements for maintaining safe work environment	identify training requirements for maintaining safe work environment
A-1.01.03L	demonstrate knowledge of regulatory requirements for maintaining safe work environment	identify safety manuals, ***standards and regulations*** for maintaining safe work environment

Range of Variables

barricades include: caution tape, fences, barriers (dust, temporary), signs, hoarding

hazards include: dust, fumes, asbestos, obstacles, tripping hazards

components include: first aid kits, Workplace Hazardous Materials Information System (WHMIS), fire extinguishers, SDS, eye wash stations

information includes: inspections, potential hazards, safety meetings, injuries, training

standards and regulations include: Canadian Standards Association (CSA), Occupational Health and Safety (OH&S), building codes (National Building Code [NBC], local), site-specific (company or client), jurisdictional regulations

A-1.02 Uses personal protective equipment (PPE) and safety equipment

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	yes	yes	yes	yes	ND	yes	yes	yes	ND	ND	ND

	Skills	
	Performance Criteria	**Evidence of Attainment**
A-1.02.01P	identify site ***hazards*** and regulations requiring use of ***PPE*** and safety equipment	site ***hazards*** and regulations requiring use of ***PPE*** and safety equipment are identified
A-1.02.02P	select and use ***PPE*** and safety equipment	***PPE*** and safety equipment are selected and used according to task and situations
A-1.02.03P	maintain and store ***PPE*** and safety equipment	***PPE*** and safety equipment are maintained and stored according to worksite requirements, company policies and ***safety regulations***
A-1.02.04P	identify CSA-approved ***PPE*** and safety equipment	CSA-approved ***PPE*** and safety equipment are identified
A-1.02.05P	ensure fit of ***PPE***	***PPE*** is adjusted to ensure fit according to manufacturers' specifications
A-1.02.06P	identify, report and replace ***damaged or faulty PPE*** and safety equipment	***damaged or faulty PPE*** and safety equipment are identified, reported to supervisor and replaced according to manufacturers' specifications and company policies

Range of Variables

hazards include: dust, fumes, falls, flying debris

PPE includes: respirators, fall arrest harnesses, face shields, hearing protection

safety regulations include: jurisdictional, WHMIS, OH&S

damaged or faulty PPE include: excessively worn footwear, worn harnesses, improperly maintained or stored dust masks, cracked safety glasses

	Knowledge	
	Learning Outcomes	**Learning Objectives**
A-1.02.01L	demonstrate knowledge of ***PPE*** and safety equipment, their characteristics and applications	identify types of ***PPE*** and describe their characteristics and applications
		identify types of safety equipment and describe their characteristics and applications
A-1.02.02L	demonstrate knowledge of procedures to select and use ***PPE*** and safety equipment	describe procedures to select and use ***PPE***
		describe procedures to select and use safety equipment
A-1.02.03L	demonstrate knowledge of training and certification requirements for ***PPE*** and safety equipment	identify training requirements for ***PPE*** and safety equipment
A-1.02.04L	demonstrate knowledge of regulatory requirements for ***PPE*** and safety equipment	identify safety manuals, ***standards and regulations*** for ***PPE*** and safety equipment

Range of Variables

PPE includes: respirators, fall arrest harnesses, face shields, hearing protection

standards and regulations include: CSA, OH&S, building codes (NBC, local), site-specific (company or client), jurisdictional regulations

Task A-2 Uses and maintains tools and equipment

Task Descriptor

Tilesetters use and maintain tools and equipment to perform tasks efficiently and safely. Tilesetters sometimes use scaffolding and access, rigging, hoisting and lifting equipment to complete their job.

A-2.01 Uses tools and equipment

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	yes	yes	yes	yes	ND	yes	yes	yes	ND	ND	ND

	Skills	
	Performance Criteria	**Evidence of Attainment**
A-2.01.01P	select and use ***tools and equipment***	***tools and equipment*** are selected and used according to task and manufacturers' specifications
A-2.01.02P	inspect ***tools and equipment***	***tools and equipment*** are inspected for deficiency or damage

A-2.01.03P	repair or replace defective or damaged ***tools and equipment***	defective or damaged ***tools and equipment*** are repaired or replaced according to manufacturers' specifications
A-2.01.04P	clean and store ***tools and equipment***	***tools and equipment*** are cleaned and stored according to manufacturers' specifications
A-2.01.05P	identify worn, damaged and defective ***tools and equipment***, and tag, report and remove from service	worn, damaged and defective ***tools and equipment*** are identified, tagged, reported to supervisor and removed from service

Range of Variables

tools and equipment include: common tools; measuring and layout equipment; air, electric and hydraulic power tools; specialty tools and equipment

	Knowledge	
	Learning Outcomes	**Learning Objectives**
A-2.01.01L	demonstrate knowledge of ***tools and equipment***, their ***components***, characteristics, applications and operation	identify types of ***tools and equipment*** and their ***components***, and describe their characteristics and applications
		describe operating principles of ***tools and equipment***
A-2.01.02L	demonstrate knowledge of procedures to use and maintain ***tools and equipment*** and their ***components***	identify ***hazards*** and describe safe work practices pertaining to ***tools and equipment***, and their ***components***
		describe procedures to use ***tools and equipment***, and their ***components***
		describe procedures to inspect ***tools and equipment***, and their ***components***
		describe procedures to clean and store ***tools and equipment***, and their ***components***
		describe procedures to maintain ***tools and equipment***, and their ***components***
		describe procedures to identify and tag out worn, damaged and defective ***tools and equipment***, and their ***components***

Range of Variables

tools and equipment include: common tools; measuring and layout equipment; air, electric and hydraulic power tools; specialty tools and equipment

components include: guards, handles, cords

hazards include: flying debris, silica dust, noise

A-2.02 Uses access equipment

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	yes	yes	yes	yes	ND	yes	yes	yes	ND	ND	ND

	Skills	
	Performance Criteria	**Evidence of Attainment**
A-2.02.01P	select and use ***access equipment***	***access equipment*** is selected and used according to ***factors***
A-2.02.02P	inspect ***access equipment***	***access equipment*** is inspected for damage and missing components
A-2.02.03P	identify and report ***hazards*** when erecting ***access equipment***	***hazards*** when erecting ***access equipment*** are identified and reported to supervisor
A-2.02.04P	secure ***access equipment***	***access equipment*** is secured according to manufacturers' specifications and jurisdictional safety regulations
A-2.02.05P	erect, level and dismantle ***access equipment***	***access equipment*** is erected, leveled and dismantled according to jurisdictional regulations
A-2.02.06P	identify worn, damaged and defective ***access equipment***, and tag, report and remove from service	worn, damaged and defective ***access equipment*** is identified, tagged, reported to supervisor and removed from service

Range of Variables

access equipment includes: scaffolding, mobile scaffolding, elevated work platforms

factors include: task, job size, site conditions, operating limitations indicated on manufacturers' tags, manufacturers' specifications, jurisdictional OH&S regulations

hazards include: excess loads, work environment, falling objects

	Knowledge	
	Learning Outcomes	**Learning Objectives**
A-2.02.01L	demonstrate knowledge of ***access equipment***, their components, characteristics, applications and operation	identify types of ***access equipment*** and their components, and describe their characteristics and applications
		describe operating principles of ***access equipmen***t and their components
A-2.02.02L	demonstrate knowledge of procedures to use ***access equipment*** and their components	identify ***hazards*** and describe safe work practices when erecting ***access equipment***
		describe procedures to erect, level and dismantle ***access equipment*** and their components
		describe procedures to inspect ***access equipment*** and their components

		describe procedures to secure ***access equipment*** and their components
		describe procedures to maintain ***access equipment*** and their components
		describe procedures to identify and tag out worn, damaged and defective ***access equipment*** and their components
A-2.02.03L	demonstrate knowledge of training and certification requirements pertaining to ***access equipment***	identify training and certification requirements pertaining to ***access equipment***
A-2.02.04L	demonstrate knowledge of regulatory requirements pertaining to elevated work platforms	identify codes, standards and regulations pertaining to elevated work platforms

Range of Variables

access equipment includes: scaffolding, mobile scaffolding, elevated work platforms
hazards include: excess loads, work environment, falling objects

A-2.03 Uses rigging, hoisting and lifting equipment

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	yes	yes	yes	yes	ND	yes	yes	yes	ND	ND	ND

	Skills	
	Performance Criteria	**Evidence of Attainment**
A-2.03.01P	select and use ***rigging, hoisting and lifting equipment***	***rigging, hoisting and lifting equipment*** is selected and used according to ***factors***
A-2.03.02P	inspect ***rigging, hoisting and lifting equipment***	***rigging, hoisting and lifting equipment*** is inspected before and after use
A-2.03.03P	identify, report and remove from service worn, damaged or defective ***rigging, hoisting and lifting equipment***	worn, damaged or defective ***rigging, hoisting and lifting equipment*** is identified, reported to supervisor and removed from service
A-2.03.04P	lubricate hoisting equipment	hoisting equipment is lubricated
A-2.03.05P	locate centre of gravity of load	centre of gravity of load is located
A-2.03.06P	secure load	load is secured using ***rigging techniques***
A-2.03.07P	communicate with personnel involved in lift	personnel involved in lift are communicated with using ***methods***
A-2.03.08P	store hoisting and rigging equipment	hoisting and rigging equipment are stored in secure, clean and dry environment
A-2.03.09P	restrict access to lift area	access to lift area is restricted to prevent injury and damage using ***barricades***

Range of Variables

rigging, hoisting and lifting equipment includes: shackles, spreader bars, chain hoists, belts, ropes, cables, slings, chain falls, gin wheels

factors include: task, manufacturers' specifications, load size, capacities

rigging techniques include: choking, using shackles and lifting clamps

methods include: using hand signals and two-way radios

barricades: include: caution tape, fences, barriers (dust, temporary), signs, hoarding

	Knowledge	
	Learning Outcomes	**Learning Objectives**
A-2.03.01L	demonstrate knowledge of ***rigging, hoisting and lifting equipment***, their components, characteristics, applications and operation	identify ***rigging, hoisting and lifting equipment*** and their components, and describe their characteristics and applications
		describe operating principles of ***rigging, hoisting and lifting equipment***, and their components
A-2.03.02L	demonstrate knowledge of procedures to use ***rigging, hoisting and lifting equipment***, and their components	identify ***hazards*** and describe safe work practices pertaining to ***rigging, hoisting and lifting equipment***, and their components
		describe procedures to use ***rigging, hoisting and lifting equipment***, and their components
		describe procedures to maintain ***rigging, hoisting and lifting equipment***, and their components
		describe procedures to inspect ***rigging, hoisting and lifting equipment***, and their components
		describe procedures to identify worn, damaged and defective ***rigging, hoisting and lifting equipment***, and their components
		describe procedures to secure loads using ***rigging techniques***
		describe ***methods*** used to communicate with personnel involved in lift
		identify ***barricades*** used to restrict lift area
		explain centre of gravity of load

Range of Variables

rigging, hoisting and lifting equipment includes: shackles, spreader bars, chain hoists, belts, ropes, cables, slings, chain falls, gin wheels

hazards include: falling objects, pinch points

rigging techniques include: choking, using shackles and lifting clamps

methods include: using hand signals and two-way radios

barricades: include: caution tape, fences, barriers (dust, temporary), signs, hoarding

Task A-3 Organizes work

Task Descriptor

Tilesetters demonstrate knowledge of organizational skills to ensure the project's success from start to finish. They must make good use of time and materials in a cost-efficient way.

A-3.01 Estimates materials, supplies and labour

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	yes	yes	yes	yes	ND	yes	yes	no	ND	ND	ND

	Skills	
	Performance Criteria	**Evidence of Attainment**
A-3.01.01P	select and use tools and equipment	tools and equipment are selected and used according to task and manufacturers' specifications
A-3.01.02P	measure ***project dimensions***	***project dimensions*** are measured
A-3.01.03P	convert imperial and metric measurements	imperial and metric measurements are converted
A-3.01.04P	select required materials and supplies	required materials and supplies are selected according to ***project specifications***
A-3.01.05P	determine if special equipment is required	need for special equipment is determined
A-3.01.06P	calculate quantities of materials and supplies	quantities of materials and supplies are calculated according to ***project specifications***
A-3.01.07P	estimate timeframe for completion of project	timeframe for completion of project is estimated according to ***project specifications***
A-3.01.08P	identify ***surrounding issues***	***surrounding issues*** are identified

A-3.01.09P	determine suitability of product to be used for project	suitability of product to be used for project is determined according to ***project specifications***
A-3.01.10P	check availability of materials	availability of materials is checked according to ***project specifications***
A-3.01.11P	coordinate work with other trades	work is coordinated through supervisor with other trades according to project critical path and sequence of work

Range of Variables

project dimensions include: length, width, height

project specifications include: design drawings, shop drawings, blueprints, schedule

surrounding issues include: elevations, protections, obstructions, utilities, logistics, heavy equipment, cranes

	Knowledge	
	Learning Outcomes	**Learning Objectives**
A-3.01.01L	demonstrate knowledge of procedures to estimate materials, supplies and labour	identify tools and equipment used to estimate materials, supplies and labour, and describe their procedures for use
		interpret information found in ***project specifications***
		describe procedures to measure ***project dimensions***
		describe procedures to determine suitability, quantities and availability of materials and supplies required
		describe procedures to determine substrate suitability
		describe procedures to determine timeframe required for completion of project
		describe procedures to determine requirements of other trades on site
		identify ***surrounding issues*** to be considered

Range of Variables

project specifications include: design drawings, shop drawings, blueprints, schedule

project dimensions include: length, width, height

surrounding issues include: elevations, protections, obstructions, utilities, logistics, heavy equipment, cranes

A-3.02 Organizes materials, supplies and work site

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	yes	yes	yes	yes	ND	yes	yes	yes	ND	ND	ND

	Skills	
	Performance Criteria	**Evidence of Attainment**
A-3.02.01P	select and use tools and equipment	tools and equipment are selected and used according to task and manufacturers' specifications
A-3.02.02P	order materials and supplies	materials and supplies are ordered according to ***project specifications***
A-3.02.03P	collect materials and supplies and check for damage	materials and supplies are collected and checked for damage
A-3.02.04P	store and secure materials and supplies on site	materials and supplies are stored and secured on site according to manufacturers' specifications
A-3.02.05P	schedule work to be performed	work to be performed is scheduled
A-3.02.06P	assess site readiness	site readiness is assessed
A-3.02.07P	pre-clean and remove obstructions from work site	work site is pre-cleaned and obstructions are removed
A-3.02.08P	protect surrounding surfaces	surrounding surfaces are protected
A-3.02.09P	install ***barricades***	***barricades*** are installed to protect surrounding finishes
A-3.02.10P	install ***inclement weather protection***	***inclement weather protection*** is installed
A-3.02.11P	take remedial action for ***problems***	remedial action is taken for ***problems***
A-3.02.12P	determine availability of ***auxiliary workspaces***	availability of ***auxiliary workspaces*** is determined

Range of Variables

project specifications include: design drawings, shop drawings, blueprints, schedule
barricades: include: caution tape, fences, barriers (dust, temporary), signs, hoarding
inclement weather protection includes: tents, covers, heaters
problems include: missing materials, unavailable utilities, unsuitable temperature
auxiliary workspaces include: mixing, storage and cutting areas

	Knowledge	
	Learning Outcomes	**Learning Objectives**
A-3.02.01L	demonstrate knowledge of procedures to organize materials, supplies and work site	identify tools and equipment used to organize materials, supplies and work site, and describe their procedures for use
		interpret information found in ***project specifications***
		describe procedures to order and collect materials and supplies
		describe procedures to store materials and supplies to ensure security and ease of use
		describe procedures to plan project schedule and task sequence
		describe procedures to organize work site and ***auxiliary workspaces***
		describe procedures to install ***barricades*** and ***inclement weather protection***
		identify ***environmental requirements*** of work to be conducted for interior and exterior projects

Range of Variables

project specifications include: design drawings, shop drawings, blueprints, schedule
auxiliary workspaces include: mixing, storage and cutting areas
barricades: include: caution tape, fences, barriers (dust, temporary), signs, hoarding
inclement weather protection includes: tents, covers, heaters
environmental requirements include: minimum temperature, humidity

A-3.03 Evaluates damages and deficiencies

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	yes	yes	yes	yes	ND	yes	yes	yes	ND	ND	ND

	Skills	
	Performance Criteria	**Evidence of Attainment**
A-3.03.01P	select and use ***tools and equipment***	***tools and equipment*** are selected and used according to task and manufacturers' specifications
A-3.03.02P	perform visual inspection of finished area	visual inspection of finished area is performed to identify ***damages and deficiencies***
A-3.03.03P	remove damaged components	damaged components are removed

A-3.03.04P	determine probable root cause of ***damages and deficiencies***	probable root cause of ***damages and deficiencies*** is determined
A-3.03.05P	confirm evaluation of root cause with ***consultants***	evaluation of root cause is confirmed with ***consultants***

Range of Variables

tools and equipment include: hammers, chisels, knives, vacuums
damages and deficiencies include: cracks, discolouration, spalling
consultants include: engineers, architects

	Knowledge	
	Learning Outcomes	**Learning Objectives**
A-3.03.01L	demonstrate knowledge of procedures to evaluate ***damages and deficiencies***	identify ***tools and equipment*** used to evaluate ***damages and deficiencies***, and describe their procedures for use
		describe procedures to inspect finished area for ***damages and deficiencies***
		describe procedures to evaluate ***damages and deficiencies***
		describe procedures to determine root cause of ***damages and deficiencies***
		describe procedures to remove and dispose of damaged components

Range of Variables

tools and equipment include: hammers, chisels, knives, vacuums
damages and deficiencies include: cracks, discolouration, spalling

A-3.04 Uses communication techniques

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	yes	yes	yes	yes	ND	yes	yes	yes	ND	ND	ND

	Skills	
	Performance Criteria	**Evidence of Attainment**
A-3.04.01P	demonstrate communication practices with individuals or in a group	instructions and messages are interpreted by all parties involved in communication
A-3.04.02P	listen using ***active listening*** practices	***active listening*** practices are utilized
A-3.04.03P	speak clearly using correct industry terminology to ensure understanding	understanding of message is confirmed by both parties
A-3.04.04P	receive and respond to instructions	response to instructions indicates understanding

A-3.04.05P	receive and respond to feedback on work completed or performed	response to feedback indicates understanding and corrective measures are taken
A-3.04.06P	explain and provide feedback	explanation and feedback are provided, and task is carried out as directed
A-3.04.07P	use questions to improve communication	questions enhance understanding, on-the-job training and goal setting
A-3.04.08P	participate in safety and information meetings	meetings are attended, information is relayed to workforce, and is applied
A-3.04.09P	send and receive ***electronic messages***	***electronic messages*** are sent and received using professionalism, plain language and clear expressions according to company policy

Range of Variables

active listening includes: hearing, interpreting, reflecting, responding, paraphrasing
electronic messages include: email, text messages

	Knowledge	
	Learning Outcomes	**Learning Objectives**
A-3.04.01L	demonstrate knowledge of trade terminology	define terminology used in trade
A-3.04.02L	demonstrate knowledge of effective communication practices	describe importance of using effective verbal and non-verbal communication with ***people in the workplace***
		identify ***sources of information*** to effectively communicate
		identify communication and ***learning styles***
		describe effective listening and speaking skills
		describe how to receive and give instructions effectively
		identify ***personal responsibilities and attitudes*** that contribute to on-the-job success
		identify value of equity, diversity and inclusion in workplace
		identify communication that constitutes bullying, ***harassment*** and ***discrimination***
		identify communication styles appropriate to different systems and applications of ***electronic messages***

Range of Variables

people in the workplace include: other tradespeople, colleagues, apprentices, supervisors, clients, jurisdictional representatives, manufacturers

sources of information include: regulations, codes, occupational health and safety requirements, jurisdictional requirements, prints, drawings, specifications, company and client documentation

learning styles include: visual, auditory, reading, writing, kinesthetic

personal responsibilities and attitudes include: asking questions, working safely, accepting constructive feedback, time management and punctuality, respect for authority, good stewardship of materials, tools and property, efficient work practice

harassment: as defined by the Canadian and jurisdictional Human Rights Commissions

discrimination: as defined by the Canadian Human Rights Act and jurisdictional human rights laws

electronic messages include: email, text messages

A-3.05 Uses mentoring techniques

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	yes	yes	yes	yes	ND	yes	yes	yes	ND	ND	ND

	Skills	
	Performance Criteria	**Evidence of Attainment**
A-3.05.01P	identify and communicate learning objective and point of lesson	apprentice or learner can explain objective and point of lesson
A-3.05.02P	link lesson to other lessons and project	lesson order and unplanned learning opportunities are defined
A-3.05.03P	demonstrate performance of a skill to an apprentice or learner	***steps required to demonstrate a skill*** are performed
A-3.05.04P	set up conditions required for apprentice or learner to practice a skill	***practice conditions*** are set up so that skill can be practiced safely by apprentice or learner
A-3.05.05P	assess apprentice or learner's ability to perform tasks with increasing independence	performance of apprentice or learner improves with practice to a point where skill can be done with little supervision
A-3.05.06P	give supportive and corrective feedback	apprentice or learner adopts best practice after having been given supportive or corrective feedback
A-3.05.07P	support apprentices or learners in pursuing technical training opportunities	technical training is completed within timeframe prescribed by apprenticeship authority
A-3.05.08P	support anti-***harassment*** and anti-***discrimination*** practices in workplace	workplace is ***harassment*** and ***discrimination***-free
A-3.05.09P	assess apprentice or learner suitability to trade during probationary period	apprentice or learner is given constructive feedback that helps them identify their own strengths and weaknesses and suitability for the trade

Range of Variables

steps required to demonstrate a skill include: understanding who, what, where, when, why, and how, explaining, showing, giving encouragement, following up to ensure skill is performed correctly

practice conditions mean: guided, limited independence, full independence

harassment: as defined by the Canadian and jurisdictional Human Rights Commissions

discrimination: as defined by the Canadian Human Rights Act and jurisdictional human rights laws

	Knowledge	
	Learning Outcomes	**Learning Objectives**
A-3.05.01L	demonstrate knowledge of strategies for learning skills in workplace	describe importance of individual experience
		describe shared responsibilities for workplace learning
		determine one's own learning preferences and explain how these relate to learning new skills
		describe importance of different types of skills in workplace
		describe importance of ***skills for success (essential skills)*** in workplace
		identify different ***learning styles***
		identify different ***learning needs*** and strategies to meet them
		identify ***strategies to assist in learning a skill***
A-3.05.02L	demonstrate knowledge of strategies for ***teaching*** workplace ***skills***	identify different roles played by workplace mentor
		describe ***teaching skills***
		explain importance of identifying point of lesson
		identify how to choose a good time to present lesson
		explain importance of linking lessons
		identify context for learning skills
		describe considerations in setting up opportunities for skill practice
		explain importance of providing feedback
		identify techniques for giving effective feedback
		describe a skills assessment
		identify methods of assessing progress
		explain how to adjust lesson to different situations

Range of Variables

skills for success (essential skills) are: adaptability, collaboration, communication, creativity and innovation, digital, numeracy, problem solving, reading, writing

learning styles include: visual, auditory, reading, writing, kinesthetic

learning needs include: learning disabilities, learning preferences, language proficiency

strategies to assist in learning a skill include: understanding the basic principles of instruction, developing coaching skills, being mature and patient, providing feedback

teaching skills include: identifying point of lesson, linking lesson, demonstrating skill, providing practice, giving feedback, assessing skills and progress

Major Work Activity B
Prepares substrates

Task B-4 Removes existing finishes

Task Descriptor

Substrate preparation is a key step of a finished tile, stone or terrazzo project. It ensures the ease in subsequent procedures and the longevity of the finished product. Tilesetters may have to remove existing surface coverings, clean, then prepare surfaces before a new installation.

B-4.01 Removes surface coverings

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	yes	yes	yes	yes	ND	yes	yes	yes	ND	ND	ND

	Skills	
	Performance Criteria	**Evidence of Attainment**
B-4.01.01P	select and use ***tools and equipment***	***tools and equipment*** are selected and used according to task and manufacturers' specifications
B-4.01.02P	determine which existing ***surface coverings*** must be removed	existing ***surface coverings*** to be removed are determined
B-4.01.03P	cover surrounding areas and items	surrounding areas and items are covered to protect from dust and debris
B-4.01.04P	remove ***items*** restricting access to work area	***items*** restricting access to work area are removed
B-4.01.05P	remove ***hardware*** from work area if permitted	***hardware*** is removed from work area if permitted
B-4.01.06P	strip existing ***surface coverings***	existing ***surface coverings*** are stripped using ***methods*** while minimizing damage
B-4.01.07P	dispose of removed existing ***surface coverings***	removed existing ***surface coverings*** are disposed of according to environmental regulations

Range of Variables

tools and equipment include: hammers, chisels, jackhammers, scrapers, pry bars
surface coverings include: carpets, tiles, wall papers, particle boards
items include: baseboards, closet doors, doors
hardware includes: towel bars, trim kits
methods include: jackhammering, scraping, chiselling, prying

	Knowledge	
	Learning Outcomes	**Learning Objectives**
B-4.01.01L	demonstrate knowledge of ***surface coverings***, their characteristics, properties and applications	identify types of ***surface coverings*** and describe their characteristics, properties and applications
B-4.01.02L	demonstrate knowledge of procedures to remove ***surface coverings***	identify ***tools and equipment*** used to remove ***surface coverings*** and describe their procedures for use
		identify ***hazards*** and describe safe work practices pertaining to removal of ***surface coverings***
		describe ***methods*** to remove ***surface coverings***
		describe procedures to dispose of ***surface coverings***
B-4.01.03L	demonstrate knowledge of regulatory requirements pertaining to disposal of ***surface coverings***	identify codes, standards and regulations pertaining to disposal of ***surface coverings***

Range of Variables

surface coverings include: carpets, tiles, wall papers, particle boards
tools and equipment include: hammers, chisels, jackhammers, scrapers, pry bars
hazards include: flying debris, fumes, dust
methods include: jackhammering, scraping, chiselling, prying

B-4.02 Cleans surfaces

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	yes	yes	yes	yes	ND	yes	yes	yes	ND	ND	ND

	Skills	
	Performance Criteria	**Evidence of Attainment**
B-4.02.01P	select and use ***tools and equipment***	***tools and equipment*** are selected and used according to task and manufacturers' specifications
B-4.02.02P	identify ***contaminants*** and take ***appropriate action***	***contaminants*** are identified and ***appropriate action*** is taken according to jurisdictional regulations
B-4.02.03P	sweep up and remove large debris	large debris is swept up and removed according to environmental regulations

B-4.02.04P	vacuum ***fine debris***	***fine debris*** is vacuumed
B-4.02.05P	wash solvent-based materials with chemical cleaners	solvent-based materials are washed with chemical cleaners according to manufacturers' specifications
B-4.02.06P	wipe surfaces	surfaces are wiped with a mop or sponge

Range of Variables

tools and equipment include: vacuums, brooms, mops, shot blasters, sponges, floor grinders
contaminants include: mould, asbestos
appropriate action includes: wearing PPE, isolating work area, ensuring adequate ventilation, arranging for removal and disposal
fine debris includes: dust, residue

	Knowledge	
	Learning Outcomes	**Learning Objectives**
B-4.02.01L	demonstrate knowledge of cleaners, their characteristics, properties and applications	identify types of cleaners and describe their characteristics, properties and applications
B-4.02.02L	demonstrate knowledge of procedures to clean surfaces	identify ***tools and equipment*** used to clean surfaces and describe their procedures for use
		identify ***hazards*** and describe safe work practices when cleaning surfaces
		describe procedures to clean surfaces
		identify types of substrate ***contaminants***
B-4.02.03L	demonstrate knowledge of regulatory requirements pertaining to removal and disposal of ***contaminants***	identify codes, standards and regulations pertaining to removal and disposal of ***contaminants***

Range of Variables

tools and equipment include: vacuums, brooms, mops, shot blasters, sponges, floor grinders
hazards include: flying debris, fumes, dust
contaminants include: mould, asbestos

Task B-5 Evaluates and prepares surface

Task Descriptor

Substrate preparation is a key step of a finished tile, stone or terrazzo project. It ensures the ease in subsequent procedures and the longevity of the finished product. Tilesetters determine and evaluate the conditions of the substrate for deficiencies such as cracks, holes, level and deterioration and prepare the surface accordingly. Substrate preparation may involve the installation of membranes, mortar beds and underlayments. Skills and knowledge related to mixing materials for mortar beds can be found in the Task D-11, Mixes materials.

B-5.01 Assesses existing substrate

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	yes	yes	yes	yes	ND	yes	yes	yes	ND	ND	ND

	Skills	
	Performance Criteria	**Evidence of Attainment**
B-5.01.01P	select and use ***tools and equipment***	***tools and equipment*** are selected and used according to task and manufacturers' specifications
B-5.01.02P	identify high and low points of substrates	high and low points of substrates are identified
B-5.01.03P	identify deflection in substrates	deflection in substrates is identified
B-5.01.04P	verify that backing is in place for ***accessories***	backing is in place for ***accessories***
B-5.01.05P	diagnose ***damages and deficiencies***	***damages and deficiencies*** are diagnosed
B-5.01.06P	determine method of repair	method of repair is determined

Range of Variables

tools and equipment include: straight edges, levels, tape measures
accessories include: grab bars, inserts, dispensers
damages and deficiencies include: seasonal cracks, deterioration, holes

	Knowledge	
	Learning Outcomes	**Learning Objectives**
B-5.01.01L	demonstrate knowledge of substrates, their characteristics, properties and applications	identify types of substrates and describe their characteristics, properties and applications
B-5.01.02L	demonstrate knowledge of procedures to assess existing substrates	identify ***tools and equipment*** used to assess existing substrates and describe their procedures for use
		describe procedures to inspect substrates for ***factors***
		describe procedures to inspect if backing is in place for ***accessories***

Range of Variables

tools and equipment include: straight edges, levels, tape measures
factors include: high and low points, deflections, structural integrity, damages, deficiencies
accessories include: grab bars, inserts, dispensers

B-5.02 Installs membranes

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	yes	yes	yes	yes	ND	yes	yes	yes	ND	ND	ND

	Skills	
	Performance Criteria	**Evidence of Attainment**
B-5.02.01P	select and use ***tools and equipment***	***tools and equipment*** are selected and used according to task and manufacturers' specifications
B-5.02.02P	select ***membrane***	***membrane*** is selected according to ***conditions*** and ***project specifications***
B-5.02.03P	apply ***membrane***	***membrane*** is applied according to manufacturers' specifications using ***methods***

Range of Variables

tools and equipment include: trowels, rollers
membranes include: waterproof, crack isolation
conditions include: humidity, stability, installation location
project specifications include: design drawings, shop drawings, blueprints
methods include: trowelling, rolling, loose lay

	Knowledge	
	Learning Outcomes	**Learning Objectives**
B-5.02.01L	demonstrate knowledge of ***membranes***, their characteristics, properties and applications	identify types of ***membranes*** and describe their characteristics, properties and applications
B-5.02.02L	demonstrate knowledge of procedures to install ***membranes***	identify ***tools and equipment*** used to install ***membranes*** and describe their procedures for use
		identify hazards and describe safe work practices when installing ***membranes***
		identify ***conditions*** considered when selecting ***membranes***
		describe procedures to install ***membranes***

Range of Variables

membranes include: waterproof, crack isolation
tools and equipment include: trowels, rollers
conditions include: humidity, stability, installation location

B-5.03 Installs mortar beds

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	yes	yes	yes	yes	ND	yes	yes	yes	ND	ND	ND

	Skills	
	Performance Criteria	**Evidence of Attainment**
B-5.03.01P	select and use ***tools and equipment***	***tools and equipment*** are selected and used according to task and manufacturers' specifications
B-5.03.02P	attach ***reinforcements***	***reinforcements*** are attached
B-5.03.03P	apply slurry bond coat on surface	slurry bond coat is applied on surface
B-5.03.04P	apply scratch coat on walls	scratch coat is applied on walls
B-5.03.05P	apply mortar screed for levelling, squaring and drainage purposes	mortar screed is applied for levelling, squaring and drainage purposes according to manufacturers' specifications

Range of Variables

tools and equipment include: straight edges, hawks, floats, mortar screed
reinforcements include: wire mesh, expanded metal lath

	Knowledge	
	Learning Outcomes	**Learning Objectives**
B-5.03.01L	demonstrate knowledge of mortar beds, their characteristics and applications	identify mortar beds and describe their characteristics and applications
		identify types of ***reinforcements*** used in mortar beds
		identify slurry bond coats and describe their characteristics and applications
		identify scratch coats and describe their characteristics and applications
		identify mortar screed and describe its characteristics and applications
B-5.03.02L	demonstrate knowledge of procedures to install mortar beds	identify ***tools and equipment*** used to install mortar beds and describe their procedures for use
		identify ***hazards*** and describe safe work practices when installing mortar beds
		describe procedures to install mortar beds
		describe procedures to attach ***reinforcements***

Range of Variables

reinforcements include: wire mesh, expanded metal lath
tools and equipment include: straight edges, hawks, floats, mortar screed
hazards include: fumes, dust

B-5.04 Installs underlayments

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	yes	yes	yes	yes	ND	yes	yes	yes	ND	ND	ND

	Skills	
	Performance Criteria	**Evidence of Attainment**
B-5.04.01P	select and use ***tools and equipment***	***tools and equipment*** are selected and used according to task and manufacturers' specifications
B-5.04.02P	select ***underlayment***	***underlayment*** is selected according to ***conditions*** and ***project specifications***
B-5.04.03P	apply ***underlayment***	***underlayment*** is applied according to manufacturers' specifications using ***methods***

Range of Variables

tools and equipment include: straight edges, drills, saws
underlayments include: exterior grade plywood, cement board, self leveller
conditions include: unevenness, deflection
project specifications include: design drawings, shop drawings, blueprints
methods include: screwing, trowelling, placing

	Knowledge	
	Learning Outcomes	**Learning Objectives**
B-5.04.01L	demonstrate knowledge of ***underlayments***, their characteristics and applications	identify types of ***underlayments*** and describe their characteristics and applications
		identify types of ***bond coats*** and describe their characteristics and applications
		identify and interpret Tile, Terrazzo and Marble Association of Canada (TTMAC) specifications
B-5.04.02L	demonstrate knowledge of procedures to install ***underlayments***	identify ***tools and equipment*** used to install ***underlayments*** and describe their procedures for use
		identify ***hazards*** and describe safe work practices when installing ***underlayments***
		identify ***conditions*** considered when selecting ***underlayments***
		describe ***methods*** to install ***underlayments***

Range of Variables

underlayments include: exterior grade plywood, cement board, self leveller
bond coats include: cement, epoxy
tools and equipment include: straight edges, drills, saws
hazards include: fumes, dust
conditions include: unevenness, deflection
methods include: screwing, trowelling, placing

Task B-6 Installs specialty products

Task Descriptor

Substrate preparation may involve the installation of specialty products such as sound barriers, in-floor heating and engineered products. Engineered products are prefabricated products that enhance the installation and performance of the substrate and tile.

B-6.01 Installs sound barrier products

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	yes	yes	yes	yes	ND	yes	yes	yes	ND	ND	ND

	Skills	
	Performance Criteria	**Evidence of Attainment**
B-6.01.01P	select and use ***tools and equipment***	***tools and equipment*** are selected and used according to task and manufacturers' specifications
B-6.01.02P	select sound barrier product	sound barrier product is selected according to ***project specifications*** or customer requirements
B-6.01.03P	place sound barrier product	sound barrier product is placed using ***methods*** according to manufacturers' specifications

Range of Variables

tools and equipment include: rollers, drills, trowels
project specifications include: design drawings, shop drawings, blueprints
methods include: peel and stick, trowel, loose lay

	Knowledge	
	Learning Outcomes	**Learning Objectives**
B-6.01.01L	demonstrate knowledge of sound barrier products, their characteristics and applications	identify types of sound barrier products and describe their characteristics and applications
B-6.01.02L	demonstrate knowledge of procedures to install sound barrier products	identify ***tools and equipment*** used to install sound barrier products and describe their procedures for use
		identify hazards and describe safe work practices when installing sound barrier products

	describe ***factors*** considered when selecting sound barrier products
	describe ***methods*** to install sound barrier products

Range of Variables

tools and equipment include: rollers, drills, trowels
factors include: project specifications, customer requirements, suitability of product
methods include: peel and stick, trowel, loose lay

B-6.02 Installs in-floor heating

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	yes	yes	yes	yes	ND	yes	yes	yes	ND	ND	ND

Skills

	Performance Criteria	Evidence of Attainment
B-6.02.01P	select and use ***tools and equipment***	***tools and equipment*** are selected and used according to task and manufacturers' specifications
B-6.02.02P	select ***radiant floor heating system***	***radiant floor heating system*** is selected according to ***conditions*** and ***project specifications***
B-6.02.03P	place ***radiant floor heating system***	***radiant floor heating system*** is placed using ***methods*** according to jurisdictional regulations, manufacturers' specifications and trade restrictions

Range of Variables

tools and equipment include: trowels, hammers, hot glue guns
radiant floor heating systems include: electronic, hydronic
conditions include: size of area, suitability of product
project specifications include: design drawings, shop drawings, blueprints
methods include: troweling-in, mechanical fastening

	Knowledge	
	Learning Outcomes	**Learning Objectives**
B-6.02.01L	demonstrate knowledge of ***radiant floor heating systems***, their characteristics and applications	identify types of ***radiant floor heating systems*** and describe their characteristics and applications
B-6.02.02L	demonstrate knowledge of procedures to install ***radiant floor heating systems***	identify ***tools and equipment*** used to install ***radiant floor heating systems*** and describe their procedures for use
		identify hazards and describe safe work practices when installing ***radiant floor heating systems***
		describe ***conditions*** considered when selecting ***radiant floor heating systems***
		describe ***methods*** to install ***radiant floor heating systems***
		identify trade restrictions related to ***component*** installations

Range of Variables

radiant floor heating systems include: electronic, hydronic
tools and equipment include: trowels, hammers, hot glue guns
conditions include: size of area, suitability of product
methods include: troweling-in, mechanical fastening
components include: structural, electrical, plumbing

B-6.03 Installs engineered products

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	yes	yes	yes	yes	ND	yes	yes	yes	ND	ND	ND

	Skills	
	Performance Criteria	**Evidence of Attainment**
B-6.03.01P	select and use ***tools and equipment***	***tools and equipment*** are selected and used according to task and manufacturers' specifications
B-6.03.02P	select ***engineered product***	***engineered product*** is selected according to ***project specifications***
B-6.03.03P	verify area of placement	area is verified that it is dry and clean
B-6.03.04P	determine placement of ***engineered product***	placement of ***engineered product*** is determined according to manufacturers' specifications

B-6.03.05P	cut ***engineered product***	***engineered product*** is cut to suit area
B-6.03.06P	place ***engineered product***	***engineered product*** is placed using ***methods*** according to manufacturers' specifications
B-6.03.07P	verify that ***engineered product*** has adhered to substrate	***engineered product*** has adhered to substrate

Range of Variables

tools and equipment include: drills, knives, saws, trowels

engineered products include: prefabricated shower curbs and niches, lightweight columns, ultra-lightweight waterproof wallboards

project specifications include: design drawings, shop drawings, blueprints

methods include: trowelling, loose lay

	Knowledge	
	Learning Outcomes	**Learning Objectives**
B-6.03.01L	demonstrate knowledge of ***engineered products***, their characteristics and applications	identify ***engineered products*** and describe their characteristics and applications
		identify and interpret TTMAC specifications
B-6.03.02L	demonstrate knowledge of procedures to install ***engineered products***	identify ***tools and equipment*** used to install ***engineered products*** and describe their procedures for use
		identify hazards and describe safe work practices when installing ***engineered products***
		describe ***factors*** considered when selecting ***engineered products***
		describe procedures used to prepare area for installation
		describe ***methods*** to install ***engineered products***

Range of Variables

engineered products include: prefabricated shower curbs and niches, lightweight columns, ultra-lightweight waterproof wallboards

tools and equipment include: drills, knives, saws, trowels

factors include: suitability of product, customer specifications

methods include: trowelling, loose lay

Major Work Activity C
Prepares layout

Task C-7 Lays out work area

Task Descriptor

Layout involves the activities required before the actual installation of the tile, stone and terrazzo. It ensures that proper installation and visual appearance of the finished material is in accordance with the design specifications.

C-7.01 Confirms site measurements

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	yes	yes	yes	yes	ND	yes	yes	yes	ND	ND	ND

	Skills	
	Performance Criteria	**Evidence of Attainment**
C-7.01.01P	select and use ***tools and equipment***	***tools and equipment*** are selected and used according to task and manufacturers' specifications
C-7.01.02P	verify work area	work area is verified to ensure it matches ***project specifications***
C-7.01.03P	verify elevations of floor and walls	elevations of floor and walls are verified to ensure they are according to ***project specifications***
C-7.01.04P	verify transitions surrounding finishing materials	transitions surrounding finishing materials are verified to ensure they are according to ***project specifications***
C-7.01.05P	verify size openings	size openings are verified to ensure they are according to ***project specifications***
C-7.01.06P	verify marked grid lines and elevations	marked grid lines and elevations are verified to ensure they are according to ***project specifications***
C-7.01.07P	assess work area	work area is assessed to ensure it meets building code relating to accessibility

Range of Variables

tools and equipment include: tape measures, framing squares, levels, straight edges, line lasers
project specifications include: design drawings, shop drawings, blueprints

	Knowledge	
	Learning Outcomes	**Learning Objectives**
C-7.01.01L	demonstrate knowledge of layout principles and procedures	identify layout principles and procedures
C-7.01.02L	demonstrate knowledge of procedures to confirm site measurements	identify ***tools and equipment*** used to perform site measurements and describe their procedures for use
		interpret information pertaining to measurements found in ***project specifications***
		describe procedures to perform site measurements

Range of Variables

tools and equipment include: tape measures, framing squares, levels, straight edges, line lasers
project specifications include: design drawings, shop drawings, blueprints

C-7.02 Determines tile layout for best visual effect

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	yes	yes	yes	yes	ND	yes	yes	yes	ND	ND	ND

	Skills	
	Performance Criteria	**Evidence of Attainment**
C-7.02.01P	select and use ***tools and equipment***	***tools and equipment*** are selected and used according to task and manufacturers' specifications
C-7.02.02P	visualize finished design	finished design is visualized
C-7.02.03P	determine grid size	grid size is determined considering grout spacing according to ***project specifications***
C-7.02.04P	determine if work area is square or geometrically compatible with design	work area is determined if it is square or geometrically compatible with design
C-7.02.05P	adapt layout	layout is adapted to ensure work area is pleasing to untrained eye and conforms with existing surroundings and finishes according to ***project specifications***
C-7.02.06P	integrate ***trim accessories*** to design	***trim accessories*** are integrated to design according to ***project specifications***

Range of Variables

tools and equipment include: chalk lines, line lasers, calculators
project specifications include: design drawings, shop drawings, blueprints
trim accessories include: alcoves, shelves

	Knowledge	
	Learning Outcomes	**Learning Objectives**
C-7.02.01L	demonstrate knowledge of layout principles and procedures	identify layout principles and procedures
		interpret information pertaining to tile layout found in ***project specifications***
C-7.02.02L	demonstrate knowledge of procedures to determine tile layout for best visual effect	identify ***tools and equipment*** used to determine tile layout and describe their procedures for use
		describe procedures to determine tile layout according to geometric shapes for best visual effect
		describe procedures to square an area
		describe procedures to determine if area is geometrically compatible with design

Range of Variables

project specifications include: design drawings, shop drawings, blueprints
tools and equipment include: chalk lines, line lasers, calculators

C-7.03 Lays out grid lines

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	yes	yes	yes	yes	ND	yes	yes	yes	ND	ND	ND

	Skills	
	Performance Criteria	**Evidence of Attainment**
C-7.03.01P	select and use ***tools and equipment***	***tools and equipment*** are selected and used according to task and manufacturers' specifications
C-7.03.02P	determine starting point	starting point is determined according to ***project specifications***
C-7.03.03P	snap or mark grid lines and reference points	grid lines and reference points are snapped or marked
C-7.03.04P	check that grid remains consistent and square with design	grid is checked to ensure it remains consistent and square with design

Range of Variables

tools and equipment include: chalk lines, line lasers, builder squares, straight edges, calculators, tape measures

project specifications include: design drawings, shop drawings, blueprints

	Knowledge	
	Learning Outcomes	**Learning Objectives**
C-7.03.01L	demonstrate knowledge of layout principles and procedures	identify layout principles and procedures
		interpret information pertaining to layout found in ***project specifications***
C-7.03.02L	demonstrate knowledge of procedures to lay out grid lines according to tile format	identify ***tools and equipment*** used to lay out grid lines and describe their procedures for use
		describe procedures to lay out grid lines
		describe procedures to determine starting point
		describe procedures to check that grid is consistent and square with design

Range of Variables

project specifications include: design drawings, shop drawings, blueprints

tools and equipment include: chalk lines, line lasers, builder squares, straight edges, calculators, tape measures

C-7.04 Evaluates rise and run of stairs

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	yes	yes	yes	yes	ND	yes	yes	yes	ND	ND	ND

	Skills	
	Performance Criteria	**Evidence of Attainment**
C-7.04.01P	select and use ***tools and equipment***	***tools and equipment*** are selected and used according to task and manufacturers' specifications
C-7.04.02P	assess stair design	stair design is assessed to ensure it meets building code
C-7.04.03P	verify height of risers and tread size	height of risers and tread size are verified based on finished elevations
C-7.04.04P	lay out stairs	stairs are laid out considering ***accessories*** specified in building code and ***project specifications***

Range of Variables

tools and equipment include: calculators, protractors, framing squares, transits, rotary laser levels, tape measures

accessories include: anti-slip nosing, profiles, railings

project specifications include: design drawings, shop drawings, blueprints

	Knowledge	
	Learning Outcomes	**Learning Objectives**
C-7.04.01L	demonstrate knowledge of layout principles and procedures	identify layout principles and procedures
		interpret information pertaining to layout found in ***project specifications***
		describe construction geometry
		identify and interpret TTMAC specifications
C-7.04.02L	demonstrate knowledge of stairs and their ***accessories***	identify types of stairs and ***accessories***, and describe their characteristics and applications
C-7.04.03L	demonstrate knowledge of procedures to evaluate rise and run of stairs	identify ***tools and equipment*** used to evaluate rise and run of stairs and describe their procedures for use
		describe procedures to evaluate rise and run of stairs
		describe procedures to lay out stairs and ***accessories***
C-7.04.04L	demonstrate knowledge of regulatory requirements pertaining to stairs	identify codes, ***standards*** and regulations pertaining to stairs

Range of Variables

project specifications include: design drawings, shop drawings, blueprints

accessories include: anti-slip nosing, profiles, railings

tools and equipment include: calculators, protractors, framing squares, transits, rotary laser levels, tape measures

standards include: height and depth of stairs, joint widths and minimum requirements

Task C-8 Evaluates joints

Task Descriptor

Joints are engineered in project plans to accommodate structural movements due to factors such as changing temperatures. Tilesetters should be aware of placement of joints and their function.

C-8.01 Accommodates existing joints

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	yes	yes	yes	yes	ND	yes	yes	yes	ND	ND	ND

	Skills	
	Performance Criteria	**Evidence of Attainment**
C-8.01.01P	select and use tools and equipment	tools and equipment are selected and used according to task and manufacturers' specifications
C-8.01.02P	determine if location of existing joints matches as-built	location of existing joints matches as-built
C-8.01.03P	determine if design and layout fit existing joints	design and layout fit existing joints

	Knowledge	
	Learning Outcomes	**Learning Objectives**
C-8.01.01L	demonstrate knowledge of joints, their characteristics and applications	identify ***types of joints*** and describe their characteristics and applications
		interpret information pertaining to joints found in ***project specifications***
		identify and interpret TTMAC specifications
C-8.01.02L	demonstrate knowledge of procedures to accommodate existing joints	identify tools and equipment used to accommodate existing joints and describe their procedures for use
		describe procedures to evaluate if design and layout fit existing joints

Range of Variables

types of joints include: cold, movement, control, structural
project specifications include: design drawings, shop drawings, blueprints

C-8.02 Determines additional joint requirements

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	yes	yes	yes	yes	ND	yes	yes	yes	ND	ND	ND

Skills

	Performance Criteria	Evidence of Attainment
C-8.02.01P	select and use tools and equipment	tools and equipment are selected and used according to task and manufacturers' specifications
C-8.02.02P	assess if additional joints are required	need for additional joints to conform to design specifications, TTMAC specifications and site conditions is assessed
C-8.02.03P	calculate and identify location, and incorporate into design layout	location is calculated and identified, and incorporated into design layout

Knowledge

	Learning Outcomes	Learning Objectives
C-8.02.01L	demonstrate knowledge of joints, their characteristics and applications	identify ***types of joints*** and describe their characteristics and applications
		interpret information pertaining to joints found in ***project specifications***
C-8.02.02L	demonstrate knowledge of procedures to determine additional joint requirements	identify tools and equipment used to determine additional joint requirements and describe their procedures for use
		describe procedures to determine additional joint requirements
		describe procedures to calculate location of joints

Range of Variables

types of joints include: cold, movement, control, structural
project specifications include: design drawings, shop drawings, blueprints

Major Work Activity D
Prepares materials

Task D-9 Inspects materials

Task Descriptor

Tilesetters must inspect materials to ensure they are consistent with project specifications and are suitable for installation.

D-9.01 Confirms material consistencies

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	yes	yes	yes	yes	ND	yes	yes	yes	ND	ND	ND

	Skills	
	Performance Criteria	**Evidence of Attainment**
D-9.01.01P	select and use ***tools and equipment***	***tools and equipment*** are selected and used according to task and manufacturers' specifications
D-9.01.02P	verify products on site	products on site are verified to ensure they match specified materials and control samples
D-9.01.03P	check variances in lots, thickness, colour and calibre	variances in lots, thickness, colour and calibre are checked

Range of Variables

tools and equipment include: tape measures, calipers, levels, squares

	Knowledge	
	Learning Outcomes	**Learning Objectives**
D-9.01.01L	demonstrate knowledge of materials, their characteristics and applications	identify ***types of materials*** and describe their characteristics and applications
		interpret information found in ***project specifications***
D-9.01.02L	demonstrate knowledge of procedures to confirm material consistencies	identify ***tools and equipment*** used to confirm material consistencies and describe their procedures for use
		describe procedures to inspect materials for calibre, shading and gauge variations
		describe procedures to confirm material consistencies

Range of Variables

types of materials include: terrazzo chips, mixing setting, grouting, tiles, stone slabs
project specifications include: design drawings, shop drawings, blueprints
tools and equipment include: tape measures, calipers, levels, squares

D-9.02 Checks materials for damage

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	yes	yes	yes	yes	ND	yes	yes	yes	ND	ND	ND

	Skills	
	Performance Criteria	**Evidence of Attainment**
D-9.02.01P	select and use ***tools and equipment***	***tools and equipment*** are selected and used according to task and manufacturers' specifications
D-9.02.02P	perform visual inspection of ***materials***	visual inspection of ***materials*** is performed to identify ***damages***
D-9.02.03P	assess damaged ***materials***	damaged ***materials*** are assessed to determine if useable or needs to be returned to supplier

Range of Variables

tools and equipment include: cameras, rubber mallets
materials include: terrazzo chips, tiles, stone slabs
damages include: chips, cracks, breakage, surface defects

	Knowledge	
	Learning Outcomes	**Learning Objectives**
D-9.02.01L	demonstrate knowledge of ***materials***, their characteristics and applications	identify types of ***materials*** and describe their characteristics and applications
D-9.02.02L	demonstrate knowledge of procedures to check ***materials*** for damage	identify ***tools and equipment*** used to check ***materials*** for damage and describe their procedures for use
		describe procedures to inspect ***material*** packaging
		describe procedures to inspect ***materials***
		identify types of ***damages*** found in ***materials***
		describe procedures to assess whether materials can be used or returned to supplier

Range of Variables

materials include: terrazzo chips, tiles, stone slabs
tools and equipment include: cameras, rubber mallets
damages include: chips, cracks, breakage, surface defects

Task D-10 Prepares material for installation

Task Descriptor

Material preparation encompasses the preparation of components required before installing the finished product.

D-10.01 Prepares tiles

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	yes	yes	yes	yes	ND	yes	yes	yes	ND	ND	ND

	Skills	
	Performance Criteria	**Evidence of Attainment**
D-10.01.01P	select and use ***tools and equipment***	***tools and equipment*** are selected and used according to task and manufacturers' specifications
D-10.01.02P	mix ***tiles***	***tiles*** are mixed to ensure a uniform appearance
D-10.01.03P	create templates for specialty cuts	templates are created for specialty cuts according to task requirements

D-10.01.04P	cut ***tiles***	***tiles*** are cut according to ***project specifications*** and site conditions
D-10.01.05P	measure and cut trim products	trim products are measured and cut
D-10.01.06P	seal ***tiles***	***tiles*** are sealed according to manufacturers' specifications

Range of Variables

tools and equipment include: tile cutters, grinders, saws
tiles include: ceramic, porcelain, stone, quartzite
project specifications include: design drawings, shop drawings, blueprints

	Knowledge	
	Learning Outcomes	**Learning Objectives**
D-10.01.01L	demonstrate knowledge of ***tiles***, their characteristics and applications	identify types of ***tiles*** and describe their characteristics and applications
		identify types of sealing products used to seal ***tiles*** and describe their characteristics and applications
D-10.01.02L	demonstrate knowledge of procedures to prepare ***tiles*** for installation	identify ***tools and equipment*** used to prepare ***tiles*** for installation and describe their procedures for use
		describe procedures to prepare ***tiles*** for installation
		describe procedures to prepare templates for specialty cuts
		describe procedures to cut ***tiles*** and trim products
		explain importance of mixing tiles prior to installation
		describe procedures to seal ***tiles***

Range of Variables

tiles include: ceramic, porcelain, stone, quartzite
tools and equipment include: tile cutters, grinders, saws

D-10.02 Prepares stone slabs

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	yes	yes	yes	yes	ND	yes	yes	yes	ND	ND	ND

	Skills	
	Performance Criteria	**Evidence of Attainment**
D-10.02.01P	select and use ***tools and equipment***	***tools and equipment*** are selected and used according to task and manufacturers' specifications
D-10.02.02P	organize slabs	slabs are organized in order of installation
D-10.02.03P	pre-drill holes	holes are pre-drilled according to ***project specifications***
D-10.02.04P	create templates for specialty cuts	templates are created for specialty cuts according to task requirements
D-10.02.05P	use template to cut slab	template is used to cut slab
D-10.02.06P	shape, edge and polish slab	slab is shaped, edged and polished according to design
D-10.02.07P	stack slabs front-to-front then back-to-back and repeat sequence	slabs are stacked front-to-front then back-to-back with sequence repeated to protect finish
D-10.02.08P	install ***reinforcement***	***reinforcement*** is installed according to ***project specifications***
D-10.02.90P	seal slabs	slabs are sealed according to manufacturers' specifications
D-10.02.10P	fill joints with grout	joints are filled with grout according to ***project specifications***

Range of Variables

tools and equipment include: hand grinders, saws, drills, routers, water polishing kits, coring bits
project specifications include: design drawings, shop drawings, blueprints
reinforcements include: rods, fasteners

	Knowledge	
	Learning Outcomes	**Learning Objectives**
D-10.02.01L	demonstrate knowledge of stone slabs, their characteristics and applications	identify ***types of stone slabs*** and describe their characteristics and applications
		identify types of ***reinforcements*** used with stone slabs and describe their characteristics and applications
		identify types of sealing products used to seal stone slabs and describe their characteristics and applications

		describe effects of ***environmental conditions*** on stone slabs
D-10.02.02L	demonstrate knowledge of procedures to prepare stone slabs for installation	identify ***tools and equipment*** used to prepare stone slabs for installation and describe their procedures for use
		describe procedures to prepare stone slabs for installation
		describe procedures to prepare templates for specialty cuts
		describe procedures to cut stone slabs
		describe procedures to shape, edge and polish stone slabs
		describe procedures to seal stone slabs

Range of Variables

types of stone slabs include: marble, limestone, granite, soap stone, slate stone, engineered stone
reinforcements include: rods, fasteners
environmental conditions include: temperature, humidity
tools and equipment include: hand grinders, saws, drills, routers, water polishing kits, coring bits

Task D-11 Mixes materials

Task Descriptor

Materials such as epoxies, additives and grouts are used for the installation of tiles, stone slabs and terrazzo. Tilesetters mix materials for the installation of tiles, stone slabs, mortar beds and terrazzo.

D-11.01 Mixes materials for tile and stone slabs

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	yes	yes	yes	yes	ND	yes	yes	yes	ND	ND	ND

	Skills	
	Performance Criteria	**Evidence of Attainment**
D-11.01.01P	select and use ***tools and equipment***	***tools and equipment*** are selected and used according to task and manufacturers' specifications
D-11.01.02P	combine ***materials***	***materials*** are combined according to manufacturers' specifications
D-11.01.03P	mix ***materials***	***materials*** are mixed according to manufacturers' specifications

Range of Variables

tools and equipment include: slow speed mixers, mixing paddles
materials include: epoxies, additives, grouts

	Knowledge	
	Learning Outcomes	**Learning Objectives**
D-11.01.01L	demonstrate knowledge of ***materials*** used to install tiles and stone slabs, their characteristics, properties and applications	identify types of ***materials*** used to install tiles and stone slabs and describe their characteristics, properties and applications
		interpret information pertaining to ***materials*** used to install tiles and stone slabs found in manufacturers' specifications
D-11.01.02L	demonstrate knowledge of procedures to mix ***materials*** for tile and stone slabs	identify ***tools and equipment*** used to mix ***materials*** for tile and stone slabs, and describe their procedures for use
		identify ***hazards*** and describe safe work practices when mixing ***materials*** for tile and stone slabs
		describe procedures and sequence for combining ***materials*** for tile and stone slabs
		describe procedures to mix ***materials*** for tile and stone slabs

Range of Variables

materials include: epoxies, additives, grouts
tools and equipment include: slow speed mixers, mixing paddles
hazards include: fumes (volatile organic compounds [VOC]), dust

D-11.02 Mixes materials for mortar beds

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	yes	yes	yes	yes	ND	yes	yes	yes	ND	ND	ND

	Skills	
	Performance Criteria	**Evidence of Attainment**
D-11.02.01P	select and use ***tools and equipment***	***tools and equipment*** are selected and used according to task and manufacturers' specifications
D-11.02.02P	determine mix ratio	mix ratio is determined according to application, manufacturers' and TTMAC specifications

D-11.02.03P	combine dry materials	dry materials are combined according to mix ratio
D-11.02.04P	add water and additives	water and additives are added to achieve desired consistency
D-11.02.05P	blend materials	materials are blended thoroughly

Range of Variables

tools and equipment include: drum mixers, shovels, wheelbarrows, rakes, measuring equipment

	Knowledge	
	Learning Outcomes	**Learning Objectives**
D-11.02.01L	demonstrate knowledge of materials for mortar beds, their characteristics, properties and applications	identify types of materials for mortar beds and describe their characteristics, properties and applications
		interpret information pertaining to materials for mortar beds found in manufacturers' and TTMAC specifications
D-11.02.02L	demonstrate knowledge of procedures to mix materials for mortar beds	identify ***tools and equipment*** used to mix materials for mortar beds and describe their procedures for use
		identify ***hazards*** and describe safe work practices when mixing materials for mortar beds
		describe procedures and sequence to combine and blend materials for mortar beds
		explain mixing ratios for materials for mortar beds

Range of Variables

tools and equipment include: drum mixers, shovels, wheelbarrows, rakes, measuring equipment
hazards include: silica, fumes (VOC), dust

D-11.03 Mixes materials for terrazzo

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	no	yes	yes	yes	ND	yes	yes	no	ND	ND	ND

Skills

	Performance Criteria	Evidence of Attainment
D-11.03.01P	select and use ***tools and equipment***	***tools and equipment*** are selected and used according to task and manufacturers' specifications
D-11.03.02P	combine aggregate	aggregate is combined according to ***project specifications***, TTMAC specifications or control sample
D-11.03.03P	blend aggregate and maintain desired consistency	aggregate is blended and desired consistency is maintained
D-11.03.04P	combine components of desired product	components of desired product are combined according to ***project specifications***, and manufacturers' and TTMAC specifications
D-11.03.05P	store mixed aggregate for epoxy	mixed aggregate for epoxy is stored to ensure it remains dry

Range of Variables

tools and equipment include: drum mixers, slow speed mixing drills, buckets, shovels
project specifications include: design drawings, shop drawings, blueprints

Knowledge

	Learning Outcomes	Learning Objectives
D-11.03.01L	demonstrate knowledge of terrazzo, their characteristics, properties and applications	identify types of terrazzo and describe their characteristics, properties and applications
		identify types and sizes of aggregates used in terrazzo and describe their characteristics, properties and applications
D-11.03.02L	demonstrate knowledge of procedures to mix materials for terrazzo	identify ***tools and equipment*** used to mix materials for terrazzo and describe their procedures for use
		identify ***hazards*** and describe safe work practices when mixing materials for terrazzo

	explain mixing ratios for terrazzo materials
	describe procedures to mix materials for terrazzo
	describe procedures to combine and blend aggregates

Range of Variables

tools and equipment include: drum mixers, slow speed mixing drills, buckets, shovels
hazards include: fumes (VOC), silica dust

Major Work Activity E
Sets materials

Task E-12 Installs tiles

Task Descriptor

Tilesetting is the craft of physically executing what designers and architects have designed or conceived using tile. Tilesetters install tile on various surfaces such as floors, walls and ceilings. Tile includes ceramic, mosaic, glass, porcelain and natural stone.

E-12.01 Applies setting material

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	yes	yes	yes	yes	ND	yes	yes	yes	ND	ND	ND

	Skills	
	Performance Criteria	**Evidence of Attainment**
E-12.01.01P	select and use ***tools and equipment***	***tools and equipment*** are selected and used according to task and manufacturers' specifications
E-12.01.02P	determine amount of ***setting material*** to be spread during open time	amount of ***setting material*** to be spread during open time is determined according to ***factors***
E-12.01.03P	spread ***setting material***	***setting material*** is spread using ***methods*** without covering grid lines
E-12.01.04P	spot check ***setting material*** periodically	***setting material*** is periodically spot checked to verify bonding properties

Range of Variables

tools and equipment include: notch trowels, margin trowels

setting materials include: thin set mortar, medium bed, mastic, ultra light weight mortar and epoxy

factors include: environmental conditions (temperature, humidity), manufacturers' specifications, substrate type

methods include: flat trowelling, notch trowelling, back buttering

	Knowledge	
	Learning Outcomes	**Learning Objectives**
E-12.01.01L	demonstrate knowledge of ***setting materials***, their characteristics, properties and applications	identify types of ***setting materials*** and describe their characteristics, properties and applications
		interpret information pertaining to ***setting materials*** found in manufacturers' specifications
E-12.01.02L	demonstrate knowledge of procedures to apply ***setting materials***	identify ***tools and equipment*** used to apply ***setting materials*** and describe their procedures for use
		identify ***hazards*** and describe safe work practices while applying ***setting materials***
		describe procedures to apply ***setting materials***
		describe ***methods*** used to apply ***setting materials***
		identify ***factors*** to consider when determining amount of ***setting material*** to apply

Range of Variables

setting materials include: thin set mortar, medium bed, mastic, ultra light weight mortar and epoxy
tools and equipment include: notch trowels, margin trowels
hazards include: silica, fumes (VOC), dust
methods include: flat trowelling, notch trowelling, back buttering
factors include: environmental conditions (temperature, humidity), manufacturers' specifications, substrate type

E-12.02 Sets tiles

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	yes	yes	yes	yes	ND	yes	yes	yes	ND	ND	ND

	Skills	
	Performance Criteria	**Evidence of Attainment**
E-12.02.01P	select and use ***tools and equipment***	***tools and equipment*** are selected and used according to task and manufacturers' specifications
E-12.02.02P	check ***environmental conditions***	***environmental conditions*** are checked to ensure they are suitable for setting tiles
E-12.02.03P	install tiles	tiles are installed using ***methods*** to ensure ultimate bond strength

E-12.02.04P	position tiles	tiles are positioned using ***methods*** to ensure sufficient coverage
E-12.02.05P	check tiles periodically	tiles are checked periodically to ensure sufficient setting material transfer
E-12.02.06P	follow grid lines	grid lines are followed to ensure straightness and even spacing of joints
E-12.02.07P	remove excess setting material	excess setting material is removed
E-12.02.08P	install threshold	threshold is installed when required

Range of Variables

tools and equipment include: tile cutters, nippers, saws, margin trowels
environmental conditions include: humidity, temperature
methods (to install tiles) include: applying thin set, preparing mortar bed
methods (to position tiles) include: pushing and twisting, beating in

	Knowledge	
	Learning Outcomes	**Learning Objectives**
E-12.02.01L	demonstrate knowledge of tiles, their characteristics and applications	identify ***types of tiles*** and describe their characteristics and applications
E-12.02.02L	demonstrate knowledge of procedures to set tiles	identify ***tools and equipment*** used to set tiles and describe their procedures for use
		identify hazards and describe safe work practices while setting tiles
		describe ***procedures*** and ***methods*** to install tiles
		describe procedures and ***methods*** to position tiles
		describe impact of ***environmental conditions*** when setting tiles

Range of Variables

types of tiles include: ceramic, porcelain, stone, quartzite
tools and equipment include: tile cutters, nippers, saws, margin trowels
procedures include: checking tiles periodically, ensuring sufficient setting material transfer, following grid lines, ensuring even space between tiles, removing excess setting material, using tile levelling kits
methods (to install tiles) include: applying thin set, preparing mortar bed
methods (to position tiles) include: pushing and twisting, beating in
environmental conditions include: humidity, temperature

E-12.03 Installs accessories

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	yes	yes	yes	yes	ND	yes	yes	yes	ND	ND	ND

Skills

	Performance Criteria	Evidence of Attainment
E-12.03.01P	select and use ***tools and equipment***	***tools and equipment*** are selected and used according to task and manufacturers' specifications
E-12.03.02P	determine location of ***accessories***	location of ***accessories*** is determined according to customer and ***project specifications***
E-12.03.03P	determine fastening methods	fastening methods are determined according to type of ***accessory***
E-12.03.04P	locate backing before installing ***accessories***	backing is located before installing ***accessories***
E-12.03.05P	level and fasten ***accessories*** in place	***accessories*** are leveled and fastened in place using ***methods*** according to manufacturers' specifications

Range of Variables

tools and equipment include: caulking guns, hot glue guns, hammer drills
accessories include: soap dishes, towel bars, grab bars, dispensers, alcoves, shelves
project specifications include: design drawings, shop drawings, blueprints
methods include: gluing, screwing

Knowledge

	Learning Outcomes	Learning Objectives
E-12.03.01L	demonstrate knowledge of ***accessories***, their limitations, characteristics and applications	identify types of ***accessories*** and describe their limitations, characteristics and applications
		interpret information found in ***project specifications***
E-12.03.02L	demonstrate knowledge of procedures to install ***accessories***	identify ***tools and equipment*** used to install ***accessories*** and describe their procedures for use
		identify hazards and describe safe work practices when installing ***accessories***
		describe procedures to install ***accessories***

Range of Variables

accessories include: soap dishes, towel bars, grab bars, dispensers, alcoves, shelves
project specifications include: design drawings, shop drawings, blueprints
tools and equipment include: caulking guns, hot glue guns, hammer drills

E-12.04 Installs expansion and control joints

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	yes	yes	yes	yes	ND	yes	yes	yes	ND	ND	ND

	Skills	
	Performance Criteria	**Evidence of Attainment**
E-12.04.01P	select and use ***tools and equipment***	***tools and equipment*** are selected and used according to task and manufacturers' specifications
E-12.04.02P	cut mortar bed	mortar bed is cut according to grid lines or patterns to incorporate expansion and control joints
E-12.04.03P	place expansion and control joints	expansion and control joints are placed according to TTMAC and ***project specifications***
E-12.04.04P	check expansion and control joints	expansion and control joints are checked to ensure they are free of contaminants

Range of Variables

tools and equipment include: caulking guns, mini saws, grinders
project specifications include: design drawings, shop drawings, blueprints

	Knowledge	
	Learning Outcomes	**Learning Objectives**
E-12.04.01L	demonstrate knowledge of expansion and control joints, their characteristics, purposes and applications	identify types of expansion and control joints and describe their characteristics, purposes and applications
		interpret information found in ***project specifications***
E-12.04.02L	demonstrate knowledge of procedures to install expansion and control joints	identify ***tools and equipment*** used to install expansion and control joints and describe their procedures for use
		identify hazards and describe safe work practices when installing expansion and control joints

	describe procedures to install expansion and control joints
	describe procedures to cut mortar beds

Range of Variables

project specifications include: design drawings, shop drawings, blueprints
tools and equipment include: caulking guns, mini saws, grinders

E-12.05 Installs tile trim

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	yes	yes	yes	yes	ND	yes	yes	yes	ND	ND	ND

Skills

	Performance Criteria	Evidence of Attainment
E-12.05.01P	select and use ***tools and equipment***	***tools and equipment*** are selected and used according to task and manufacturers' specifications
E-12.05.02P	select moulding and thresholds	moulding and thresholds are selected according to transition heights, adjacent materials and ***project specifications***
E-12.05.03P	cut and shape moulding and thresholds	moulding and thresholds are cut and shaped to length and width
E-12.05.04P	set and anchor moulding and thresholds	moulding and thresholds are set and anchored according to manufacturers' specifications to achieve finished look

Range of Variables

tools and equipment include: hacksaws, snips, utility knives
project specifications include: design drawings, shop drawings, blueprints

Knowledge

	Learning Outcomes	Learning Objectives
E-12.05.01L	demonstrate knowledge of moulding and thresholds, their characteristics and applications	identify moulding and thresholds and describe their characteristics and applications
E-12.05.02L	demonstrate knowledge of procedures to install moulding and thresholds	identify ***tools and equipment*** used to install moulding and thresholds and describe their procedures for use
		identify hazards and describe safe work practices when installing moulding and thresholds

	describe procedures to install moulding and thresholds
	describe procedures to cut and shape moulding and thresholds

Range of Variables

tools and equipment include: hacksaws, snips, utility knives

Task E-13 Installs stone slabs

Task Descriptor

Tilesetting is the craft of physically executing what designers and architects have designed or conceived using stone slabs. Tilesetters install stone slabs on various surfaces for interiors and exteriors such as floors and walls. Stone slabs include marble, limestone, granite, soap stone, slate stone and engineered stone.

E-13.01 Installs anchors

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	no	yes	yes	yes	ND	yes	yes	yes	ND	ND	ND

	Skills	
	Performance Criteria	**Evidence of Attainment**
E-13.01.01P	select and use ***tools and equipment***	***tools and equipment*** are selected and used according to task and manufacturers' specifications
E-13.01.02P	select ***anchors*** as determined by engineers	***anchors*** are selected according to engineer shop drawings and local building code
E-13.01.03P	position and fasten ***anchors*** to slab and substrate	***anchors*** are positioned and fastened to slab and substrate according to engineer shop drawings

Range of Variables

tools and equipment include: hammer drills, grinders, ratchet sets
anchors include: T, track, wire, J plate, L bracket

	Knowledge	
	Learning Outcomes	**Learning Objectives**
E-13.01.01L	demonstrate knowledge of ***anchors***, their characteristics and applications	identify types of ***anchors*** and describe their characteristics and applications
E-13.01.02L	demonstrate knowledge of procedures to install ***anchors***	identify ***tools and equipment*** used to install ***anchors*** and describe their procedures for use
		identify hazards and describe safe work practices when installing ***anchors***
		describe procedures to install ***anchors***
		describe procedures to position and fasten ***anchors*** to slab and substrate

Range of Variables

anchors include: T, track, wire, J plate, L bracket
tools and equipment include: hammer drills, grinders, ratchet sets

E-13.02 Applies stone slab setting material

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	no	yes	yes	yes	ND	yes	yes	yes	ND	ND	ND

	Skills	
	Performance Criteria	**Evidence of Attainment**
E-13.02.01P	select and use ***tools and equipment***	***tools and equipment*** are selected and used according to task and manufacturers' specifications
E-13.02.02P	check ***environmental conditions***	***environmental conditions*** are checked to ensure they are suitable for setting stone slabs
E-13.02.03P	verify that setting material is suitable for application and stone	setting material is verified to ensure it is suitable for application and stone according to TTMAC specifications
E-13.02.04P	place setting material	setting material is placed using ***methods***, ensuring enough setting material is used for specific application

Range of Variables

tools and equipment include: margin trowels, mixers, caulking guns
environmental conditions include: humidity, temperature
methods include: spreading, back buttering, spotting

	Knowledge	
	Learning Outcomes	**Learning Objectives**
E-13.02.01L	demonstrate knowledge of stone slab setting materials, their characteristics, applications and operation	identify types of stone slab setting materials and describe their characteristics and applications
		explain compatibility of setting material with stone slabs
E-13.02.02L	demonstrate knowledge of procedures to install stone slab setting materials	identify ***tools and equipment*** used to install stone slab setting materials and describe their procedures for use
		identify hazards and describe safe work practices when installing stone slab setting materials
		describe procedures and ***methods*** used to install stone slab setting materials
		describe impact of ***environmental conditions*** when installing stone slab setting materials

Range of Variables

tools and equipment include: margin trowels, mixers, caulking guns
methods include: spreading, back buttering, spotting
environmental conditions include: humidity, temperature

E-13.03 Mounts stone slabs

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	no	yes	yes	yes	ND	yes	yes	yes	ND	ND	ND

	Skills	
	Performance Criteria	**Evidence of Attainment**
E-13.03.01P	select and use ***tools and equipment***	***tools and equipment*** are selected and used according to task and manufacturers' specifications
E-13.03.02P	position stone slab	stone slab is positioned using ***methods***
E-13.03.03P	secure stone slab to substrate	stone slab is secured to substrate using ***fasteners***

Range of Variables

tools and equipment include: rubber mallets, hammer drills, levels, socket sets
methods include: ensuring slab is aligned, level and plumb
fasteners include: anchors and pins, wires

	Knowledge	
	Learning Outcomes	**Learning Objectives**
E-13.03.01L	demonstrate knowledge of stone slabs, their characteristics and applications	identify ***types of stone slabs*** and describe their characteristics and applications
E-13.03.02L	demonstrate knowledge of procedures to mount stone slabs	identify ***tools and equipment*** used to mount stone slabs and describe their procedures for use
		identify hazards and describe safe work practices when mounting stone slabs
		describe procedures and ***methods*** used to position stone slabs
		describe procedures to secure stone slabs to substrate using ***fasteners***

Range of Variables

types of stone slabs include: marble, limestone, granite, soap stone, slate stone, engineered stone
tools and equipment include: rubber mallets, hammer drills, levels, socket sets
methods include: ensuring slab is aligned, level and plumb
fasteners include: anchors and pins, wires

E-13.04 Sets stone slabs

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	no	yes	yes	yes	ND	yes	yes	yes	ND	ND	ND

	Skills	
	Performance Criteria	**Evidence of Attainment**
E-13.04.01P	select and use ***tools and equipment***	***tools and equipment*** are selected and used according to task and manufacturers' specifications
E-13.04.02P	position stone slab	stone slab is positioned using ***methods***
E-13.04.03P	fasten stone slab to substrate	stone slab is fastened to substrate using applied ***adhesives***
E-13.04.04P	make final adjustments	final adjustments are made if required

Range of Variables

tools and equipment include: rubber mallets, trowels, levels
methods include: ensuring slab is aligned, level and plumb
adhesives include: epoxy, mortar, silicone

	Knowledge	
	Learning Outcomes	**Learning Objectives**
E-13.04.01L	demonstrate knowledge of stone slabs, their characteristics and applications	identify ***types of stone slabs*** and describe their characteristics and applications
E-13.04.02L	demonstrate knowledge of procedures to set stone slabs	identify ***tools and equipment*** used to set stone slabs and describe their procedures for use
		identify hazards and describe safe work practices when setting stone slabs
		describe procedures and ***methods*** used to position stone slabs
		describe procedures to fasten stone slabs to substrate using ***adhesives***

Range of Variables

types of stone slabs include: marble, limestone, granite, soap stone, slate stone, engineered stone
tools and equipment include: rubber mallets, trowels, levels
methods include: ensuring slab is aligned, level and plumb
adhesives include: epoxy, mortar, silicone

Task E-14 Pours terrazzo mixture

Task Descriptor

Tilesetting is the craft of physically executing what designers and architects have designed or conceived using terrazzo. Tilesetters install terrazzo on various surfaces such as floors and walls.

E-14.01 Installs divider strips for terrazzo

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	no	yes	yes	yes	ND	yes	yes	no	ND	ND	ND

	Skills	
	Performance Criteria	**Evidence of Attainment**
E-14.01.01P	select and use ***tools and equipment***	***tools and equipment*** are selected and used according to task and manufacturers' specifications
E-14.01.02P	select strip	strip is selected according to ***criteria***

E-14.01.03P	measure and cut strips	strips are measured and cut according to size of grid and pattern, and to TTMAC specifications
E-14.01.04P	set strips in fresh mortar bed or over cured mortar bed	strips are set in fresh mortar bed or over cured mortar bed using ***methods***

Range of Variables

tools and equipment include: saws, snips, grinders, point trowels, straight edges
criteria include: size of aggregate, installation methods, design specifications, project specifications
methods include: insertion and use of adhesives

	Knowledge	
	Learning Outcomes	**Learning Objectives**
E-14.01.01L	demonstrate knowledge of terrazzo, their characteristics, properties and applications	identify ***types of terrazzo*** and describe their characteristics, properties and applications
E-14.01.02L	demonstrate knowledge of divider strips for terrazzo, their characteristics and applications	identify types of divider strips and describe their characteristics and applications
E-14.01.03L	demonstrate knowledge of procedures to install divider strips for terrazzo	identify ***tools and equipment*** used to install divider strips for terrazzo and describe their procedures for use
		identify hazards and describe safe work practices when installing divider strips for terrazzo
		describe procedures and ***methods*** used to install divider strips for terrazzo
		identify ***criteria*** to be considered when selecting divider strips for terrazzo
		describe procedures to measure and cut divider strips for terrazzo

Range of Variables

types of terrazzo include: cement, latex, epoxy
tools and equipment include: saws, snips, grinders, point trowels, straight edges
methods include: insertion and use of adhesives
criteria include: size of aggregate, installation methods, design specifications, project specifications

E-14.02 Applies bond coat

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	no	yes	yes	yes	ND	yes	yes	no	ND	ND	ND

	Skills	
	Performance Criteria	**Evidence of Attainment**
E-14.02.01P	select and use ***tools and equipment***	***tools and equipment*** are selected and used according to task and manufacturers' specifications
E-14.02.02P	select bond coat	bond coat is selected according to ***type of terrazzo*** used and manufacturers' specifications
E-14.02.03P	check that substrate is clean	substrate is checked that it is clean prior to applying bond coat
E-14.02.04P	treat substrate	substrate is treated prior to applying bond coat
E-14.02.05P	place bond coat in pre-determined area	bond coat is placed in pre-determined area according to ***open time factors***

Range of Variables

tools and equipment include: rollers, brushes
types of terrazzo include: cement, latex, epoxy
open time factors include: environmental conditions, manufacturers' specifications, type of substrate

	Knowledge	
	Learning Outcomes	**Learning Objectives**
E-14.02.01L	demonstrate knowledge of bonding agents, their characteristics and applications	identify ***types of bonding agents*** and describe their characteristics and applications
		explain setting times of bonding agents
		identify and interpret TTMAC specifications
E-14.02.02L	demonstrate knowledge of procedures to apply bond coats	identify ***tools and equipment*** used to apply bond coats and describe their procedures for use
		identify hazards and describe safe work practices when applying bond coats
		describe procedures to treat substrates prior to bond coat application

	describe procedures and methods used to apply bond coats
	describe impact of environmental conditions when installing bond coats

Range of Variables

types of bonding agents include: epoxy, slurry bond coat
tools and equipment include: rollers, brushes

E-14.03 Trowels in terrazzo mixture

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	no	yes	yes	yes	ND	yes	yes	no	ND	ND	ND

	Skills	
	Performance Criteria	**Evidence of Attainment**
E-14.03.01P	select and use ***tools and equipment***	***tools and equipment*** are selected and used according to task and TTMAC specifications
E-14.03.02P	pour terrazzo mixture	terrazzo mixture is poured within strip boundaries
E-14.03.03P	spread terrazzo mixture	terrazzo mixture is spread up to strip heights to ensure uniform thickness

Range of Variables

tools and equipment include: trowels (magnesium, base), shovels, terrazzo floats

	Knowledge	
	Learning Outcomes	**Learning Objectives**
E-14.03.01L	demonstrate knowledge of terrazzo, their characteristics, properties and applications	identify ***types of terrazzo*** and describe their characteristics, properties and applications
E-14.03.02L	demonstrate knowledge of procedures to trowel in terrazzo mixture	identify ***tools and equipment*** used to trowel in terrazzo mixture and describe their procedures for use
		identify hazards and describe safe work practices when trowelling in terrazzo mixture
		describe procedures and methods used to trowel in terrazzo mixture

Range of Variables

types of terrazzo include: cement, latex, epoxy
tools and equipment include: trowels (magnesium, base), shovels, terrazzo floats

E-14.04 Works surface

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	no	yes	yes	yes	ND	yes	yes	no	ND	ND	ND

Skills

	Performance Criteria	Evidence of Attainment
E-14.04.01P	select and use ***tools and equipment***	***tools and equipment*** are selected and used according to task and manufacturers' specifications
E-14.04.02P	sprinkle and compact aggregate	aggregate is sprinkled and compacted evenly in cementitious matrix
E-14.04.03P	check terrazzo has set to pre-determined plastic state	terrazzo is checked to determine if it has set to pre-determined plastic state
E-14.04.04P	hand work terrazzo	terrazzo is hand worked until it stiffens
E-14.04.05P	compact terrazzo aggregates evenly	terrazzo aggregates are compacted evenly using rollers and water in cementitious terrazzo
E-14.04.06P	remove excess water on surface	excess water is removed on surface
E-14.04.07P	power-trowel surface of epoxy terrazzo	surface of epoxy terrazzo is power-troweled

Range of Variables

tools and equipment include: compacting trowels, rollers, power trowels

Knowledge

	Learning Outcomes	Learning Objectives
E-14.04.01L	demonstrate knowledge of terrazzo, their characteristics, properties and applications	identify ***types of terrazzo*** and describe their characteristics, properties and applications
		identify types and sizes of aggregates used in terrazzo, and describe their characteristics, properties and applications

E-14.04.02L	demonstrate knowledge of procedures to work surface of terrazzo	identify ***tools and equipment*** used to work surface of terrazzo and describe their procedures for use
		identify hazards and describe safe work practices when working surface of terrazzo
		describe procedures to apply and compact aggregates on surface of cementitious terrazzo
		describe procedures to hand work surface of terrazzo

Range of Variables

types of terrazzo include: cement, latex, epoxy
tools and equipment include: compacting trowels, rollers, power trowels

Major Work Activity F
Finishes materials

Task F-15 Finishes installed product

Task Descriptor

Finishing is the last step of completing the installation. This step is very important since it completes the process and reveals the final product.

Tilesetters need to be detail-oriented when grinding, grouting and finishing as this process will complete the look and enhance the finished product.

F-15.01 Installs grout

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	yes	yes	yes	yes	ND	yes	yes	yes	ND	ND	ND

	Skills	
	Performance Criteria	**Evidence of Attainment**
F-15.01.01P	select and use ***tools and equipment***	***tools and equipment*** are selected and used according to task and manufacturers' specifications
F-15.01.02P	remove contaminants from grout joints	contaminants are removed from grout joints
F-15.01.03P	float grout over surface	grout is floated over surface ensuring that joints are completely full
F-15.01.04P	remove excess grout from surface	excess grout is removed from surface
F-15.01.05P	determine time between applying and cleaning grout	time between applying and cleaning grout is determined according to ***environmental conditions*** and manufacturers' specifications
F-15.01.06P	wash tiles and shape joints	tiles are washed and joints are shaped using sponge and water
F-15.01.07P	polish or wash surface	surface is polished or washed to remove grout haze

Range of Variables

tools and equipment include: grout floats, margin trowels, buckets, sponges, towels

environmental conditions include: temperature, humidity

	Knowledge	
	Learning Outcomes	**Learning Objectives**
F-15.01.01L	demonstrate knowledge of grouts, their characteristics and applications	identify types of grouts and describe their characteristics and applications
		interpret information relating to grouts found in manufacturers' specifications
F-15.01.02L	demonstrate knowledge of procedures to install grout	identify ***tools and equipment*** used to install grout and describe their procedures for use
		identify ***hazards*** and describe safe work practices when installing grout
		describe procedures to install grout
		identify types of floats used to install grout
		describe grout floating methods
		identify types of sponges used to wash tiles
		identify types of cleaning compounds used to clean tiles
		describe impact of ***environmental conditions*** when installing grout
		explain setting times and surface absorption rates

Range of Variables

tools and equipment include: grout floats, margin trowels, buckets, sponges, towels
hazards include: irritations, burns, toxic materials, noxious fumes
environmental conditions include: temperature, humidity

F-15.02 Caulks joints

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	yes	yes	yes	yes	ND	yes	yes	yes	ND	ND	ND

	Skills	
	Performance Criteria	**Evidence of Attainment**
F-15.02.01P	select and use ***tools and equipment***	***tools and equipment*** are selected and used according to task and manufacturers' specifications
F-15.02.02P	select compatible caulking material	compatible caulking material is selected according to ***criteria*** and project specifications

F-15.02.03P	apply and shape caulking material uniformly in required areas	caulking material is applied and shaped uniformly in required areas
F-15.02.04P	install backer rod if required	backer rod is installed if required
F-15.02.05P	apply primer to surface prior to caulking if required	primer is applied to surface prior to caulking if required

Range of Variables

tools and equipment include: caulking guns, shaping tools
criteria include: usage, colour, location, exposure

	Knowledge	
	Learning Outcomes	**Learning Objectives**
F-15.02.01L	demonstrate knowledge of caulking materials, their characteristics and applications	identify types of caulking materials and describe their characteristics and applications
		interpret information pertaining to caulking found in manufacturers' specifications
F-15.02.02L	demonstrate knowledge of procedures to caulk joints	identify ***tools and equipment*** used to caulk joints and describe their procedures for use
		identify hazards and describe safe work practices when caulking joints
		describe procedures to install backer rods
		describe procedures to caulk joints
		describe caulking application methods

Range of Variables

tools and equipment include: caulking guns, shaping tools

F-15.03 Seals material

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	yes	yes	yes	yes	ND	yes	yes	yes	ND	ND	ND

	Skills	
	Performance Criteria	**Evidence of Attainment**
F-15.03.01P	select and use ***tools and equipment***	***tools and equipment*** are selected and used according to task and manufacturers' specifications
F-15.03.02P	select sealant	sealant is selected according to ***criteria***
F-15.03.03P	clean surface and allow for drying time	surface is cleaned and drying time is allowed
F-15.03.04P	apply sealant on grout and tile	sealant is applied on grout and tile according to manufacturers' specifications

Range of Variables

tools and equipment include: brushes, rollers, sealant applicators, sponges
criteria include: usage, finished look, location, exposure, manufacturers' specifications

	Knowledge	
	Learning Outcomes	**Learning Objectives**
F-15.03.01L	demonstrate knowledge of sealants, their characteristics and applications	identify types of sealants and describe their characteristics and applications
		interpret information pertaining to sealants found in manufacturers' specifications
F-15.03.02L	demonstrate knowledge of procedures to seal materials	identify ***tools and equipment*** used to seal materials and describe their procedures for use
		identify ***hazards*** and describe safe work practices when sealing materials
		describe procedures to seal materials
		describe sealant application methods
		describe procedures to determine moisture content
		describe impact of ***environmental conditions*** when sealing materials

Range of Variables

tools and equipment include: brushes, rollers, sealant applicators, sponges
hazards include: fumes (VOC), irritations
environmental conditions include: temperature, humidity

Task F-16 Finishes terrazzo and stone

Task Descriptor

Finishing is the last step of completing the installation. This step is very important since it completes the process and reveals the final product.

Tilesetters need to be detail-oriented when grinding, grouting and finishing as this process will complete the look and enhance the finished product.

F-16.01 Grinds terrazzo and stone

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	no	yes	yes	yes	ND	yes	yes	yes	ND	ND	ND

	Skills	
	Performance Criteria	**Evidence of Attainment**
F-16.01.01P	select and use ***tools and equipment***	***tools and equipment*** are selected and used according to task and manufacturers' specifications
F-16.01.02P	identify grinding requirements	grinding requirements are identified according to type of surface
F-16.01.03P	select abrasives, grit stones or diamond pads	abrasives, grit stones or diamond pads are selected according to type of surface
F-16.01.04P	grind terrazzo	terrazzo is ground with 24 or 80 grit until aggregate and strips are exposed
F-16.01.05P	clean surface to remove sludge and grout to fill pinholes	surface is cleaned to remove sludge and grouted to fill pinholes
F-16.01.06P	cut stone surface	stone surface is cut to remove lippage and to flatten surface
F-16.01.07P	polish surface	surface is polished using diamond pads with 120 grit

Range of Variables

tools and equipment include: hand grinders, cove base machines, squeegees, floor grinding machines

	Knowledge	
	Learning Outcomes	**Learning Objectives**
F-16.01.01L	demonstrate knowledge of terrazzo, their characteristics, properties and applications	identify ***types of terrazzo*** and describe their characteristics, properties and applications
		identify types and sizes of aggregates used in terrazzo and describe their characteristics, properties and applications
F-16.01.02L	demonstrate knowledge of stone slabs, their characteristics, properties and applications	identify ***types of stone slabs*** and describe their characteristics, properties and applications
F-16.01.03L	demonstrate knowledge of procedures to grind terrazzo and stone	identify ***tools and equipment*** used to grind terrazzo and stone, and describe their procedures for use
		identify hazards and describe safe work practices when grinding terrazzo and stone
		identify types of abrasives used to grind surfaces
		describe procedures to grind terrazzo and stone
		describe grinding methods and materials
F-16.01.04L	demonstrate knowledge of procedures to polish terrazzo and stone surfaces	describe procedures to polish terrazzo and stone surfaces
		identify types of diamond pads and grits used to polish terrazzo and stone surfaces

Range of Variables

types of terrazzo include: cement, latex, epoxy
types of stone slabs include: marble, limestone, granite, soap stone, slate stone, engineered stone
tools and equipment include: hand grinders, cove base machines, squeegees, floor grinding machines

F-16.02 Grouts terrazzo and stone

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	no	yes	yes	yes	ND	yes	yes	yes	ND	ND	ND

Skills

	Performance Criteria	Evidence of Attainment
F-16.02.01P	select and use ***tools and equipment***	***tools and equipment*** are selected and used according to task and manufacturers' specifications
F-16.02.02P	fill imperfections on surface and joints with grout and/or aggregates	imperfections on surface and joints are filled with grout and/or aggregates
F-16.02.03P	identify areas that need additional grinding	areas that need additional grinding are identified

Range of Variables

tools and equipment include: trowels, floats, sponges

Knowledge

	Learning Outcomes	Learning Objectives
F-16.02.01L	demonstrate knowledge of grouts, their characteristics, properties and applications	identify types of grouts and describe their characteristics and applications
		interpret information pertaining to grouts found in manufacturers' and TTMAC specifications
F-16.02.02L	demonstrate knowledge of procedures to grout terrazzo and stone	identify ***tools and equipment*** used to grout terrazzo and stone, and describe their procedures for use
		identify hazards and describe safe work practices when grouting terrazzo and stone
		describe procedures to inspect terrazzo and stone
		describe procedures to grout terrazzo and stone
		describe grout application methods

Range of Variables

tools and equipment include: trowels, floats, sponges

F-16.03 Seals terrazzo and stone

NL	NS	PE	NB	QC	ON	MB	SK	AB	BC	NT	YT	NU
NV	yes	no	yes	yes	yes	ND	yes	yes	yes	ND	ND	ND

Skills

	Performance Criteria	Evidence of Attainment
F-16.03.01P	select and use ***tools and equipment***	***tools and equipment*** are selected and used according to task and manufacturers' specifications
F-16.03.02P	clean surface thoroughly	surface is cleaned thoroughly using ***cleaning products*** and according to manufacturers' specifications
F-16.03.03P	determine type of sealant to be used	type of sealant to be used is determined according to surface requirements, product suitability and ***project specifications***
F-16.03.04P	apply sealant	sealant is applied according to manufacturers' specifications
F-16.03.05P	test surface	surface is tested to identify if additional sealant is necessary
F-16.03.06P	buff finished surface	finished surface is buffed

Range of Variables

tools and equipment include: brushes, mops, rollers, spray bottles
cleaning products include: grout haze removers, stone and grout cleaners
project specifications include: design drawings, shop drawings, blueprints

Knowledge

	Learning Outcomes	Learning Objectives
F-16.03.01L	demonstrate knowledge of sealants, their characteristics, properties and applications	identify types of sealants and describe their characteristics and applications
		interpret information pertaining to sealants found in manufacturers' specifications
F-16.03.02L	demonstrate knowledge of procedures to seal terrazzo and stone	identify ***tools and equipment*** used to seal terrazzo and stone, and describe their procedures for use
		identify hazards and describe safe work practices when sealing terrazzo and stone

	describe procedures to apply sealants to terrazzo and stone
	describe sealant application methods
	describe procedures to buff terrazzo and stone surfaces

Range of Variables

tools and equipment include: brushes, mops, rollers, spray bottles

Appendix A
Acronyms

ANSI	American National Standards Institute
CSA	Canadian Standards Association
GFCI	ground fault interrupters
LEED	Leadership in Energy and Environmental Design
NBC	National Building Code
OH&S	Occupational Health and Safety
PPE	personal protective equipment
SDS	safety data sheets
TTMAC	Tile, Terrazzo and Marble Association of Canada
VOC	volatile organic components
WHMIS	Workplace Hazardous Materials Information System

Appendix B
Tools and Equipment/Outils et équipement

Personal Protective Equipment (PPE) and Safety Equipment/Équipement de protection individuelle (EPI) et de sécurité

air circulators	circulateurs d'air
air exchangers	échangeurs d'air
caution tapes	rubans de signalisation
coveralls (fire retardant)	combinaison (ignifuge)
dust masks	masques antipoussières
ear plugs and muffs	protecteurs et bouchons d'oreilles
exhaust fans	ventilateur d'extraction
eye wash facilities	douches oculaires
face shields	écrans faciaux
fire extinguishers	extincteurs
first aid kit/equipment	trousse et matériel de premiers soins
full body harnesses	harnais de sécurité
ground fault interrupters (GFCI)	disjoncteurs de fuite à la terre
hard hats	casques de sécurité
knee pads	genouillères
leather gloves	gants en cuir
life lines (lanyards)	cordes d'amarrage
portable lighting	lampes portatives
respirators	respirateurs
rope grabs	coulisseaux de sécurité
rubber gloves	gants en caoutchouc
safety footwear	chaussures de sécurité
safety vest	gilets de sécurité
saw guards	protecteurs de lames
signage	signalisation
vapour masks	masques anti-vapeurs
warning signs	panneaux de mise en garde

Common Tools/Trousse d'outils standard

brooms	balais
buckets	seaux
caulking guns	pistolets à calfeutrer
chalk lines	cordeaux à craie
chisels	ciseaux
claw hammers	marteaux à panne fendue
cove base trowels	truelles à plinthe à gorge
electrical power bars	barres de surtension
extension cords	rallonges électriques
finishing trowels	truelles de finition
floor scrapers	grattoirs à plancher
grinding stones	pierres à meuler
grout floats	taloches à coulis
grout scrapers	racloirs à coulis
hacksaws	scies à métaux
hand brushes	brosses à main

hawks	boucliers (porte mortiers)
heavy gauge trowels	truelles de compaction
lights	appareils d’éclairage
magnesium floats	truelles en magnésium
margin trowels	truelles carrées
marking instruments	instruments de marquage
masking tapes	rubans gommé
mitre boxes	boîtes à onglets
mortar boards	planches à mortier
notch trowels	truelles dentelée
plastic sheets	feuilles de plastique
pliers	pinces
point trowels	truelles à joints
pry bars	leviers
putty knives	couteaux à mastic
rags	torchons
rubber mallets	maillets en caoutchouc
screwdrivers	tournevis
shovels	pelles
snips	cisailles
socket sets	jeu de douilles
sponges	éponges
squeegees	racloirs en caoutchouc
straight edges	règles droite
suction cups	ventouses
tile cutters	coupe-carreaux
tile nippers	pinces de carreleur
utility knives	couteaux universel
locking pliers	pinces-étau
wheelbarrows	brouettes
wood floats	taloches de bois

Measuring and Layout Equipment/Instruments de mesure et de pose

lasers (square, line, rotary)	niveaux au laser (horizontal, à raie et rotatif)
plumb bobs	fils à plomb
squares	niveaux de bâtisseur
builders levels	équerres
storey poles	baguettes-guide
straight edges	règles droite
tape measures	rubans à mesurer
transits	théodolites (mises à niveau)
water levels	niveaux à eau

Scaffolding and Access Equipment/Matériel d’échafaudage et d’accès

aluminium decks	plateformes en aluminium
boom lifts (articulating)	nacelles à flèche articulée
ladder jacks	échelles télescopiques
ladders	échelles
pallet jacks	transpalettes
ramps	rampes
sawhorses	chevalets
scaffolds (mechanical, stationary, rolling)	échafaudages (mécaniques, fixe, roulant)
scissor-lifts	plateformes élévatrice

Portable Power Tools and Accessories/Outils mécaniques portatifs et accessoires

angle grinders	meuleuses d'angle
base grinders	meuleuses à plinthe
buffers	polisseuses
chipping hammers	smilles
circular saws	scies circulaire
core bit drills	perceuses à mèches cylindriques
drum cement mixers	mélangeurs à ciment à tambour
electric winches	treuils électrique
floor grinding machines	meuleuses à plancher
floor polishers	polisseuses à plancher
floor scrubbers	machines à nettoyer les planchers
hammer drills	marteaux-perforateur
hot glue guns	pistolets à colle chaude
jack hammers	marteaux-perforateur
mixing drills	perceuses-malaxeur
power chisels	burineurs
power drills	perceuses à percussion
power grout washing machines	machines à laver le coulis
power grouting machines	machines de cimentation mécanique
power scarifiers	scarificateurs mécanique
power undercut saws	scies à coupe à ras
routers	toupies
stand-up screw guns	tournevis électrique à maintien debout
wet and dry vacuums	aspirateurs industriel eaux et poussières
wet saws	scies à l'eau

Specialty Tools and Equipment/Outils et équipement de spécialité

A-frames	chevalets
air compressors and attachments	compresseurs d'air et leurs accessoires
bridge saws for large format tiles	scies à portiques pour carreaux grand format
buggies	chariots
cement mixers	mélangeurs à ciment
communication devices	appareils de communication
diamond plug stones and pads	bouchons de meulage et tampons diamantés
dry grinders for terrazzo	meuleuses à sec pour le terrazzo
dry vacuum systems	aspirateurs à poussières
generators	groupes électrogène
heaters	appareils de chauffage
jigs (racks)	gabarits de carrelage
multiple suction cup lifters	élévateurs à ventouses multiples
rail cutters	fraises à rails
sealer applicators	applicateurs de produits de scellement
stone grinders	meuleuses à pierres
stone polishers	polisseuses à pierres
terrazzo rollers	rouleaux à terrazzo
vibrators	vibrateurs

Appendix C
Glossary/Glossaire

accessories	fixtures such as towel bars, paper and soap holders	**accessoires**	accessoires comme les porte-serviettes, les porte-rouleaux de papier hygiénique et les porte-savons
bond coat	material applied to adhere two products together	**couche de liaison**	matériau utilisé pour sceller deux produits ensemble
contaminant	product residue such as adhesive, grease, oil or paint which inhibits bonding	**contaminant**	résidus de produits tels l'adhésif, la graisse, l'huile ou la peinture qui entrave la liaison
divider strips	zinc, brass or plastic strips used to allow for expansion or contraction of the underbed and topping, or to divide different colour panels or patterns	**bandes des séparation**	bandes de zinc, de laiton ou de plastique servant à limiter la dilatation ou le retrait de la sous-couche et de la chape ou à séparer des panneaux de différentes couleurs ou de différents motifs
epoxy	a two-component synthetic thermosetting resinous material	**résine époxyde**	résine synthétique thermodurcissable à deux composants
membrane	material used to isolate two components to obtain desired function	**membrane**	matériau utilisé pour isoler deux composants pour obtenir la fonction désirée
mortar bed	mixture of cement and sand placed over a substrate to provide a base for finishing material	**lit de mortier**	mélange de ciment et de sable placé sur support et qui fournit une base pour l'application des matériaux de finition
scratch coat	first layer of a mortar bed that has a scratched surface	**couche de préenduit**	première couche d'un lit de mortier qui est éraflée pour assurer une meilleure liaison
slurry bond coat	wetter version of a bond coat	**couche de liant semi-liquide**	version mouillée de la couche de liaison
stone slabs	any natural or engineered material that is 3/4 in. or greater in thickness such as marble, slate, limestone and granite	**dalles de pierre**	tout matériau d'origine naturelle ou modifié qui est de 3/4 po ou plus d'épaisseur comme le marbre, l'ardoise, le calcaire et le granite
substrate	the underlying surface such as cement board, wood and concrete, upon which finishing material is placed	**support**	surface sous-jacente comme le béton, le bois et les dalles de béton sur laquelle seront mis en place les matériaux de finition
terrazzo	a form of mosaic flooring made by embedding aggregate in a matrix	**terrazzo**	type de revêtement de sol mosaïque constitué d'agrégats noyés dans une matrice
trim	edge protection or finish feature made of materials such as metal, wood, plastic and ceramic	**accessoires de finition**	lisière de protection ou élément fini fait à partir de matériaux comme le métal, le bois, le plastique et la céramique