

Resilient Flooring Layer

Occupational Analysis Report

July 2010



Commission
de la construction
du Québec

The purpose of this report is to describe as accurately as possible the resilient flooring layer trade as currently practiced in Québec's construction industry. It is a record of discussions held by a group of workers who met for the occasion after industry partners recommended them to the Commission de la construction du Québec for their expertise in the trade.

The occupational analysis is a first step in the definition of the competencies required for practicing the trade. This report becomes one of the reference and decision-making tools used by the Commission for teaching and learning purposes.

The present report does not bind the Commission in any way. It has no legal effect and is meant as a reflection of discussions held on the date of the analysis workshop.

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The Commission de la construction du Québec wishes to thank the production team for this occupational analysis.

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The masculine gender is used generically
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INTRODUCTION

In early 2009, the CCQ's Direction de la formation professionnelle launched a large-scale operation to review the occupational analyses¹ of all construction industry trades.

The CCQ undertook this operation for many reasons, particularly the following:

- the project to reform the construction workforce apprenticeship and management system, and the eventual design of qualitative apprenticeship booklets requiring a detailed description of each trade;
- the fact that most construction occupational analyses² had been conducted between 1987 and 1991 and had not been reviewed since;
- updates to vocational qualification examination question banks;
- implementation of Chapter 7 of the Agreement on Internal Trade (AIT) and of the Québec-France Agreement on the Mutual Recognition of professional Qualifications.

These factors demonstrate the necessity of updating the occupational analyses in order to obtain a current and complete profile of the various trades in Quebec.

The analysis of the Resilient Flooring Layer trade belongs to this context³. Its purpose is to describe the trade as currently practiced in the construction industry. The present report was written in order to collate and organize the information gathered during the occupational analysis workshop held in Laval on March 29 and 30, 2010.

This analysis aims to draw a portrait of the trade (tasks and operations) and its working conditions, and to identify the skills and behaviours required. The report of the occupational analysis workshop is an accurate reflection of the consensus reached by a group of workers in the trade. A special effort was made to include in this report all the data collected during the workshop and to ensure that the data accurately depict the realities of the trade analysed.

1. The terms "profession" and "trade" are considered synonymous.

2. Called "work situation analyses" at the time.

3. This occupational analysis was conducted according to the Cadre de référence et instrumentation pour l'analyse d'une profession produced in 2007 by the ministère de l'Éducation, du Loisir et du Sport (Direction générale de la formation professionnelle et technique) and the Commission des partenaires du marché du travail, ministère de l'Emploi et de la Solidarité sociale.

1. GENERAL CHARACTERISTICS OF THE TRADE

1.1 DEFINITION OF THE TRADE

According to the Regulation respecting the vocational training of workforce in the construction industry (Schedule A, Group 5, No. 14), the term “resilient flooring layer” means:

[...] anyone who lays:

- a) resilient flooring made of vinyl, asphalt, rubber, cork, linoleum or of any other material that is glued but not stretched;
- b) rugs, carpets and undercarpets, except acoustical tile applied on walls and ceilings.

Performance of the work described in the first paragraph includes trade-related handling for the purposes of immediate and permanent installation.

Moreover, laying resilient flooring includes surface preparation as well as flooring installation and repairs. However, surface preparation work is usually delimited by the following criteria (according to the 1989 training specifications):

- it should not represent over 25% of the total time of all installation work;
- it should be limited to cleaning surfaces, removing old flooring and making minor repairs such as:
 - strengthening the floor by screwing or nailing;
 - eliminating nail heads;
 - equalizing a seam between two plywood panels;
 - filling small cracks;
 - equalizing the surface on a thickness of more or less 1/8 inch, using appropriate latex products;
 - regular sanding of the surfaces to be covered.

Resilient flooring may be grouped into three categories:

- carpets (stretched, glued, double glued, installed using double-sided adhesive tape, stapled);

- non-specialized (in rolls or tiles);
- specialized flooring:
 - vinyl flooring (commercial, sport, slip resistant with metal particles, in resilient or semi-rigid wall panels);
 - sport or commercial rubber flooring (in slabs or rolls);
 - specialized linoleums (cork, linseed oil and woodflour, etc.);
 - artificial turf (in rolls or panels).

The workshop participants estimate that specialized flooring is characterized by the use of specialized equipment and particularly by specialised usage or locations (food industry, hospitals, etc.).

1.2 JOB TITLES

The job title used for describing the trade is “resilient flooring layer.” At times titles are used that are related to the type of product (“carpet installer,” “linoleum installer”).

It is important not to confuse the title “resilient flooring layer” with “ceramic layer” (tile setter) and “floor layer” (parquetry worker-sander).

1.3 SECTORS OF ACTIVITY

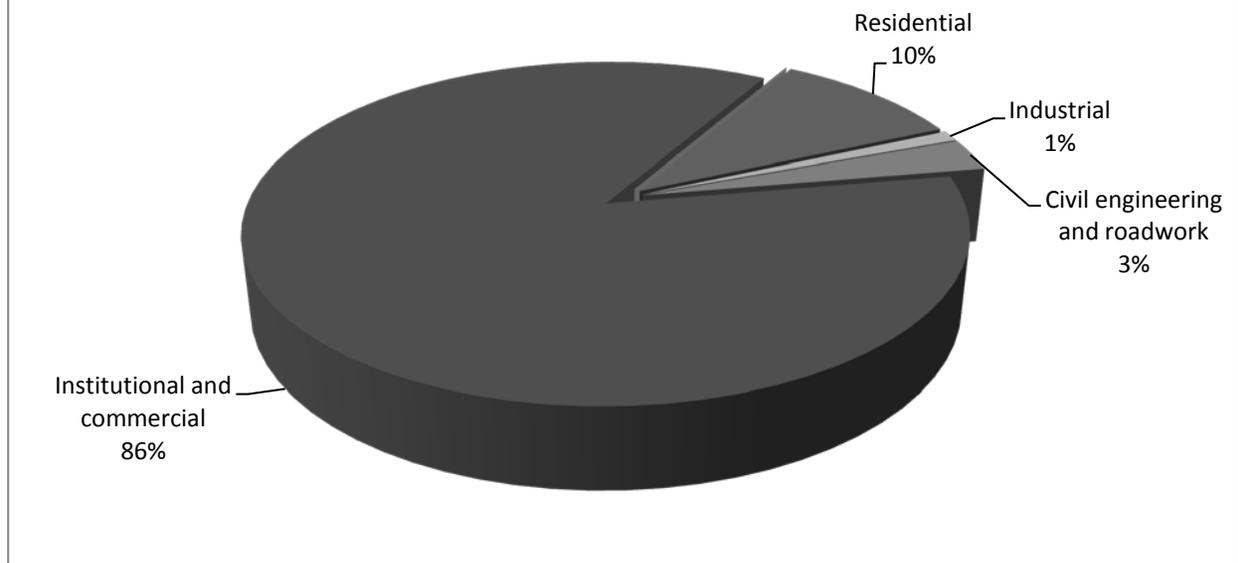
Resilient flooring layers are active, to varying degrees, in the four sectors of the construction industry:

- institutional and commercial;
- industrial;
- civil engineering and roadwork;
- residential.

However, the institutional and commercial sector clearly predominates⁴.

4. Commission de la construction du Québec, *Carrières construction*, 2009-2010 edition.

Distribution of Hours Worked in 2008 per Sector of Activity



1.4 FIELD OF PRACTICE

The trade's field of practice is the construction industry. The Act respecting labour relations, vocational training and workforce management in the construction industry (R.S.Q., c. R-20) defines construction as follows:

[...] the foundation, erection, maintenance, renewal, repair, alteration and demolition work on buildings and civil engineering works carried out on the job site itself and vicinity including the previous preparatory work on the ground;

In addition, the word "construction" includes the installation, repair and maintenance of machinery and equipment, work carried out in part on the job site itself and in part in the shop, moving of buildings, transportation of employees, dredging, turfing, cutting and pruning of trees and shrubs and laying out of golf courses, but solely in the cases determined by regulation.

1.5 LEGISLATION AND REGULATIONS

The construction industry's resilient flooring layers are subject to:

- the *Act respecting labour relations, vocational training and workforce management in the construction industry* (R.S.Q., c. R-20);
- the *Regulation respecting the vocational training of workforce in the construction industry* (R-20, r.6.2);
- the *Safety Code for the construction industry* (R.Q. c. S-2.1, r.6);
- the four sector-based collective agreements of the construction industry;
- the *Quebec Building Code*, Chapter I – “Building”;
- the *National Building Code – Canada 2005* (NBC);
- the *Act Respecting Occupational Health and Safety* (R.S.Q., c. S-2.1).

1.6 WORKING CONDITIONS

The following information provides an overview of the conditions and context of the work of resilient flooring layers, as commented by the participants in the occupational analysis workshop. To obtain up-to-date and complete information that has legal effect, it is necessary to refer to the four collective agreements of the construction industry sectors.

Salary⁵

A journeyman's average *annual* salary was \$23,857 in 2008.

A journeyman's daytime *hourly* wage in May 2009 was as follows:

- Industrial, institutional and commercial: \$28.36
- Civil engineering and roads: \$28.66
- Residential (light): \$26.16
- Residential (heavy): \$28.65

5. The salary data are taken from the document *Carrières construction*, 2009-2010 edition, published by the Commission de la construction du Québec, and from the collective agreements of the construction industry sectors.

Vacations and time off⁶

Mandatory annual holidays of four weeks – two weeks in summer and two in winter at periods predetermined in collective agreements – are the general rule in the construction industry. To avoid penalizing employers and employees experiencing special constraints, the industry's four collective agreements allow certain possibilities for changing the vacation periods prescribed by the general rule.

To these vacation periods are added eight not worked statutory holidays, as well as a lump sum for sick leaves not otherwise paid.

Pension plan

Construction industry workers participate in a pension plan. They retain their eligibility for this pension plan throughout their career in construction, even if they change employer, trade or sector.

Insurance

The group insurance plan (medications, illness, disability, death) is fully paid by employers. Workers (and their families, as the case may be) are eligible for it so long as they remain active in the construction industry and work the required number of hours, whether or not they change employer.

Physical requirements

Being a resilient flooring layer requires a lot of endurance and physical strength. The work is done largely on one's knees, bent over or crouching, and one must be able to handle material that is often very heavy. In fact, many improvements should be made to handling tools and equipment.

The work is done in the presence of dust – particularly cement and plaster dust – and products (adhesives, solvents, etc.) that pose health and safety hazards. Wearing a mask or respirator, as well as using new, less toxic products for the environment, are good ways of preventing those hazards.

6. The data on vacations and time off, the pension plan and insurance are taken from the following document, published in 2009 by the Commission de la construction du Québec: *La construction au Québec : c'est bien plus payant!*

Work schedules

A 40-hour work week from Monday to Friday is the general rule in all construction industry sectors. The daily limit is 8 hours a day, except in the light residential sector, where it can be 10 hours within a 40-hour week.

To avoid penalizing employers and employees experiencing special constraints, the industry's four collective agreements allow many possibilities for changing the schedule prescribed by the general rule: compressed schedule, schedule shift, make-up time in light residential construction, etc. These special schedules confer flexibility to the work schedules in effect in the construction industry.

Resilient flooring layers generally work in the daytime, from 30 to 40 hours a week. Evening and weekend work is frequent, for example, in office buildings and residential renovation. As for outdoor work, the schedules depend on weather conditions.

1.7 WORK ORGANIZATION

Traditionally, resilient flooring layers have specialized according to flooring types (carpets, linoleums, specialized flooring). Surface preparation, including removal of existing flooring, can also constitute a specialization.

1.8 JOB MARKET ENTRY CONDITIONS⁷

To obtain the competency certificate-apprentice in the trade (CCA), candidates must present to the CCQ the original version of an academic transcript or apprenticeship transcript attesting that they have passed the course of study for the DEP in laying resilient flooring, as well as a guarantee of employment from an employer registered with the CCQ for at least 150 hours within a period of not more than three consecutive months.

7. Other conditions than those listed above may apply. For a complete list of conditions for entering the trade, see the Act respecting labour relations, vocational training and workforce management in the construction industry (R.S.Q., c. R-20). The CCQ's website may also be consulted:
http://www.ccq.org/E_CertificatsCompetence.aspx?sc_lang=en&profil=DevenirTravailleur

Although the construction industry favours graduates for access to the trade, labour shortages may at times make it necessary for the CCQ to admit candidates without a diploma. Thus, candidates without a diploma are eligible to obtain a competency certificate-apprentice only during a labour shortage and must:

- Supply proof that they have the academic prerequisites for the program leading to a vocational studies diploma (DEP) in the trade referred to in the application or pledge, by signing a consent letter, to take the necessary training to obtain those academic prerequisites;
- Present a guarantee of employment registered during a labour-pool opening by an employer registered with the CCQ, for at least 150 hours over a period of at most three consecutive months.

The apprentice resilient flooring layer must have completed an apprenticeship period of 2,000 hours in order to be eligible for the provincial qualification examination that leads to obtaining the competency certificate-journeyman for the trade. Credits are paid into the apprenticeship record book of an apprentice resilient flooring layer who has obtained his diploma.

Moreover, certain qualities are sought by employers hiring new resilient flooring layers. The following list presents the main qualities, in the order they were mentioned and not in order of importance:

- attentiveness;
- attention to detail;
- concern for aesthetics;
- resourcefulness;
- manual skills;
- logic;
- ability to visualize the finished product;
- patience;
- perseverance.

Some participants in the occupational analysis workshop estimate that the 2,000 hours of training required for becoming a journeyman are insufficient.

1.9 PLACE OF WOMEN IN THE TRADE

Section 126.0.1 of the Act respecting labour relations, vocational training and workforce management in the construction industry pertains to women's access to the construction industry: "The Commission, after consultation with the Commission des droits de la personne et des droits de la jeunesse, shall develop measures to favour the access of women to and their maintenance and greater representation on the labour market in the construction industry."

According to the CCQ⁸, the proportion of women active in the trade of resilient flooring layer is 1.8% (20 women out of 1,140 resilient flooring layers in 2008).

In the view of the participants in the occupational analysis workshop, physical strength requirements pose the main obstacle to increasing the number of women, particularly concerning handling the often very heavy material. However, the participants also mentioned that several people are recommended for lifting heavy loads and that equipment exists for lifting heavy loads. Finally, the participants pointed out that women have no difficulty with the actual installation of resilient flooring.

1.10 CAREER PROSPECTS

With experience and depending on their fields of interest, resilient flooring layers can become team leaders or foremen, product representatives, technical experts in laying flooring, manufacturing company consultants, estimators-planners, and instructors. The participants specified that the number of team leaders or foremen is less than in other trades because the companies and work teams involved are often small.

8. Commission de la construction du Québec, *Carrières construction*, Québec City, 2009-2010 edition.

1.11 DEVELOPMENT OF THE TRADE

The participants mentioned several observable changes to the context in which the trade is practiced.

First, we observe changes in the types of materials and flooring used:

- broadloom carpets are declining, replaced by carpet tiles or floor tiles;
- more and more new materials are used, such as flax fibre and wood chip linoleums, semi-rigid vinyl panels, and new artificial turf flooring;
- the progressive disappearance of asphalt in floor tiles; today, they remain only on the back surface of some flooring;
- new specialized flooring is appearing and requires new installation techniques.

In tandem with the appearance of new products, work techniques are diversifying and new adhesives and other products are replacing solvents deemed toxic for health and the environment.

Finally, new tools are available, such as knives for cutting weld seams (Mozart knives), slotting dies and spatula knives (quarter-moon knives). In coming years, more-suitable handling equipment will be available for making the work of resilient flooring layers easier.

1.12 IMPACT OF ENVIRONMENTAL STANDARDS ON THE PRACTICE OF THE TRADE

The application of various environmental protection standards has had an impact on the work of resilient flooring layers, particularly with regard to:

- using new adhesives;
- replacing solvents with new products;
- using vacuum cleaners to prepare surfaces with a concrete polisher.

2. WORK DESCRIPTION

2.1 TASKS AND OPERATIONS

List of tasks

The following list presents the main tasks performed by resilient flooring layers. The order in which the tasks are presented does not necessarily reflect their importance in the trade.

Task 1	Lay a carpet ⁹
Task 2	Repair a carpet
Task 3	Lay linoleum ¹⁰
Task 4	Repair linoleum
Task 5	Lay specialized flooring
Task 6	Repair specialized flooring
Task 7	Lay artificial turf flooring
Task 8	Repair artificial turf flooring

Table of tasks and operations

During the workshop, a table of tasks and operations performed by resilient flooring layers was proposed to the participants. After discussions, modifications were made to the table. The final version is presented in the following pages.

9. The carpet may be stretched, glued, stapled, or laid using double-faced tape or a double glued.

10. The linoleum may be in rolls or tiles.

Table 2.1 Tasks and Operations

TASKS	OPERATIONS					
1. Lay a carpet	1.1 Read the specifications	1.2 Check the instructions and modify the laying plan, if applicable	1.3 Check the condition and quantity of materials	1.4 Prepare the work site	1.5 Remove existing flooring, if applicable	1.6 Evaluate the condition of surfaces and the laying conditions
	1.7 Prepare surfaces	1.8 Lay tackless strips (stretched carpet)	1.9 Lay the undercarpet (stretched and double glued carpets)	1.10 Place the carpet on the surface	1.11 Trim and make the seams	1.12 Apply the adhesive (glued and double glued carpets)
	1.13 Apply tape (carpet installed using double-sided adhesive tape)	1.14 Spread and adjust the carpet	1.15 Staple the carpet (stapled carpet)	1.16 Pass the roller (glued and double glued carpets)	1.17 Install mouldings, if applicable	1.18 Clean the work site
2. Repair a carpet	2.1 Find out what repair is to be made	2.2 Evaluate the repair's feasibility	2.3 Make the repair	2.4 Clean the premises		
3. Lay linoleum	3.1 Read the specifications	3.2 Check the instructions and modify the laying plan, if applicable	3.3 Check the condition and quantity of materials	3.4 Prepare the work site	3.5 Remove existing flooring, if applicable	3.6 Evaluate the condition of surfaces and the laying conditions
	3.7 Prepare surfaces	3.8 Prepare the linoleum	3.9 Glue the linoleum	3.10 Pass the roller	3.11 Make the final cuts	3.12 Seal the seams, if applicable
	3.13 Install mouldings	3.14 Clean the work site	3.15 Weld the seams, if applicable (for heat sealing)			
4. Repair linoleum	4.1 Find out what repair is to be made	4.2 Evaluate the repair's feasibility	4.3 Redo a seam	4.4 Replace a piece of linoleum	4.5 Install a moulding, if applicable	4.6 Clean the premises

TASKS	OPERATIONS					
5. Lay specialized flooring	5.1 Read the specifications	5.2 Check the instructions and modify the laying plan, if applicable	5.3 Check the condition and quantity of materials	5.4 Prepare the work site	5.5 Remove existing flooring, if applicable	5.6 Evaluate the condition of surfaces and the laying conditions
	5.7 Prepare surfaces	5.8 Prepare the flooring	5.9 Glue the flooring	5.10 Pass the roller	5.11 Make the final cuts	5.12 Lay the mouldings
	5.13 Clean the work site	5.14 Heat weld, if applicable	5.15 Make the play lines, if applicable			
6. Repair specialized flooring	6.1 Find out what repair is to be made	6.2 Check the instructions and laying conditions	6.3 Evaluate the repair's feasibility	6.4 Redo a seam	6.5 Replace a piece of flooring	6.6 Redo a step
	6.7 Install a moulding	6.8 Clean the premises				
7. Lay artificial turf flooring	7.1 Read the specifications	7.2 Check measurements and materials	7.3 Prepare the work site	7.4 Remove existing flooring, if applicable	7.5 Evaluate the condition of surfaces and the laying conditions	7.6 Prepare surfaces
	7.7 Place the flooring	7.8 Install lines, numbers and logos	7.9 Prepare the flooring for filling	7.10 Fill the flooring	7.11 Do the finishing	7.12 Clean the work site
8. Repair artificial turf flooring	8.1 Find out what repair is to be made	8.2 Check the instructions	8.3 Evaluate the repair's feasibility	8.4 Redo a seam	8.5 Replace a piece of flooring	8.6 Clean the premises

2.2 OPERATIONS, SUB-OPERATIONS AND CLARIFICATIONS

In the following pages are presented sub-operations related to most of the operations¹¹, as well as a few clarifications made by the participants.

Table 2.2 Sub-Operations and Operation Clarifications

TASK 1 LAY A CARPET		
Operations	Sub-Operations	Clarifications
1.1 Read the specifications	1.1.1 Check the plan 1.1.2 Check the specifications, if applicable 1.1.3 Check the location where the carpet is to be laid 1.1.4 Check the carpet's colour 1.1.5 Check the carpet's laying direction	There is always a plan in the institutional and commercial sector, but not necessarily in the residential sector. It is necessary to make sure to have the correct version of the plan. Specifications may notably be related to the type of material, of glue and its opening time, of the trowel to be used, etc.
1.2 Check the instructions and modify the laying plan, if applicable	1.2.1 Discuss required modifications with the person of authority 1.2.2 Agree on modifications 1.2.3 Document the modifications 1.2.4 Check the premises' accessibility	In the institutional and commercial sector, instructions are given by a foreman, whereas in the residential sector they are given by the client.
1.3 Check the condition and quantity of materials	1.3.1 Ensure that cuts correspond to specified dimensions 1.3.2 Ensure that received materials are sufficient for the surfaces that are to be covered 1.3.3 Ensure that batch numbers are exact for all materials 1.3.4 Locate the seams	At times the batch has to be divided to reduce losses to a minimum. Seams should be located where there is the least traffic.
1.4 Prepare the work site	1.4.1 Secure the work site by delimiting the work area 1.4.2 Coordinate with the project manager and the other trades 1.4.3 Determine the necessary handling equipment 1.4.4 Ensure appropriate and secure storage 1.4.5 Remove furniture, if applicable 1.4.6 Sweep 1.4.7 Determine the starting point of the work	Necessary means must be used to prevent traffic during the installation.

11. The sequence of operations may vary according to the company's organization.

TASK 1 LAY A CARPET		
Operations	Sub-Operations	Clarifications
1.5 Remove existing flooring, if applicable	1.5.1 Evaluate the premises' conditions 1.5.2 Determine the necessary resources 1.5.3 Apply the appropriate removal technique 1.5.4 Dispose of removed materials	The necessary resources may be persons, equipment, or locations for disposing of old flooring.
1.6 Evaluate the condition of surfaces and the laying conditions	1.6.1 Ensure that the cement does not crumble 1.6.2 Check the room temperature	An excessively low temperature reduces glue adhesion.
1.7 Prepare surfaces	1.7.1 Scratch or sand floors and bottoms of walls to remove plaster or paint residues 1.7.2 Pass the vacuum cleaner on the surface 1.7.3 Repair the cement, if applicable ¹² 1.7.4 Sand the surface again 1.7.5 Clean	Preparations may be more or less slight; waves must be corrected.
1.8 Lay tackless strips (stretched carpet)	1.8.1 Extend the strips 1.8.2 Cut the strips 1.8.3 Nail or glue the strips	It is necessary to make sure that the strips are in the correct direction.
1.9 Lay the undercarpet (stretched and double glued carpets)	1.9.1 Lay the undercarpet 1.9.2 Cut the undercarpet 1.9.3 Apply glue on the surface (double glued carpet)	For stretched carpets, the tacking strip must be left free.
1.10 Place the carpet on the surface	10.1 Unroll the carpet over the entire surface	
1.11 Trim and make the seams	1.11.1 Cut surplus carpeting 1.11.2 Match the pattern scheme 1.11.3 Weld the seams 1.11.4 Determine the border width 1.11.5 Weld the inserts	
1.12 Apply the adhesive (glued and double spread carpets)	1.12.1 Raise the carpet 1.12.2 Spread the glue 1.12.3 Seal the seams and lower the carpet	The trowel or appropriate equipment must be used to spread the glue (trowel, pressure gun, roller, brush), while observing the glue's opening time.

12. These are minor repairs, otherwise this work is done by the cement finisher.

TASK 1 LAY A CARPET		
Operations	Sub-Operations	Clarifications
1.13 Apply tape (carpet installed using double-sided adhesive tape)	1.13.1 Clean the surface	It is important to eliminate dust completely. The tape should be placed as close as possible to the wall.
1.14 Spread and adjust the carpet	1.14.1 Adjust the seams 1.14.2 Stretch the carpet in both directions 1.14.3 Make the final cut	Stretching is done with a carpet stretcher or a power stretcher.
1.15 Staple the carpet (stapled carpet)		The carpet should be stretched and stapled all around the room while ensuring that the staples are not apparent.
1.16 Pass the roller (glued and double glued carpets)	1.16.1 Roll the carpet in both directions with a roller	
1.17 Install mouldings, if applicable	1.17.1 Lay door mouldings 1.17.2 Install baseboards	Carpet baseboards have to be stapled or glued and vinyl baseboards have to be glued.
1.18 Clean the work site	1.18.1 Collect the carpet nails with a magnet 1.18.2 Collect all carpet residues 1.18.3 Pass the vacuum cleaner 1.18.4 Do a final check	
TASK 2 REPAIR A CARPET		
Operations	Sub-Operations	Clarifications
2.1 Find out what repair is to be made	2.1.1 Find out what the problem is 2.1.2 Repair the damage 2.1.3 Check the necessary material 2.1.4 Check the carpet direction	Various repairs may be necessary following: <ul style="list-style-type: none"> - burns; - wear from furniture; - tears; - spots; - discolourations; - etc.
2.2 Evaluate the repair's feasibility	2.2.1 Determine whether the repair can be made immediately 2.2.2 Take necessary measures	

TASK 2 REPAIR A CARPET		
Operations	Sub-Operations	Clarifications
2.3 Make the repair	2.3.1 Secure the premises with boundary tape 2.3.2 For a glued carpet, remove the damaged piece and replace it with a new one while observing the pile direction 2.3.3 In the case of a double glued, remove the carpet and undercarpet and replace damaged pieces 2.3.4 For a stretched carpet, change the carpet and weld the seams with a hot iron, and then stretch the carpet again 2.3.5 To eliminate buckles, remove furniture from the room and stretch the carpet well	Necessary means must be taken to prevent traffic during repairs.
2.4. Clean the premises	2.4.1 Collect all carpet pieces 2.4.2 Pass the vacuum cleaner	
TASK 3 LAY LINOLEUM		
Operations	Sub-Operations	Clarifications
3.1 Read the specifications	3.1.1 Check the plan 3.1.2 Check the specifications, if applicable 3.1.3 Check the location where the linoleum is to be laid 3.1.4 Check the colour 3.1.5 Check the linoleum's laying direction	There is always a plan in the institutional and commercial sector, but not necessarily in the residential sector. It is necessary to make sure to have the correct version of the plan. Specifications may notably be related to the type of material, of glue and its opening time, of the trowel to be used, etc.
3.2 Check the instructions and modify the laying plan, if applicable	3.2.1 Discuss required modifications with the person of authority 3.2.2 Agree on modifications 3.2.3 Document the modifications 3.2.4 Check the premises' accessibility	

TASK 3 LAY LINOLEUM		
Operations	Sub-Operations	Clarifications
3.3 Check the condition and quantity of materials	3.3.1 Ensure that cuts correspond to specified dimensions 3.3.2 Ensure that received materials are sufficient for the surfaces that are to be covered 3.3.3 Ensure that batch numbers are exact for all materials 3.3.4 Locate the seams	
3.4 Prepare the work site	3.4.1 Secure the work site by delimiting the work area 3.4.2 Coordinate with the project manager and the other trades 3.4.3 Determine the necessary handling equipment 3.4.4 Ensure appropriate and secure storage 3.4.5 Remove furniture, if applicable 3.4.6 Sweep 3.4.7 Determine the location of the start of work	
3.5 Remove existing flooring, if applicable	3.5.1 Evaluate the premises' condition 3.5.2 Determine the necessary resources 3.5.3 Apply the appropriate removal technique 3.5.4 Dispose of removed materials	The necessary resources may be persons, equipment, or locations for disposing of old flooring.
3.6 Evaluate the condition of surfaces and the laying conditions	3.6.1 Check the concrete's porosity 3.6.2 Check the integrity, solidity and uniformity of the surface to be covered 3.6.3 Detect imperfections 3.6.4 Detect the presence of sealers 3.6.5 Ensure that appropriate tests on the slab have been performed 3.6.6 Ensure that the room's temperature and humidity meet manufacturer specifications 3.6.7 Make sure that the work area is appropriately lit 3.6.8 Locate the drains and make corrections as necessary 3.6.9 Check for screws (make sure they are not raised)	It is necessary to ensure that the surface is not contaminated and that the studs are solid, and to check electrical outlets and plumbing fixtures. Tests have to be performed as necessary (humidity, pH, etc.), according to manufacturer specifications.

TASK 3 LAY LINOLEUM		
Operations	Sub-Operations	Clarifications
3.7 Prepare surfaces	3.7.1 Clean, scrape and sand floors and bottoms of walls to remove residues of plaster, of paint, etc. 3.7.2 Apply one or two layers of cement based levelling compound ¹³ . 3.7.3 Adjust the slopes (drains) and the junction with other materials 3.7.4 Do the finish sanding 3.7.5 Clean again 3.7.6 Mark the start and square lines or the reference points	Surface preparation is essential for a quality installation.
3.8 Prepare the linoleum	3.8.1 Place the linoleum on the square line 3.8.2 Align, superimpose and cut the seams as necessary 3.8.3 Remove surpluses (trim) 3.8.4 Align the linoleum	In the case of tiles, gluing is done before placing the first tile. Seams may be prepared before or during the gluing.
3.9 Glue the linoleum	3.9.1 Remove the linoleum and sweep the back 3.9.2 Glue the linoleum from the centre to the edges 3.9.3 Make the seams in the glue, if applicable	The glue opening time must be observed.
3.10 Pass the roller	3.10.1 Roll the linoleum in both directions 3.10.2 Do the periphery of walls 3.10.3 Secure the premises to prevent traffic 3.10.4 Detect the presence of air pockets	This operation is usually performed using a roller of 100 lb. or more, according to manufacturer specifications.
3.11 Make the final cuts	3.11.1 Cut the periphery and door frames	
3.12 Seal the seams, if applicable	3.12.1 Clean the seams 3.12.2 Apply the sealer	Seams are sealed if a cold sealer is used.
3.13 Lay the mouldings	3.13.1 Glue the door mouldings 3.13.2 Glue the baseboards	

13. The workshop participants responded according to their knowledge of the trade. However, the Direction de l'application des conventions collectives issued a notice that cement application belongs to the cement finisher trade.

TASK 3 LAY LINOLEUM		
Operations	Sub-Operations	Clarifications
3.14 Clean the work site	3.14.1 Collect residues 3.14.2 Clean the surface 3.14.3 Make a final check	
3.15 Weld the seams, if applicable (for heat sealing)	3.15.1 Groove the seams 3.15.2 Apply weld rod in the seams 3.15.3 Trim the seams	Ideally, hot welds should be done at least 24 hours after the installation.
TASK 4 REPAIR LINOLEUM		
Operations	Sub-Operations	Clarifications
4.1 Find out what repair is to be made	4.1.1 Find out what the problem is 4.1.2 Repair the damage 4.1.3 Check the necessary material 4.1.4 Check the linoleum direction	Various repairs may be necessary following: <ul style="list-style-type: none"> - burns; - wear from furniture; - tears; - spots; - discolourations; - etc.
4.2 Evaluate the repair's feasibility	4.2.1 Determine whether the repair can be made immediately 4.2.2 Take necessary measures	As the case may be, examine the feasibility (water damage, tears, etc.).
4.3 Redo a seam	4.3.1 Raise the linoleum 4.3.2 Clean the surface 4.3.3 Reglue the seam	
4.4 Replace a piece of linoleum	4.4.1 Remove the piece to be replaced 4.4.2 Clean and repair the surface if necessary 4.4.3 Put the new piece in place 4.4.4 Seal the seam, if applicable	The piece may be located on the floor, a step or a wall.
4.5 Install a moulding, if applicable	4.5.1 Glue the transition mouldings 4.5.2 Glue the baseboards	
4.6 Clean the premises	4.6.1 Collect the linoleum pieces 4.6.2 Clean 4.6.3 Review the work done	

TASK 5 LAY SPECIALIZED FLOORING		
Operations	Sub-Operations	Clarifications
5.1 Read the specifications	5.1.1 Check the plan 5.1.2 Check the specifications, if applicable 5.1.3 Check the location where the flooring is to be laid	Manufacturer specifications must be referred to. The specifications may, notably, be related to: <ul style="list-style-type: none"> - the type of material; - the type of glue; - the type of preparation; - tolerances; - sealers; - drawings or patterns; - colours; - insertions; - types of mouldings; - batch numbers; - the installation sequence; - etc.
5.2 Check the instructions and modify the laying plan, if applicable	5.2.1 Discuss required modifications with the person of authority 5.2.2 Agree on modifications and make them as necessary 5.2.3 Check the material's direction and the colour and pattern schemes 5.2.4 Document the modifications 5.2.5 Check the premises' accessibility	Sometimes a sample piece has to be made first, as a kind of prototype requested by the client.
5.3 Check the condition and quantity of materials	5.3.1 Ensure that cuts correspond to specified dimensions 5.3.2 Ensure that received materials are sufficient for the surfaces that are to be covered 5.3.3 Ensure that batch numbers are exact for all materials 5.3.4 Locate the seams	
5.4 Prepare the work site	5.4.1 Secure the work site by delimiting the work area 5.4.2 Coordinate with the project manager and the other trades 5.4.3 Determine the necessary handling equipment 5.4.4 Ensure appropriate and secure storage 5.4.5 Remove furniture, if applicable 5.4.6 Sweep 5.4.7 Determine the location of the start of work	

TASK 5 LAY SPECIALIZED FLOORING		
Operations	Sub-Operations	Clarifications
5.5 Remove existing flooring, if applicable	5.5.1 Evaluate the premises' condition 5.5.2 Determine the necessary resources 5.5.3 Apply the appropriate removal technique 5.5.4 Dispose of removed materials	The necessary resources may be persons, equipment, or locations for disposing of old flooring.
5.6 Evaluate the condition of surfaces and the laying conditions	5.6.1 Check the concrete's porosity 5.6.2 Check the integrity, solidity and uniformity of the surface to be covered 5.6.3 Check for imperfections 5.6.4 Check for the presence of sealers 5.6.5 Ensure that appropriate tests on the slab have been performed according to manufacturer specifications 5.6.6 Ensure that the room's temperature and humidity meet manufacturer specifications 5.6.7 Make sure that the work area is appropriately lit	To lay vinyl sheet flooring, one must check that the paint is not too fresh and that there are no plaster residues on walls and no round corners. One must also ensure that the surface is not contaminated and that the studs are solid. In addition, electrical outlets and plumbing fixtures must be checked. At times it is necessary to perform tests.
5.7 Prepare surfaces	5.7.1 Scrape or sand floors and bottoms of walls to remove residues 5.7.2 Sweep or pass the vacuum cleaner on the surface 5.7.3 Repair the cement, if applicable ¹⁴ 5.7.4 Adjust the slopes (drains) and the junction with other materials 5.7.5 Sand the surface again 5.7.6 Clean 5.7.7 Mark the start and square lines or the reference points	Preparations may be more or less slight; waves must be corrected. To lay vinyl sheet flooring, the preparation is done mainly by drywall finishers. To lay raised flooring, a cove moulding has to be installed at the bottom of the wall, and a moulding at the flooring limit.
5.8 Prepare the flooring	5.8.1 Unroll the flooring and let it rest if necessary 5.8.2 Place the flooring on the square line 5.8.3 Align, superimpose and cut seams as necessary 5.8.4 Remove surpluses (trim) 5.8.5 Align the flooring	To lay vinyl sheet flooring: – scaffold as necessary; – fold the sheets; – wash the back of sheets; – apply glue on the flooring; – place the flooring on the wall. Seams may be prepared in the glue or before gluing. There are several methods for cutting seams.

14. These are minor repairs, otherwise this work is done by the cement finisher.

TASK 5 LAY SPECIALIZED FLOORING		
Operations	Sub-Operations	Clarifications
5.9 Glue the flooring	5.9.1 Make sure to use the correct adhesive and the correct tool to spread it 5.9.2 Apply the adhesive 5.9.3 Ensure the adhesive transfer	The glue opening time must be observed.
5.10 Pass the roller	5.10.1 Bind if necessary 5.10.2 Roll the flooring in both directions 5.10.3 Put weights (often bricks) on the seams 5.10.4 Secure the premises to prevent traffic 5.10.5 Detect residual air pockets	Air pockets have to be detected and removed. This operation is usually performed with a roller of 100 lb. or more, according to manufacturer specifications. To lay vinyl sheet flooring, use a hand roller from bottom to top and from left to right on the walls. In some cases, the flooring has to be protected with panels.
5.11 Make the final cuts	5.11.1 Adjust interior and exterior corners 5.11.2 Transfer using a template, if applicable 5.11.3 Cut under mouldings and around door frames	
5.12 Lay the mouldings	5.12.1 Install transition mouldings 5.12.2 Install baseboards	To lay vinyl sheet flooring, sealers must be applied.
5.13 Clean the work site	5.13.1 Collect waste and waste trimmings 5.13.2 Clean the material 5.13.3 Collect the weights used 5.13.4 Ensure that pre-use periods are observed	
5.14 Heat weld, if applicable	5.14.1 Groove the seams 5.14.2 Apply weld rod in the seams 5.14.3 Trim the seams	To lay vinyl sheet flooring, seams are welded with a vinyl bead that is melted before being flattened.
5.15 Make the play lines, if applicable		Mainly in the case of sports flooring, lines have to be made (inserted, glued or painted).

TASK 6 REPAIR SPECIALIZED FLOORING		
Operations	Sub-Operations	Clarifications
6.1 Find out what repair is to be made	6.1.1 Find out what the problem is 6.1.2 Repair the damage 6.1.3 Check the necessary material 6.1.4 Check the flooring direction	Various repairs may be necessary following: - burns; - wear from furniture; - tears; - spots; - discolourations; - etc.
6.2 Check instructions and laying conditions	6.2.1 Check the humidity level and ensure that checks or tests have been performed 6.2.2 Ensure that the area is adequately heated 6.2.3 Check for the presence of sealers and remove them as necessary 6.2.4 Check colour and pattern schemes 6.2.5 Make modifications as necessary	
6.3 Evaluate the repair's feasibility	6.3.1 Check the causes 6.3.2 Check the condition of materials 6.3.3 Check the availability and compliance of materials (nature and dimensions)	
6.4 Redo a seam	6.4.1 Decontaminate 6.4.2 Reglue a seam 6.4.3 Add a piece if necessary 6.4.4 Seal again or weld depending on the material	
6.5 Replace a piece of flooring	6.5.1 Cut the piece to be replaced 6.5.2 Scratch the old adhesive 6.5.3 Level 6.5.4 Reglue 6.5.5 Roll and make the required seams	
6.6 Redo a step	6.6.1 Remove the flooring to be replaced 6.6.2 Prepare the surface 6.6.3 Install the new flooring	

TASK 6 REPAIR SPECIALIZED FLOORING		
Operations	Sub-Operations	Clarifications
6.7 Install a moulding	6.7.1 Glue or screw a transition moulding 6.7.2 Clean and install a new vinyl baseboard	
6.8 Clean the premises	6.8.1 Collect flooring pieces 6.8.2 Remove excess adhesive 6.8.3 Review the work done	
TASK 7 LAY ARTIFICIAL TURF FLOORING		
Operations	Sub-Operations	Clarifications
7.1 Read the specifications	7.1.1 Check the plan 7.1.2 Check the specifications, if applicable 7.1.3 Check the material's direction and the colour and pattern schemes	You have to refer to manufacturer specifications.
7.2 Check measurements and materials	7.2.1 Ensure that the plan is suitable for the premises 7.2.2 Ensure that base level checks and drainage tests have been performed 7.2.3 Make sure of the laying sequence 7.2.4 Check the condition of materials 7.2.5 Check the availability and compliance of materials (nature and dimensions)	
7.3 Prepare the work site	7.3.1 Ensure appropriate and secure storage 7.3.2 Coordinate with the project manager and the other trades 7.3.3 Determine the required handling equipment 7.3.4 Mark the ground's centre and limits	You have to refer to survey data.
7.4 Remove existing flooring, if applicable	7.4.1 Evaluate the premises' condition 7.4.2 Determine the necessary resources 7.4.3 Apply the appropriate removal technique 7.4.4 Dispose of removed materials	

TASK 7 LAY ARTIFICIAL TURF FLOORING		
Operations	Sub-Operations	Clarifications
7.5 Evaluate the condition of surfaces and the laying conditions	7.5.1 Check surface integrity, solidity and uniformity 7.5.2 Check the drainage and slopes	Drainage tests must be performed; in particular, base uniformity must be checked.
7.6 Prepare surfaces	7.6.1 Prepare and maintain the surface for the entire duration of the work	Work is done continuously on compacted soil.
7.7 Place the flooring	7.7.1 Spread the flooring 7.7.2 Sew or glue seams as necessary 7.7.3 Stretch each width and pass the compression roller	The plan or specifications must be followed. The flooring is stretched using pliers.
7.8 Install lines, numbers and logos	7.8.1 Shear the flooring 7.8.2 Cut out lines, numbers and logos 7.8.3 Glue lines, numbers and logos	A small roller has to be passed as work progresses.
7.9 Prepare the flooring for filling	7.9.1 Roll the flooring with a compression roller 7.9.2 Adjust the lines 7.9.3 Glue the periphery, if applicable	
7.10 Fill the flooring	7.10.1 Brush the flooring on the ground 7.10.2 Fill with sand and rubber pellets	These two sub-operations have to be repeated several times. Filling is done using a power broom.
7.11 Do the finishing	7.11.1 Harmonize the ground's final appearance	The finishing is done using rakes and shavers.
7.12 Clean the work site	7.12.1 Collect waste and trimmings 7.12.2 Clean the material	
TASK 8 REPAIR ARTIFICIAL TURF FLOORING		
Operations	Sub-Operations	Clarifications
8.1 Find out what repair is to be made	8.1.1 Find out what the problem is 8.1.2 Detect the damage 8.1.3 Check the necessary material	
8.2 Check the instructions	8.2.1 Ensure that checks and tests have been performed 8.2.2 Check the material's direction and the colour and pattern schemes	

TASK 8 REPAIR ARTIFICIAL TURF FLOORING		
Operations	Sub-Operations	Clarifications
8.3 Evaluate the repair's feasibility	8.3.1 Check the causes 8.3.2 Check the condition of materials 8.3.3 Check the availability and compliance of materials (nature and dimensions)	
8.4 Redo a seam	8.4.1 Clean the area of the seam 8.4.2 Reglue the seam 8.4.3 Use hand tools and required materials to fill the cleaned area	Cleaning is done using a vacuum cleaner.
8.5 Replace a piece of flooring	8.5.1 Clean the area of the piece to be replaced 8.5.2 Cut the new piece and the one to be replaced 8.5.3 Glue the piece 8.5.4 Use hand tools and required materials to fill the cleaned area	
8.6 Clean the premises	8.6.1 Collect waste and waste fabric 8.6.2 Clean the material 8.6.3 Make a final check	

2.3 ACHIEVEMENT CONDITIONS

Data on achievement conditions were collected for the resilient flooring layer trade as a whole. The data pertain to aspects such as work areas, work instructions, health and safety hazards, reference documents consulted and material resources used.

Table 2.3 Achievement Conditions

ACHIEVEMENT CONDITIONS
<p>Workplaces¹⁵</p> <p>Depending on the type of flooring to be laid or repaired, resilient flooring layers have to work indoors or outdoors, in various locations such as residences, businesses, institutions, sporting facilities, etc.</p> <p>The work is often done in the presence of other trades.</p>
<p>Instructions</p> <p>Instructions may come from various persons of authority who should be clearly identified from the start (client, architect, general contractor, decorator, designer, etc.).</p>
<p>References</p> <p>To do the work, resilient flooring layers consult mainly the plans, but also manufacturer specifications contained in guides or manuals, as well as material safety data sheets.</p>
<p>Raw materials, tools and equipment</p> <p>In Annex 1 of the present report is a list of material resources used by resilient flooring layers in practicing their trade.</p>
<p>Health and safety hazards</p> <p>A list of the main hazards related to the resilient flooring layer trade is drawn in Annex 2 of the present report. Applicable preventive measures are also listed there.</p> <p>During the workshop, the participants mainly pointed out hazards related to:</p> <ul style="list-style-type: none">– using cutting tools;– handling heavy loads;– back and knee problems attributable to the work posture;– exposure to dust, glue and mildew.

15. Non-exhaustive list.

ACHIEVEMENT CONDITIONS
<p>Degree of autonomy</p> <p>The work is done alone or in a team, depending on the importance of the work to be done and the size of the company employing resilient flooring layers.</p> <p>The work is often done without supervision, but a team leader may also supervise some of the work, particularly in the case of sports flooring.</p>
<p>Stress factors</p> <p>Delivery times, weather conditions (for outdoor work), the presence of various trades, long working hours and the client's acceptance of work constitute the main stress factors.</p>

2.4 PERFORMANCE CRITERIA

Performance criteria were gathered for each task. They are used for assessing whether the tasks were performed satisfactorily. The criteria pertain to aspects such as the quantity and quality of work done, the observance of a work procedure, the attitudes adopted, etc.

To draw the list of criteria for each task, the participants worked in teams of two or three. Their results were then collected and presented in full session. Thus, certain criteria may at times be as relevant to other tasks as to those for which they have been retained.

Table 2.4 Performance Criteria

TASK 1 LAY A CARPET
<p style="text-align: center;">Performance Criteria</p> <ul style="list-style-type: none">– Strict application of safety rules– Observance of manufacturer specifications– Respecting the foreman or client’s instructions– Sound advice to the client– Adequate use of required tools and equipment– Correct pattern match– Clean surfaces– Using the appropriate adhesive– Meticulously checking material quality– Observance of the pattern and the fabric pile– Observance of installation and delivery times– Clean and well-sealed seams– Seams not apparent
TASK 2 REPAIR A CARPET
<p style="text-align: center;">Performance Criteria</p> <ul style="list-style-type: none">– Strict application of safety rules– Observance of manufacturer specifications– Respecting the foreman or client’s instructions– Sound advice to the client– Adequate use of required tools and equipment– Correct pattern match– Clean surfaces– Using the appropriate adhesive– Adequate damage appraisal– Observance of the pattern and the fabric pile– Conscientiousness

TASK 3 LAY LINOLEUM**Performance Criteria**

- Strict application of safety rules
- Observance of manufacturer specifications
- Respecting the foreman or client's instructions
- Sound advice to the client
- Adequate use of required tools and equipment
- Correct pattern match
- Clean surfaces
- Using the appropriate adhesive
- Quality of surface preparation
- Seams quality and sealing
- Cutting precision
- Good squareness
- Observance of drying and setup times without traffic
- Adequate handling of material
- No buckling nor bulging
- No bumps or differences in level of the surfaces

TASK 4 REPAIR LINOLEUM**Performance Criteria**

- Strict application of safety rules
- Observance of manufacturer specifications
- Respecting the foreman or client's instructions
- Sound advice to the client
- Adequate use of required tools and equipment
- Correct pattern match
- Clean surfaces
- Using the appropriate adhesive
- Seams quality and sealing
- Repairs not apparent
- No buckling nor bulging
- No bumps or differences in level of the surfaces

TASK 5 LAY SPECIALIZED FLOORING**Performance Criteria**

- Strict application of safety rules
- Observance of manufacturer specifications
- Respecting the foreman or client's instructions
- Sound advice to the client
- Adequate use of required tools and equipment
- Correct pattern match
- Clean surfaces
- Using the appropriate adhesive
- Quality of surface preparation
- Seams quality and sealing
- Cutting precision
- Adhesion of perimeters
- Seams arrangement according to trade practices
- No buckling nor bulging
- No bumps or differences in level of the surfaces

TASK 6 REPAIR SPECIALIZED FLOORING**Performance Criteria**

- Strict application of safety rules
- Observance of manufacturer specifications
- Respecting the foreman or client's instructions
- Sound advice to the client
- Adequate use of required tools and equipment
- Correct pattern match
- Clean surfaces
- Using the appropriate adhesive
- Quality of surface preparation
- Seams quality and sealing
- Cutting precision
- Adhesion of perimeters
- Seams arrangement according to trade practices
- No buckling nor bulging
- No bumps or differences in level of the surfaces

TASK 7 LAY ARTIFICIAL TURF FLOORING**Performance Criteria**

- Strict application of safety rules
- Observance of manufacturer specifications
- Respecting the foreman or client's instructions
- Sound advice to the client
- Adequate use of required tools and equipment
- Correct pattern match
- Clean surfaces
- Quality of seams and insertions
- Uniform and well filled ground
- Straight lines
- Ground corresponding to survey data
- Appropriately wearing personal protective equipment (mask, shoes or boots)
- Effective coordination with other team members

TASK 8 REPAIR ARTIFICIAL TURF FLOORING**Performance Criteria**

- Strict application of safety rules
- Observance of manufacturer specifications
- Respecting the foreman or client's instructions
- Sound advice to the client
- Adequate use of required tools and equipment
- Correct pattern match
- Clean surfaces
- Quality of seams and insertions
- Uniform and well filled ground
- Straight lines
- Ground corresponding to survey data
- Appropriately wearing personal protective equipment (mask, shoes or boots)
- Effective coordination with other team members

2.5 FUNCTIONS

Functions correspond to a set of related tasks. This set may be defined by the work's results or by a sequence of steps.

For the trade of resilient flooring layer, two functions appear to stand out:

- a function related to installation and grouping the following tasks:
 - task 1: “Lay a carpet;”
 - task 3: “Lay linoleum;”
 - task 5: “Lay specialized flooring;”
 - task 7: “Lay artificial turf flooring;”

- a function related to repairs and grouping the following tasks:
 - task 2: “Repair a carpet;”
 - task 4: “Repair linoleum;”
 - task 6: “Repair specialized flooring;”
 - task 8: “Repair artificial turf flooring.”

3. QUANTITATIVE DATA ON TASKS

3.1 OCCURRENCE

Occurrence data concern the percentage of resilient flooring layers¹⁶ who perform a task in the same work environment. The data presented in the tables below are the average results of the workshop participants. However, they account for the use of time not only of the resilient flooring layers attending the workshop, but also of all resilient flooring layers working in the companies represented.

Table 3.1 Task Occurrence

Task		Occurrence
1	Lay a carpet	67.0%
2	Repair a carpet	65.7%
3	Lay linoleum	72.9%
4	Repair linoleum	54.2%
5	Lay specialized flooring	35.7%
6	Repair specialized flooring	31.6%
7	Lay artificial turf flooring	8.3%
8	Repair artificial turf flooring	8.3%

16. The data also include apprentices.

3.2 WORK TIME

Work time, also expressed in percentages, represents the average time allocated to each task by the participants, on average and on an annual basis.

Table 3.2 Work Time Allocated to Each Task

	Task	Work Time
1	Lay a carpet	32.1%
2	Repair a carpet	11.2%
3	Lay linoleum	22.4%
4	Repair linoleum	4.2%
5	Lay specialized flooring	26.4%
6	Repair specialized flooring	2.4%
7	Lay artificial turf flooring	1.2%
8	Repair artificial turf flooring	0.1%

The data reveal that most of the tasks performed by the resilient flooring layers who attended the workshop are related to laying carpets, linoleums and specialized flooring, with a total percentage of 80.9% of work time.

3.3 IMPORTANCE AND DIFFICULTY OF TASKS

The **importance** of a task is estimated according to the more or less harmful consequences of performing a task poorly or not at all. The importance is assessed according to the following scale:

1. Not important at all: Poor execution of the task has no consequences on the quality of the result, the costs, health and safety, etc.
2. Not very important: Poor execution of the task could lead to minimal costs, a result of lesser quality, injury or minor accident hazards, etc.

- 3. Important: Poor execution of the task could lead to an unsatisfactory result, substantial additional costs, injuries, accidents, etc.
- 4. Very important: Poor execution of the task could lead to an unacceptable result and have very substantial consequences in terms of costs, safety, etc.

A task's **difficulty** is assessed according to the following scale:

- 1. Very easy: The task involves little risk of error; it requires no notable physical or mental effort. Performing the task is less difficult than average.
- 2. Easy: The task involves a few risks of error; it requires minimal physical or mental effort.
- 3. Difficult: The task involves many risks of error; it requires a good physical or mental effort. Performing the task is more difficult than average.
- 4. Very difficult: The task involves a high risk of error; it requires substantial physical or mental effort. The task is among the most difficult in the trade.

The data presented in the table below are the average results for the workshop participants.

Table 3.3 Importance and Difficulty of Tasks

	Task	Importance	Difficulty
1	Lay a carpet	3.2	3.2
2	Repair a carpet	2.8	2.8
3	Lay linoleum	3.5	3.6
4	Repair linoleum	3.5	3.5
5	Lay specialized flooring	3.9	3.8
6	Repair specialized flooring	3.8	3.8
7	Lay artificial turf flooring	3.8	3.8
8	Repair artificial turf flooring	3.5	3.5

4. KNOWLEDGE, SKILLS AND ATTITUDES

The occupational analysis enabled us to specify some of the knowledge, skills and attitudes necessary for performing the tasks. Those qualities are transferable, i.e., applicable to a variety of tasks and situations.

The following pages present the knowledge, skills and attitudes that, according to the participants, are considered essential for performing the tasks of the resilient flooring layer.

4.1 KNOWLEDGE

Mathematics

Resilient flooring layers must be able to use both measurement systems (metric and imperial) and to make conversions between them, if applicable. They must also be able to perform basic operations (addition, subtraction, division and multiplication) and to use a measuring tape. Finally, they must know the necessary concepts for calculating surfaces and using templates.

Languages and communication

Knowledge of the basic principles of interpersonal communication is important in order to be able to deal with clients and persons of authority and work in teams with co-workers. A good minimal knowledge of English makes it possible to read technical documentation written in that language and to communicate with anglophone clients.

Reading plans

It is necessary to have the necessary knowledge to read annotations, symbols and other information contained in plans, specifications, sketches and drawings.

Materials and working techniques

Knowledge of the various materials used and of the various installation and repair techniques is essential for practicing the trade. It is also necessary to have up-to-date knowledge of flooring types and their properties, as well as adhesive used.

4.2 SKILLS

Skills are types of know-how. They are divided into three categories: cognitive, motor and perceptual.

Cognitive skills

Cognitive skills pertain to intellectual strategies applied in working. The main cognitive skills that resilient flooring layers need are the following:

- problem-solving;
- decision-making;
- planning the work;
- visualizing the work.

Motor skills

Motor skills involve gestures and movements. The main motor skills that resilient flooring layers need are the following:

- good eye-hand coordination;
- manual dexterity, to use tools;
- coordination, to handle material;
- good physical strength.

Perceptual skills

Perceptual skills are sensory skills enabling a person to perceive by his senses what is happening in his environment. The main perceptual skills that resilient flooring layers need are the following:

- visual acuity, to detect imperfections and check colours and pattern schemes;
- sense of smell, to detect toxic emanations;
- sense of touch, to ensure the uniformity of surfaces, textures and flooring;
- good spatial perception;
- hearing acuity.

4.3 ATTITUDES

Attitudes are ways of acting, reacting and relating with others or with one's environment. They involve personal skills. A resilient flooring layer should demonstrate the following attitudes:

- patience;
- sense of responsibility;
- ability to communicate;
- ability to work in a team;
- perseverance;
- diplomacy;
- cleanliness;
- helpfulness;
- attention to detail;
- prudence and preventing hazards;
- ability to concentrate;
- ability to adapt to contingencies.

5. TRAINING SUGGESTIONS

The participants made the following suggestions:

- Take measures so that in their initial training, students have a correct and up-to-date perception of the work environment and the practice of the trade (videos describing the realities of the workplace, training in the workplace, alternating work-study periods, etc.).
- Have students in initial training work elsewhere than in partitioned spaces, so that they practice in situations as realistic as possible.
- Have more material available in vocational training centres for practical training purposes and, to that effect, encourage companies to provide material (flooring and products) to schools.
- Organize training in new products and flooring for workers already employed.

Annexes

Annex 1
TOOLS AND EQUIPMENT

During the occupational analysis workshop, the participants consulted lists of tools and equipment used by resilient flooring layers and added, corrected or withdrew certain items according to the tasks performed.

Table A.1 presents the tools and equipment used by resilient flooring layers according to the workshop participants.

Table A.1 Tools and Equipment

PERSONAL PROTECTIVE EQUIPMENT AND SAFETY EQUIPMENT (ALL TASKS)
<ul style="list-style-type: none"> – Respirator – Work boots – Hard hat – Back support belt – Fall arrest equipment – Work gloves – Knee pads – Safety glasses – Dust mask – Hearing protection
HAND TOOLS (ALL TASKS)
<ul style="list-style-type: none"> – Broom – Crowbar – Mitre box – Dust brush – Tin snips – Scissors / Shears – Chisel – Adjustable wrench – Dryline – Chalk line – Knife – Square – T square – Plumb bob – Hand scraper – Files – Rubber mallet

HAND TOOLS
(ALL TASKS)

- Claw hammer
- Pull bar
- Sharpening stone
- Pliers
- Caulking gun
- Straight edge (ruler)
- 100 lb. roller
- Measuring tape
- Hacksaw
- Screwdrivers
- Tool pouch and belt
- Patching trowel

POWER TOOLS AND EQUIPMENT
(ALL TASKS)

- Stapler
- Vacuum cleaner
- Dolly and hand truck
- Air compressor
- Carpet trimmer (edger)
- Light
- Angle grinder
- Power drill and mixing paddle
- Welding gun
- Hot melt glue gun
- Cove base adhesive gun
- Heat gun
- Sander
- Laser line
- Extension cord
- Floor fan

CARPET TOOLS AND EQUIPMENT
(TASKS 1 AND 2)

- Hand Stapler
- Magnet
- Carpet awl
- Squeezable latex bottle
- Staple remover
- Driving bar
- Hot melt edge sealer tip
- Carpet cart
- Carpet shears
- Duckbill carpet shears
- Sheep shears
- Loop pile cutter
- Wall trimmer
- Divider
- Instant repair carpet cutter "cookie cutter"
- Trowel notcher
- Stand up scraper
- Carpet crane
- Porcupine roller
- Brad nails set
- Tack hammer
- Hammer stapler
- Carpet restretcher (crab or double headed crab)
- Seam seal kit
- Moisture test kit
- Door pin tool
- Carpet tucker
- Sewing palm and thimble
- Carpet comb
- Seam Squeezer
- Stand up roller
- Carpet seam roller
- Power stretcher
- Knee Kicker
- Stair stretcher
- Carpet tractor
- Adhesive trowel

LINOLEUM AND SPECIALIZED FLOORING TOOLS AND EQUIPMENT
(TASKS 3, 4, 5 AND 6)

- Adhesive spreader
- Needle-tip nozzle
- Propane torch
- Chisel
- Divider
- Vinyl flooring edge trimmer
- Tile cutter
- Vinyl flooring knife
- Linoleum knife
- Cove base groover
- Spatula knife (quarter-moon knife)
- Specialized knives
- Dispenser
- Linoleum truck or dolly
- Cove base gouging tool
- Tape dispensing machine
- Power mixer
- Moisture test kit
- Vinyl seaming tools
- Scriber
- Mixing paddle
- Power drill
- Paint brush
- Heat welding gun
- Trim plate
- Grooving machine
- Two metre straightedge
- Extension hand roller
- Hand roller
- Stand seam roller
- Sand bags
- Notched steel trowel

ARTIFICIAL TURF FLOORING TOOLS AND EQUIPMENT
(TASKS 7 AND 8)

- Power brush
- Loader
- Lift truck
- Chisel
- Sheep shears
- Angle iron
- Specialized knives
- Artificial turf dispenser
- Spreader
- Instant repair tool "cookie cutter"
- Generator
- Binding machine and hot melt glue gun
- Sewing machine
- Sledgehammer
- Synthetic flooring pliers
- U-shaped beams
- Sheep shears
- Line roller
- Compression roller
- Stretcher

Grid of Occupational Health and Safety Elements

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Table A.2 Description of Hazards

No.	Hazards	Effects on Health and Safety	Means of Prevention
1	<p>Ergonomic hazards</p> <ul style="list-style-type: none"> • Posture stress • Handling: weight and size of loads, frequency of moving, accessibility of premises, etc. • Repeated movements: handling the trowel, using a knee kicker 	<ul style="list-style-type: none"> • Fatigue • Pain • Muscular and joint discomfort • Musculoskeletal injuries, mainly to the knees and back 	<ul style="list-style-type: none"> • Move within the comfort zone. • Wear knee pads or knee pad trousers. • Make sure to obtain optimum lighting. • Use handling tools (two-wheel hand truck, pneumatic cart). • Favour team handling. • Know handling techniques. • Rotate operations.
2	<p>Chemical hazards</p> <ul style="list-style-type: none"> • Adhesives: polyurethane (epoxy) base, contact glue • Cement: dust when surfaces are polished and ingredients are mixed • Asbestos: material with a back surface containing asbestos, old tiles, etc. • Cold welding (chemical) • Exposure to hot welding smoke 	<ul style="list-style-type: none"> • Intoxication • Skin disorders • Sensitivity to products • Eye injuries • Respiratory disorders (cancer, silicosis) 	<ul style="list-style-type: none"> • Have WHMIS training. • Have in the work area the material safety data sheets of products used. • Wear respiratory protection equipped with filters appropriate for the contaminants (mandatory with silica and asbestos dust). • In the presence of dust, choose a means of control at the source to minimize dust concentration (have water poured on the tool or a dust extractor at the source) in cases of silica dust. • Ensure mechanical or natural ventilation. • Wear appropriate personal protective equipment (gloves, coveralls, safety glasses, visor, etc.). • In the presence of asbestos, have taken training in asbestos work before the commencement of work.

No.	Hazards	Effects on Health and Safety	Means of Prevention
3	Physical hazards <ul style="list-style-type: none"> • Using tools such as: knife, pliers, shearer, rake, cement polisher, trowel, pressure gun, knee kicker, roller (weight varying according to manufacturer requirements) • Hot welding 	<ul style="list-style-type: none"> • Cuts • Burns • Contusions • Shocks • Crushing 	<ul style="list-style-type: none"> • When using cutting tools, make sure the blade is well sharpened. • Select the tool according to the task's characteristics and the worker's anthropometric measurements.
4	Same-level fall hazards <ul style="list-style-type: none"> • Housekeeping (clutter) • Slippery surface 	<ul style="list-style-type: none"> • Tripping • Shocks • Contusions • Bruises 	<ul style="list-style-type: none"> • Pick up debris. • Secure the work area.
5	Electrical hazards <ul style="list-style-type: none"> • Using electric tools 	<ul style="list-style-type: none"> • Burns • Electrification 	<ul style="list-style-type: none"> • Ensure that electric tools are equipped with double insulation. • Use extension cords in good condition.
6	Noise hazards	<ul style="list-style-type: none"> • Hearing loss • Occupational deafness 	<ul style="list-style-type: none"> • Insulate the source of noise. • Wear hearing protectors (plugs or shells).
7	Fall-from-height hazards <ul style="list-style-type: none"> • Using metal frame scaffolding (Baker) 	<ul style="list-style-type: none"> • Fractures • Shocks • Stroke • Backache • Paraplegia 	<ul style="list-style-type: none"> • Use the wheel blocking device at each use. • Climb down the mobile scaffold to move it. • When there is a hazard of falling more than 3 m: <ul style="list-style-type: none"> – install a railing; <u>or</u> <ul style="list-style-type: none"> – wear a shock-absorbing harness, with an anchor that has a breaking strength of 18 kN; <u>or</u> <ul style="list-style-type: none"> – be attached to a vertical lifeline complying with the specifications of the Safety Code for the construction industry. • Check the bearing capacity of the ground. • Install beds and jack screws if the ground is sloped. • For each scaffolding section, install vertical locks. • Use safe means of access. • Install anchors to the structure at intervals not exceeding three times the minimum scaffolding width. • Use planks that carry the NLGA seal of approval.

No.	Hazards	Effects on Health and Safety	Means of Prevention
	<ul style="list-style-type: none"> • Using a stepladder 		<ul style="list-style-type: none"> • Make sure that the floor is wide enough (min. 470 mm) and that the distance between the structure and the floor is less than 350 mm. • Use a class 1 stepladder with a nominal capacity of 250 lb. • Keep the spreader bars fully open. • Install on a firm level surface. • Choose according to the height to be attained.

Table A.3 Hazards per Task and Operation

Legend

0	The risk is nil.
+	The risk is low.
++	The risk is average.
+++	The risk is high.

Risk levels are noted according to exposure to hazards, not according to the gravity of effects on personal health and safety.

No.	Tasks and Operations	Ergonomic Hazards	Chemical Hazards	Physical Hazards	Same-Level Fall Hazards	Electrical Hazards	Noise Hazards	Fall-from-Height Hazards
TASK 1 Lay a carpet								
1.1	Read the specifications	0	0	0	0	0	0	0
1.2	Check the instructions and modify the laying plan, if applicable	0	0	0	0	0	0	0
1.3	Check the condition and quantity of materials	+	0	+	0	0	0	0
1.4	Prepare the work site	+++	0	+	+	+	0	0
1.5	Remove existing flooring, if applicable	+++	0	+++	+++	0	+	0
1.6	Evaluate the condition of surfaces and the laying conditions	+	+		+	0	0	0
1.7	Prepare surfaces	+++	+++	+++	++	0	++	0
1.8	Lay tackless strips (stretched carpet)	+++	+++	+++	++	0	+	0
1.9	Lay the undercarpet (stretched and double glued carpets)	+++	+++	+++	++	0	+	0
1.10	Place the carpet on the surface	+++	0	++	+++	0	0	0
1.11	Trim and make the seams	+++	+++	+++	+++	0	+	0
1.12	Apply the adhesive (glued and double glued carpets)	+++	+++	+++	+++	0	0	0
1.13	Apply tape (carpet installed using double-sided adhesive tape)	+++	+++	++	+++	+	++	0
1.14	Spread and adjust the carpet	+++	0	+++	+++	0	0	0
1.15	Staple the carpet (stapled carpet)	+++	0	+++	+	0	+	0
1.16	Pass the roller (glued and double glued carpets)	+++	0	+++	+++	0	0	0
1.17	Install mouldings, if applicable	+++	+++	+++	+	+	+	0
1.18	Clean the work site	+++	0	++	+++	+	++	0

No.	Tasks and Operations	Ergonomic Hazards	Chemical Hazards	Physical Hazards	Same-Level Fall Hazards	Electrical Hazards	Noise Hazards	Fall-from-Height Hazards
TASK 2 Repair a carpet								
2.1	Find out what repair is to be made	0	0	0	0	0	0	0
2.2	Evaluate the repair's feasibility	0	0	0	0	0	0	0
2.3	Make the repair	+++	+	+++	+++	0	+	0
2.4	Clean the premises	+++	+	++	+++	++	++	0
TASK 3 Lay linoleum								
3.1	Read the specifications	0	0	0	0	0	0	0
3.2	Check the instructions and modify the laying plan, if applicable	0	0	0	0	0	0	0
3.3	Check the condition and quantity of materials	++	0	+	+	0	0	0
3.4	Prepare the work site	+++	0	+	++	0	0	0
3.5	Remove existing flooring, if applicable	+++	0	+++	+++	+	+	0
3.6	Evaluate the condition of surfaces and the laying conditions	+++	0	+	++	0	0	0
3.7	Prepare surfaces	+++	+++	+++	+++	+	+	0
3.8	Prepare the linoleum	+++	0	++	+++	0	0	0
3.9	Glue the linoleum	+++	0	+++	+++	0	+	0
3.10	Pass the roller	+++	0	+++	+++	0	0	0
3.11	Make the final cuts	+++	0	+++	++	0	0	0
3.12	Seal the seams, if applicable	+++	+++	+++	++	0	0	0
3.13	Lay the mouldings	+++	+++	+++	++	0	+	0
3.14	Clean the work site	+++	+	++	++	+	+	0
3.15	Weld the seams, if applicable (for heat sealing)	+++	+++	+++	++	+	+	0
TASK 4 Repair linoleum								
4.1	Find out what repair is to be made	0	0	0	0	0	0	0
4.2	Evaluate the repair's feasibility	+	0	+	+	0	0	0
4.3	Redo a seam	+++	+++	+++	+++	+	+	0
4.4	Replace a piece of linoleum	+++	+++	+++	+++	+	+	0
4.5	Install a moulding, if applicable	+++	+++	+++	0	+	+	0
4.6	Clean the premises	++	++	++	++	+	+	0
TASK 5 Lay specialized flooring								
5.1	Read the specifications	0	0	0	0	0	0	0
5.2	Check the instructions and modify the laying plan, if applicable	0	0	0	0	0	0	0
5.3	Check the condition and quantity of materials	++	0	+	+	0	0	0

No.	Tasks and Operations	Ergonomic Hazards	Chemical Hazards	Physical Hazards	Same-Level Fall Hazards	Electrical Hazards	Noise Hazards	Fall-from-Height Hazards
5.4	Prepare the work site	+++	0	++	+	0	+	+++
5.5	Remove existing flooring, if applicable	+++	++	+++	+++	0	0	+++
5.6	Evaluate the condition of surfaces and the laying conditions	+++	++	++	+	0	0	+++
5.7	Prepare surfaces	+++	+++	+++	++	0	+	+++
5.8	Prepare the flooring	+++	+++	+++	+++	0	0	+++
5.9	Glue the flooring	+++	+++	+++	+++	+	0	+++
5.10	Pass the roller	+++	0	+++	+++	0	0	+++
5.11	Make the final cuts	+++	+++	+++	++	0	0	+++
5.12	Lay the mouldings	+++	+++	+++	++	0	+	+++
5.13	Clean the work site	+++	++	++	++	+	+	+++
5.14	Heat weld, if applicable	+++	+++	+++	++	+	+	0
5.15	Make the play lines, if applicable	+++	++	++	+++	+	+	0
TASK 6 Repair specialized flooring								
6.1	Find out what repair is to be made	0	0	0	0	0	0	0
6.2	Check laying instructions and conditions	0	0	0	0	0	0	0
6.3	Evaluate the repair's feasibility	+	+	+	+	0	0	+++
6.4	Redo a seam	+++	++	+++	+	+	+	+++
6.5	Replace a piece of flooring	+++	+++	+++	++	+	+	+++
6.6	Redo a step	+++	+	+++	++	+	+	+++
6.7	Install a moulding	+++	+++	+++	+	+	+	+
6.8	Clean the premises	+++	++	++	++	+	+	+++
TASK 7 Lay artificial turf flooring								
7.1	Read the specifications	0	0	0	0	0	0	0
7.2	Check measurements and materials	+	0	+	+	0	+	0
7.3	Prepare the work site	++	0	+	+	0	+	0
7.4	Remove existing flooring, if applicable	+++	+++	+++	+++	0	0	0
7.5	Evaluate the condition of surfaces and the laying conditions	+	0	++	+	0	+	0
7.6	Prepare surfaces	+++	+++	+++	++	+	+	0
7.7	Place the flooring	+++	+++	+++	+++	+	+	0
7.8	Install lines, numbers and logos	+++	+++	+++	++	+	+	0
7.9	Prepare the flooring for filling	+++	+++	+++	+++	+	+	0
7.10	Fill the flooring	+++	++	+++	+++	++	+++	0
7.11	Do the finishing	+++	+++	+++	+	+	+++	0
7.12	Clean the work site	++	++	+++	++	+	+++	0

No.	Tasks and Operations	Ergonomic Hazards	Chemical Hazards	Physical Hazards	Same-Level Fall Hazards	Electrical Hazards	Noise Hazards	Fall-from-Height Hazards
TASK 8 Repair artificial turf flooring								
8.1	Find out what repair is to be made	0	0	0	0	0	0	0
8.2	Check the instructions	0	0	0	0	0	0	0
8.3	Evaluate the repair's feasibility	0	0	0	0	0	0	0
8.4	Redo a seam	+++	+++	+++	++	++	+++	0
8.5	Replace a piece of flooring	+++	+++	+++	++	+++	+++	0
8.6	Clean the premises	++	++	++	++	++	+++	0