

SKILLED**TRADES**^{BC}

PROGRAM OUTLINE

Residential Building Maintenance Worker

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**RESIDENTIAL BUILDING
MAINTENANCE WORKER

PROGRAM OUTLINE**

Revised August 2009

**Developed by
SkilledTradesBC
Province of British Columbia**

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FOREWORD

This Program Outline is for use in Residential Building Maintenance Worker apprenticeship training classes sponsored by SkilledTradesBC and will be used as a guide for instructors in the formal classroom portions of apprenticeship training.

Practical demonstration and student participation should always be integrated with classroom sessions.

Safe working practices, though not always specified in each of the competencies and learning tasks, are an implied part of the program and should be stressed throughout the apprenticeship.

This Program Outline includes a list of recommended reference textbooks that are available to support the learning objectives and the minimum shop requirements needed to support instruction.

SAFETY ADVISORY

Please note that it is always the responsibility of any person using these materials to inform him/herself about the Occupational Health and Safety Regulation pertaining to his/her work. The references to the Workers' Compensation Board of British Columbia safety regulations contained within these materials do not/may not reflect the most recent Occupational Health and Safety Regulation. The current Standards and Regulation in BC can be obtained on the following website: <http://www.worksafebc.com>.

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Technical Writers for the RBMW program:

Berlin Consulting: Lynn Berlin & Howard Berlin

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SECTION 1

OCCUPATION ANALYSIS CHART

**RESIDENTIAL BUILDING MAINTENANCE WORKER
Occupation Analysis Chart**

Describe Building Maintenance Work
A

Describe Types of Buildings
A1

1				
---	--	--	--	--

Describe Building Maintenance Industry
A2

1				
---	--	--	--	--

Describe Building Maintenance Work
A3

1				
---	--	--	--	--

Use Basic Trade Terminology
A4

1				
---	--	--	--	--

Use Safe Work Practices
B

Obtain Level 1 First Aid Certification and Transport Endorsement
B1

1				
---	--	--	--	--

Obtain WHMIS Certification
B2

1				
---	--	--	--	--

Identify WCB Safety Regulations
B3

1				
---	--	--	--	--

Practice Fire Safety
B4

1				
---	--	--	--	--

Use and Maintain Personal Safety Equipment
B5

1	2			
---	---	--	--	--

Use and Maintain Ladders, Scaffolding & Platforms
B6

1	2	3		
---	---	---	--	--

Safely Enter Confined Spaces and Use Air Packs
B7

1				
---	--	--	--	--

Identify Lock Out Procedures
B8

1	2	3		
---	---	---	--	--

Perform Trades Math & Financial Calculations
C

Perform Conversions to and from Metric and Imperial
C1

1				
---	--	--	--	--

Perform Arithmetic Functions with Whole Numbers & Fractions
C2

1				
---	--	--	--	--

Perform Basic Plane (2D) Geometry
C3

1				
---	--	--	--	--

Perform Estimating Calculations for Materials & Services
C4

		3		
--	--	---	--	--

Perform Budget Calculations
C5

		3		
--	--	---	--	--

Prepare Basic Budget Spreadsheets
C6

		3		
--	--	---	--	--

Use & Maintain Tools
D

Use and Maintain Hand Tools
D1

1	2	3		
---	---	---	--	--

Use and Maintain Power Tools
D2

1				
---	--	--	--	--

Use and Maintain Shop Tools
D3

1				
---	--	--	--	--

Disassemble, Sharpen & Reassemble Cutting Tools
D4

1				
---	--	--	--	--

Use Measuring & Testing Devices
D5

1	2	3		
---	---	---	--	--

Obtain Powder Actuated Tool Certification
D6

1				
---	--	--	--	--

Use Lifting and Hoisting Equipment
D7

		3		
--	--	---	--	--

Use a Personal Computer
D8

		3		
--	--	---	--	--

Describe Building Structure and Design E	Apply Federal, Provincial & Local Codes & Bylaws E1 1 2 3	Interpret Blueprints E2 1	Identify Residential Concrete Technology E3 1	Identify Structural Elements in Wood Frame Construction E4 1	Prepare Basic Shop Drawings E5 1	Identify Fire and Life Safety Systems E6 2 3
	Prevent and Remediate Mould Issues F	Describe Types and Causes of Mould F1 1	Recognize and Prevent Mould Issues F2 1	Remediate Mould Issues F3 1		
Perform Carpentry Repairs and Maintenance G	Identify Carpentry Materials G1 1	Repair & Maintain Stairs, Landings, Handrails & Decks G2 1	Repair Cabinets, Countertops & Shelving G3 1	Repair, Maintain & Replace Hardware G4 1	Repair Concrete G5 1	Identify & Repair Structural Problems G6 1
	Repair, Maintain & Replace Windows and Doors G7 1	Repair & Maintain Baseboards, Moldings and Casings G8 1	Identify and Locate Cladding Problems G9 1	Identify Infestation Problems G10 1	Assess Need for a Journeyman and/or Licensed Contractor G11 1	
Repair Drywall H	Identify Drywall Materials H1 1	Patch Holes in Gyproc, Plaster and Lath H2 1	Tape, Mud and Install Beads H3 1	Sand & Finish Gyproc H4 1	Repair Insulation and Vapour Barriers H5 1	Assess need for a Journeyman and/pr Licensed Contractor H6 1
	Apply Public Relations Skills I	Demonstrate Interpersonal Skills I1 1	Maintain Effective Home Owner and Tenant Relations I2 1 3	Conduct Home Owner and Tenant Orientations and Training I3 2 3	Liaise with Regulatory Officials and Inspectors I4 3	
Repair and Maintain Plumbing J	Identify Plumbing Materials J1 2	Repair & Maintain Plumbing Fixture Components J2 2	Implement Replacement of Piping & Hot Water Tanks J3 2	Identify and Locate Plumbing Problems J4 2	Assess Need for a Journeyman and/or Licensed Contractor J5 2	

**Repair and
Maintain Roofing**

K

Identify Roofing
Materials

K1
2

Repair, Maintain &
Replace Gutters &
Downspouts

K2
2

Repair & Replace
Flashings

K3
2

Repair & Maintain
Shakes and Shingles

K4
2

Repair & Maintain
Panel Roofing Systems

K5
2

Apply Roof Patching
Materials

K6
2

Repair & Maintain
Venting Systems

K7
2

Repair Roof Decks &
Sheathing

K8
2

Identify Roofing &
Weatherproofing
Problems

K9
2

Assess Need for
Journeyman and/or
Licensed Contractor

K10
2

**Repair and
Maintain Flooring**

L

Identify Flooring
Materials

L1
2

Prepare Substrate for
Flooring (Lino, Tile &
Carpet)

L2
2

Repair & Replace
Ceramic Tile

L3
2

Repair, Maintain &
Replace Underlay,
Carpets, Rolled Goods
and Tile

L4
2

Maintain Hardwood
Flooring

L5
2

Identify and Locate
Flooring Problems

L6
2

Repair and Lay Vinyl
Flooring

L7
2

Assess Need for
Journeyman and/or
Licensed Contractor

L8
2

**Repair and
Maintain Heating
and Ventilation
Systems**

M

Identify Heating System
Materials

M1
2

Replace Thermostats

M2
2

Replace Baseboard
Heater Thermostats

M3
2

Inspect and Maintain
Chimneys

M4
2

Inspect and Replace
Furnace Belts, Fans &
Filters

M5
2

Describe Heat Recovery
Ventilation Systems

M6
3

Describe Basic
Refrigeration and Boiler
Theory

M7
3

Identify and Locate
Heating Problems

M8
3

Identify, Test for
Ventilation Problems

M9
3

Perform minor repairs
and implement
maintenance of
furnaces

M10
3

Assess Need for a
Journeyman and/or
Licensed Contractor

M11
3

**Perform RBMW
Administrative
Duties**
N

Maintain Records				
				N1
	2			

Complete Forms and Permits				
				N2
	2			

Procure Materials				
				N3
	2			

Schedule Work, Including Sub-Contractor				
				N4
		3		

Estimate Costs, Including Sub-Contractor Prices				
				N5
		3		

Perform Maintenance Planning				
				N6
		3		

Assess the Retrofitting of Buildings for Accessibility				
				N7
		3		

**Describe Basic
Building Sciences**
O

Describe the Forces Acting on a Building				
				O1
		3		

Describe the Heat and Sound Transfer Principles				
				O2
		3		

Describe Air and Moisture Movement in a Building				
				O3
		3		

**Repair and Maintain
Electrical**
P

Identify Electrical Materials				
				P1
		3		

Replace and Relocate Existing Receptacles & Switches				
				P2
		3		

Test for Household Appliance Problems				
				P3
		3		

Test for Electrical Problems				
				P4
		3		

Assess Need for a Journeyman and/or Licensed Contractor				
				P5
		3		

**Apply Paint and
Wall Coverings**
Q

Identify Painting Materials				
				Q1
		3		

Prepare Surfaces for Paint & Stain				
				Q2
		3		

Prime, Paint & Stain Surfaces				
				Q3
		3		

Apply Wall Coverings				
				Q4
		3		

Assess Need for a Journeyman and/or Licensed Contractor				
				Q5
		3		

SECTION 2

RESIDENTIAL BUILDING MAINTENANCE WORKER PROGRAM OUTLINE

RESIDENTIAL BUILDING MAINTENANCE WORKER

A Residential Building Maintenance Worker is a person who:

- * Maintains or repairs residential building piping and plumbing fixtures for the supply and disposal of water, installs and connect appliances that use or dispose of water;
- * Maintains or repairs residential building electrical appliances, outlets, fixtures and accessories;
- Lays out, measures, cuts, shapes and assembles wood or wood substitutes used in residential building construction for the purpose of repairing or retrofitting roofs, decks, stairs, walls, floors, ceilings, doors, windows, openings and vents and cabinets;
- Maintains and places concrete products in residential buildings;
- Maintains and repairs gutters, downspouts, flashings, shakes, unitized roofing materials and panel roofing systems in residential buildings;
- Removes and repairs all manners of thermal insulation in residential buildings;
- Maintains and repairs gyproc walls and wall coverings of residential buildings including sheet goods, roll wall coverings, and paint;
- Maintains and repairs ceramic tiles, vinyl tile, rolled flooring goods, carpet and underlay in residential buildings;
- * Maintains and repairs forced air heating systems and verifies and adjusts indoor air quality in residential buildings;
- Maintains small outdoor power equipment for residential building maintenance and repair.
- Performs all duties in accordance with federal, provincial and local building codes and bylaws and BC Safety Authority Regulations.

**Work in these areas is regulated by the BC Safety Authority - additional licensing is required.*

All work regulated by BC Safety Authority must be performed under a contractors' license. The RBMW trade does not cover this regulated work unless they hold the optional endorsements and only apprentices who have achieved a higher level of qualification or are directly supervised by a certified person may perform the work that is regulated by BC Safety Authority. For additional information please review the BC Safety Authority requirements: <http://www.safetyauthority.ca/>

RESIDENTIAL BUILDING MAINTENANCE WORKER APPRENTICESHIP TRAINING SYSTEM

Eligible Program Delivery Models

Background

RCITO has undertaken a review of and consultation on the RBMW program to determine what changes were required in the program standards, learning resources, assessment, and program delivery model. This review was conducted in consultation with residential building maintenance employers, Aboriginal housing organizations, training providers, and SkilledTradesBC.

As a result of the review and consultation, a RCITO Accreditation Committee and SkilledTradesBC have approved changes in the program standards and learning resources.

Eligible RBMW Delivery Models

A result of the review and RBMW changes was to clarify what delivery models were eligible for RCITO approval and SkilledTradesBC funding. The schematic on the next page illustrates the structure and sequencing of eligible RBMW delivery models.

RCITO and SkilledTradesBC strongly urge training providers and employers to follow the traditional or modified traditional apprenticeship models for the delivery of the RBMW program. However, alternate flexible models are also encouraged if that is what it takes to enable employers and apprentices to participate in and complete technical training and workplace training.

Secondary School RBMW Delivery

RCITO endorses the need for dual credit for secondary school ACE IT programs and SSA program options. Secondary Schools can follow any of the eligible RBMW delivery models with RCITO strongly supporting the Modified Front End Loaded Model, where secondary school students begin the RBMW program in Grade 11, and complete level 1 work-based training during the summer break returning to complete levels two and three technical in their final year of high school, graduating with dual matriculation, Grade 12 and completion of all the technical training required for the RBMW. Trainees would move into a work-based training situation and require completion of a transfer of sponsorship to an employer sponsor to document the outstanding work-based training hours.

SUGGESTED SCHEDULE OF TIME ALLOTMENT FOR LEVEL 1

Level One		% of Time	Theory	Practical
Line A	Describe Building Maintenance Work	5%		
A1	Describe types of buildings		✓	
A2	Describe the building maintenance industry		✓	
A3	Describe building maintenance work		✓	
A4	Use basic trade terminology			✓
Line B	Use Safe Work Practices	of Time 20%		
B1	Obtain Level 1 First Aid certification and Transport Endorsement		✓	✓
B2	Obtain WHMIS certification		✓	✓
B3	Identify WCB safety regulations		✓	✓
B4	Practice fire safety		✓	✓
B5	Use and maintain personal safety equipment		✓	✓
B6	Use and maintain ladders, scaffolding and platforms		✓	✓
B7	Safely enter confined spaces and use air paks		✓	✓
B8	Identify lock out procedures		✓	✓
Line C	Perform Trades Math and Financial Calculations of Time	5%		
C1	Perform conversions to and from Metric and Imperial		✓	
C2	Perform arithmetic functions with whole numbers and fractions		✓	
C3	Perform basic plane (2D) geometry		✓	
Line D	Use and Maintain Tools	of Time 10%		
D1	Use and maintain hand tools			✓
D2	Use and maintain power tools			✓
D3	Use and maintain shop tools			✓
D4	Disassemble, sharpen and reassemble cutting tools			✓
D5	Use measuring and testing devices			✓
D6	Obtain powder actuated tool certification			✓
Line E	Describe Building Structure and Design	15%		
E1	Apply Federal, Provincial and Local codes and by-laws		✓	✓
E2	Interpret blueprints		✓	✓
E3	Identify residential concrete technology		✓	✓
E4	Identify structural elements of wood frame construction		✓	✓
E5	Prepare basic shop drawings		✓	✓
Line F	Prevent and Remediate Mould Issues	5%		
F1	Describe Types and Causes of Mould		✓	
F2	Recognize and Prevent Mould Issues		✓	
F3	Remediate Mould Issues		✓	
Line G	Perform Carpentry Repairs and Maintenance	of Time 20%		

Level One		% of Time	Theory	Practical
G1	Identify carpentry materials		✓	
G2	Repair and maintain stairs, landings, hand rails & decks		✓	✓
G3	Repair cabinets, counter tops and shelving		✓	✓
G4	Repair, maintain and replace hardware		✓	✓
G5	Repair concrete		✓	✓
G6	Identify and repair structural problems		✓	
G7	Repair, maintain and replace windows and doors		✓	✓
G8	Repair and maintain baseboards, mouldings and casings		✓	✓
G9	Identify and locate cladding problems		✓	✓
G10	Identify infestation problems		✓	
G11	Assess need for a journeyperson and/or licensed contractor			✓
Line H	Repair Drywall	of Time	15%	
H1	Identify drywall materials		✓	
H2	Patch holes in gyproc, plaster and lath		✓	✓
H3	Tape, mud and install beads		✓	✓
H4	Sand and finish gyproc		✓	✓
H5	Repair insulation and vapour barriers		✓	✓
H6	Assess need for a journeyperson and/or licensed contractor			✓
Line I	Apply Public Relations Skills		5%	
I1	Demonstrate interpersonal skills		✓	✓
I2	Maintain effective home owner and tenant relations		✓	✓
Total Percentage for Level One			100%	

SUGGESTED SCHEDULE OF TIME ALLOTMENT FOR LEVEL 2

Level Two		% of Time	Theory	Practical
Line B	Use Safe Work Practices	5%		
B5	Use and maintain personal safety equipment		✓	✓
B6	Use and maintain ladders, scaffolding and platforms		✓	✓
B8	Identify lock out procedures		✓	✓
Line D	Use and Maintain Tools	5%		
D1	Use and maintain hand tools			✓
D5	Use measuring and testing devices			✓
Line E	Describe Building Structure and Design	15%		
E1	Apply Federal, Provincial and Local codes and by-laws		✓	✓
E6	Identify Fire and Life Safety Systems		✓	✓
Line I	Apply Public Relations Skills	15%		
I3	Conduct home owner and tenant orientation and training		✓	✓
Line J	Repair and Maintain Plumbing	10%		
J1	Identify plumbing materials		✓	
J2	Repair and maintain plumbing fixture components		✓	✓
J3	Implement replacement of piping and hot water tanks*		✓	✓
J4	Identify and locate plumbing problems		✓	✓
J5	Assess need for a journey person and/or licensed contractor			✓
Line K	Repair and Maintain Roofing	15%		
K1	Identify roofing materials		✓	
K2	Repair, maintain and replace gutters and downspouts		✓	✓
K3	Repair and replace flashings		✓	✓
K4	Repair and maintain shakes and shingles		✓	✓
K5	Repair and maintain panel roofing roof systems		✓	✓
K6	Apply roof patching materials		✓	✓
K7	Repair and maintain venting systems		✓	✓
K8	Repair roof decks and sheathing		✓	✓
K9	Identify roofing and weatherproofing problems		✓	
K10	Assess need for a journey person and/or licensed contractor			✓
Line L	Repair and Maintain Flooring	15%		
L1	Identify flooring materials		✓	
L2	Prepare substrate for flooring (lino, tile & carpet)		✓	✓
L3	Repair and replace ceramic tile		✓	✓

Level Two		% of Time	Theory	Practical
L4	Repair, maintain & replace underlay, carpets, rolled goods & tile		✓	✓
L5	Maintain hardwood flooring		✓	✓
L6	Identify and locate flooring problems		✓	✓
L7	Repair and lay vinyl flooring		✓	✓
L8	Assess the need for a journey person and/or licensed contractor			✓
Line M	Repair and Maintain Heating and Ventilation Systems	15%		
M1	Identify heating system materials		✓	
M2	Implement replacement of thermostats*		✓	✓
M3	Implement replacement of baseboard heater thermostats*		✓	✓
M4	Inspect and maintain chimneys		✓	✓
M5	Inspect and replace furnace belts, chains and filters		✓	✓
Line N	Perform RBMW Administrative Duties	5%		
N1	Maintain records		✓	✓
N2	Complete forms and permits		✓	✓
N3	Procure materials		✓	✓
Total Percentage for Level Two		100%		

* All work with an asterisk is required to be done by either a BCSA certified/licensed contractor or by an RBMW with an Electrical and/or Gas Endorsement.

SUGGESTED SCHEDULE OF TIME ALLOTMENT FOR LEVEL 3

Level Three		% of Time	Theory	Practical
Line B	Use Safe Work Practices	5%		
B6	Use and maintain ladders, scaffolding and platforms		✓	✓
B8	Identify lock out procedures		✓	✓
Line C	Perform Trades Math and Financial Calculations	5%		
C4	Perform estimating calculations for materials and services		✓	✓
C5	Perform budget calculations		✓	✓
C6	Prepare basic budget spreadsheets		✓	✓
Line D	Use and Maintain Tools	5%		
D1	Use and maintain hand tools			✓
D5	Use measuring and testing devices			✓
D7	Use lifting and hoisting equipment			✓
D8	Use a personal computer		✓	✓
Line E	Describe Building Structure and Design	10%		
E1	Apply Federal, Provincial and local codes and by-laws		✓	✓
E6	Identify Fire and Life Safety Systems		✓	
Line I	Apply Public Relations Skills	10%		
I2	Maintain effective home owner and tenant relations		✓	✓
I3	Conduct home owner and tenant orientations and training		✓	✓
I4	Liaise with regulatory officials and inspectors		✓	✓
Line M	Repair and Maintain Heating and Ventilation Systems	15%		
M6	Describe heat recovery ventilation systems		✓	
M7	Describe basic refrigeration and boiler theory		✓	
M8	Identify and locate heating problems		✓	
M9	Identify and test for ventilation problems		✓	
M10	Perform minor repairs and implements maintenance of furnaces*		✓	✓
M11	Assess need for a journey person and/or licensed contractor			✓
Line N	Perform RBMW Administrative Duties	10%		
N4	Schedule work, including sub-contractors		✓	✓
N5	Estimate costs, including sub-contractor prices		✓	✓
N6	Perform maintenance planning		✓	✓
N7	Assess the Retrofitting of Buildings for Accessibility		✓	✓
Line O	Describe Basic Building Sciences	10%		

Level Three

		% of Time	Theory	Practical
O1	Describe the forces acting on a building		✓	
O2	Describe heat and sound transfer principles		✓	
O3	Describe air, moisture movement in a building		✓	

Line P Repair and Maintain Electrical

		15%		
P1	Identify electrical materials		✓	
P2	Replace and relocate existing receptacles and switches*		✓	✓
P3	Test for household appliance problems		✓	✓
P4	Test for electrical problems		✓	✓
P5	Assess the need for a journeyman and/or licensed contractor			✓

Line Q Apply Paint and Wall Coverings

		15%		
Q1	Identify painting materials		✓	
Q2	Prepare surfaces for paint and stain		✓	✓
Q3	Prime, paint and stain surfaces		✓	✓
Q4	Apply wall covering		✓	✓
Q5	Assess need for a journeyman and/or licensed contractor			✓

Total Percentage for Level Three

100%

* All work with an asterisk is required to be done by either a BCSA certified/licensed contractor or by an RBMW with an Electrical and/or Gas Endorsement.

PROGRAM OUTLINE FOR LEVEL 1

BC Safety Authority Requirements for Regulated Gas and Electrical Work

In British Columbia, all gas and electrical contractors doing regulated work are required, under the *Safety Standards Act*, to hold a valid license issued by the BC Safety Authority. The license ensures the contractor and the people employed by the contractor are qualified and can perform the work safely. Licenses must be renewed annually and require certain qualifications are met, including a \$10,000 surety bond.

Impacts for the Residential Building Maintenance Worker Apprentice

Remediation and maintenance in residential construction electrical and gas installations and renovations can pose some of the most serious safety risks in the home. “Do-it-yourself” might make sense for the RBMW apprentice, but when it comes to doing electrical or gas work, you must rely on the experts and hire licensed contractors. The RBMW program and training does not extend to these areas of technical training and/or certification. For the RBMW apprentice you need to be aware of both the legal requirements and benefits of hiring a licensed contractor to do the work.

Laws and regulations

Every province and municipality has its own set of laws and regulations that must be followed. A licensed contractor works with these every day, and knows what work is regulated, and requires permits and inspections. Doing regulated electrical and gas work without a permit is illegal, and may jeopardize the property owners insurance, the value of the residence, and the resident’s safety.

Quality and qualifications

In order to be licensed, a contractor must have the training, expertise and experience required to do the job well, safely and to code. While a license doesn’t guarantee quality, it provides you with some assurance that the contractor has adequate knowledge and experience in his or her field. Before issuing a license, the provincial licensing agency or board will verify the contractor’s background and be satisfied that the person is qualified to hold such a license.

For additional information and up to date requirements RBMW need to check with the BC Safety Authority by calling: 1-866-566-SAFE, or visiting the BC Safety Authority website:

www.safetyauthority.ca

Delaying a RBMW project to make sure it is done correctly and to Code is worth the wait.

LINE A DESCRIBE BUILDING MAINTENANCE WORK

Competency: A1 Describe Types of Buildings

Learning Objectives:

After completion of the competency the apprentice will be able to identify the different types of buildings that a Residential Building Maintenance Worker may be required to complete maintenance activities.

LEARNING TASKS

1 Identify Building Types

CONTENT

- Description
- Types

Achievement Criteria:

The trainee will successfully complete a theory assessment identifying building types commonly maintained by a RBMW, with a minimum score of 70%.

LINE A DESCRIBE BUILDING MAINTENANCE WORK

Competency: A2 Describe Building Maintenance Industry

Learning Objectives:

After completion of the competency the apprentice will describe the Residential Building Maintenance Industry its related trades and occupations.

LEARNING TASKS

CONTENT

1 Identify related trades and occupations

- Related trades and occupations

Achievement Criteria:

The trainee shall successfully complete a written examination identifying related trades within the Building Maintenance Industry, with a minimum score of 70%.

Note: In British Columbia, all gas and electrical contractors doing regulated work are required, under the *Safety Standards Act*, to hold a valid license issued by the BC Safety Authority. The license ensures the contractor and the people employed by the contractor are qualified and can perform the work safely. Licenses must be renewed annually and require certain qualifications are met, including a \$10,000 surety bond. The RBMW program and training does not extend to these areas of technical training and/or certification.

Line A DESCRIBE BUILDING MAINTENANCE WORK

Competency: A3 Describe Building Maintenance Work

Learning Objectives:

After completion of the competency the apprentice will be able to identify work done by a Residential Building Maintenance Worker.

LEARNING TASKS	CONTENT
1 Identify Building Maintenance Tasks	<ul style="list-style-type: none">• Tasks

Achievement Criteria:

The trainee will successfully complete a written multiple-choice examination identifying tasks of a RBMW with a minimum score of 70%.

Note: In British Columbia, all gas and electrical contractors doing regulated work are required, under the *Safety Standards Act*, to hold a valid license issued by the BC Safety Authority. The license ensures the contractor and the people employed by the contractor are qualified and can perform the work safely. Licenses must be renewed annually and require certain qualifications are met, including a \$10,000 surety bond. The RBMW program and training does not extend to these areas of technical training and/or certification.

LINE A DESCRIBE BUILDING MAINTENANCE WORK

Competency: A4 Use Basic Trade Terminology

Learning Objectives:

After completion of the competency the apprentice will be able to use basic Residential Building Maintenance Worker trade terminology.

LEARNING TASKS

1. Use basic trade terminology for various trades and for fire safety

CONTENT

- Fire safety terminology
- Building trades terminology

Achievement Criteria:

The trainee will successfully complete a written examination identifying basic RBMW terminology with a minimum score of 70%.

LINE B USE SAFE WORK PRACTICES

Competency: B1 Obtain Level 1 First Aid Certification & Transport Endorsement

Learning Objectives:

After completion of the competency the apprentice will obtain a Level One Occupational First Aid Certificate with Transport Endorsement.

(This objective must suit the requirements of RBMW's at work in remote areas where transportation to a hospital is difficult to obtain, and the distance to a hospital can be a matter of flight hours as opposed to vehicle transport time.)

LEARNING TASKS

1. Obtain Level One Occupational First Aid Certificate.

2. Obtain transportation endorsement

CONTENT

- WCB requirements
- Renewal timelines

- Required if more than 20 minutes surface travel from a hospital

Achievement Criteria:

The trainee will complete requirements for third party certification provided by a recognized and BC accredited trainer and will obtain Level One Occupational First Aid Certification with Transport endorsement.

LINE B USE SAFE WORK PRACTICES

Competency: B2 Obtain WHMIS Certification

Learning Objectives:

Apprentices will obtain WHMIS Certification.

LEARNING TASKS

1. Recognize and describe the dangers associated with common hazardous materials.
2. Identify the symbols used to identify hazardous materials.
3. Identify harmful substances
4. Identify environmental health hazards and describe WCB regulations and controls that apply

CONTENT

- Effects of toxins and dust
- Inhalants
- Skin absorption
- Ingestion

- WHMIS

- Controlled products
- Material Safety Data Sheets (MSDS)
- Worker education and training programs
- Precautions
- Storage
- Air contamination
- Fumes, vapours and mists

Achievement Criteria:

The trainee will complete requirements for third party certification provided by a recognized and BC accredited trainer and will obtain WHMIS certification.

LINE B USE SAFE WORK PRACTICES

Competency: B3 Identify WCB Safety Regulations

Learning Objectives:

After completion of the competency the apprentice will be able to:

- identify WCB Safety Regulations as they pertain to the Building Maintenance occupation
- fill out injury reports
- identify legal aspects & penalties affecting employers and employees.

LEARNING TASKS

1. Describe the various sections of the WCB Occupational Health and Safety Regulations as they pertain to the Building Maintenance Occupation
2. Describe safety rules for conduct, legal responsibility affecting yourself and assessments and penalties for employers
3. Have knowledge of WCB regulations

CONTENT

- Purpose and role of WCB
- Inspections
- Safety programs
- Injury reports

- Personal safety rules
- Responsibility affecting you and others
- WCB assessment and penalty costs affecting employers

- Safety Issues

Achievement Criteria:

After completion of the competency the apprentice shall complete a written assessment on sections of the WCB Occupational Health and Safety Regulations pertaining to the RBMW occupation, and correctly fill in an emergency report form, with a minimum score of 70%.

The apprentice will also verbally identify legal aspects and penalties affecting employers and employees and relate them to a work place situation to the satisfaction of the instructor.

LINE B USE SAFE WORK PRACTICES

Competency: B4 Practice Fire Safety

Learning Objectives:

After completion of the competency the apprentice will be able to:

- identify the aspects of fire and safety control
- distinguish between the type of fire and type of extinguisher required
- identify the locations of and requirements for smoke and carbon monoxide detectors
- describe the use of fire drills and escape routes

LEARNING TASKS

CONTENT

1. Identify types of fires	<ul style="list-style-type: none"> • Class A • Class B • Class C • Class D
2. Identify Class A, B, C and D fires and state the type of extinguisher used to put out each fire	<ul style="list-style-type: none"> • First aid fire fighting • Classes of fire • Types of extinguishers • Class A fire (wood, paper) • Class B fire (gas, oil, etc) • Class C fire (electrical) • Class D fire (metals)
3. Identify and describe the use of fire extinguishers	<ul style="list-style-type: none"> • Water Foam • All purpose chemical powder • Soda acid • Foam
4. Describe the location and inspection of smoke and carbon monoxide detectors	<ul style="list-style-type: none"> • Change batteries • Test detectors
5. Describe the use of fire drills and set up fire escape routes	<ul style="list-style-type: none"> • Discuss with home owners

Achievement Criteria:

The apprentice shall complete a written assessment, identifying correctly: fires; types of extinguishers; which extinguisher to use with a particular type of fire; smoke and carbon dioxide detector parameters; and use of fire drills and escape routes with a minimum score of 70%.

LINE B USE SAFE WORK PRACTICES

Competency: B5 Use and Maintain Personal Safety Equipment

Learning Objectives:

After completion of the competency the apprentice will be able to:

- identify and assemble the proper safety equipment and clothing needed and then store such equipment properly.
- use personal safety gear and equipment, fall restraint equipment, and clothing required for adverse conditions.

LEARNING TASKS

CONTENT

1. Describe personal safety equipment	<ul style="list-style-type: none"> • Safety footwear • Eye and ear protection • Head protection • Respiratory protection
2. Demonstrate the use of personal safety equipment	<ul style="list-style-type: none"> • Safety procedures while using various types of equipment
3. Describe the use of fall restraint equipment	<ul style="list-style-type: none"> • Harnesses • Life lines • Toe boards
4. Describe safety gear, clothing and precautions for various weather conditions	<ul style="list-style-type: none"> • Safety procedures while working under adverse weather conditions • Rainy weather • Windy weather • Cold or hot temperatures • Care of clothing and gear

Achievement Criteria:

The apprentice shall successfully complete a written and practical assessment on safety equipment, identifying what is needed, its use, and what equipment would be used in various given workplace situations and weather conditions with a minimum score of 70%.

LINE B USE SAFE WORKING PRACTICES

Competency: B6 Use and Maintain Ladders, Scaffolding and Platforms

Learning Objectives:

After completion of the competency the apprentice will be able to demonstrate the proper use of step ladders, extension ladders, scaffolding, and platforms in a workplace setting as well as identify related WCB Regulations.

LEARNING TASKS

1. Describe WCB regulations for step and extension ladders
2. Carry, set up and use step and extension ladders
3. Set up and use scaffolding & platforms

CONTENT

- Safe handling and use of step ladders
- Safe handling and use of extension ladders
- WCB regulations
- Types, uses and erection

Achievement Criteria:

The apprentice shall successfully complete a written assessment on the handling and use of stepladders, extension ladders, scaffolds and platforms; and describe related WCB regulations with a minimum score of 70%. The apprentice will also successfully demonstrate the set up of ladders, scaffolds and platforms to the satisfaction of the instructor.

LINE B USE SAFE WORK PRACTICES

Competency: B7 Safely Enter Confined Spaces and Use Air Packs

Learning Objectives:

After completion of the competency the apprentice will successfully obtain a certificate for the use of air packs during confined space entry and verbally describe the skills required by a safety person.

LEARNING TASKS

1. Identify and demonstrate entering confined spaces
2. Demonstrate the use of air packs
3. Demonstrate the use of a safety person for emergency removal

CONTENT

- Water storage tanks, sewage/septic tanks
- Crawl and attic spaces

- Scott pack
- Respiratory masks

- Skills required by a safety person

Achievement Criteria:

The trainee will complete requirements for third party certification provided by a recognized and BC accredited trainer.

LINE B USE SAFE WORK PRACTICES

Competency: B8 Identify Lockout Procedures

Learning Objectives:

After completion of the competency the apprentice will identify lockout and tagging, WCB Regulations, and lockout procedures.

LEARNING TASKS

1. Identify lockout and tagging
2. Identify WCB OH&S Regulations
3. Identify lockout procedures

CONTENT

- Define lockout & tagging
- Describe related WCB regulations
- Implementation and procedures for lockout and tagging
- Responsibilities

Achievement Criteria:

The apprentice shall complete a written assessment on lockout and tagging, and procedures with a minimum score of 70%.

LINE C PERFORM TRADES MATH AND FINANCIAL CALCULATIONS

Competency: C1 Perform Conversions to and from Metric and Imperial

Learning Objectives:

After completion of the competency the apprentice will be able to read and understand a set of plans or instructions using metric measurements.

LEARNING TASKS

1. Review conversions to and from metric and imperial

CONTENT

- Lengths
- Areas
- Volumes
- Weights
- Temperatures

Achievement Criteria:

The apprentice shall complete a written assessment containing metric or imperial measurements with a minimum score of 70%.

LINE C

PERFORM TRADES MATH AND FINANCIAL CALCULATIONS

Competency: C2 Perform Arithmetic Functions with Whole Numbers and Fractions

Learning Objectives:

After completion of the competency the apprentice will give real world examples of how some of these math skills may be successfully used.

LEARNING TASKS

1. Review basic arithmetic functions with whole numbers, decimal and common fractions
2. Review converting fractions
3. Review calculating ratios

CONTENT

- Addition
- Subtraction
- Division
- Multiplication

- Decimal to common fractions
- Common to decimal fractions

- By weight
- By volume

Achievement Criteria:

The apprentice shall complete a written assessment that reviews basic arithmetic functions with whole numbers, decimal and common fractions reviews converting fractions and calculating ratios with a minimum score of 70%.

LINE C

PERFORM TRADES MATH AND FINANCIAL CALCULATIONS

Competency: C3 Perform Basic Plane Geometry

Learning Objectives:

After completion of the competency the apprentice will be able to perform basic geometry calculations using practical examples that involve the calculation of perimeters, areas, and volumes of different shapes.

LEARNING TASKS

1. Describe the formulas for calculating perimeters

2. Describe the formulas for calculating areas

3. Describe the formulas for calculating volume

CONTENT

- Triangles
- Squares
- Rectangles
- Circles
- Or parts of the above

- Triangles
- Squares
- Rectangles
- Circles
- Or parts of the above

- Prisms
- Cylinder
- Cubes
- Pyramids
- Cones
- Irregular shapes

Achievement Criteria:

The apprentice will complete a written assessment to calculate the areas of triangles, squares, rectangles and circles; and calculate the perimeter of given objects made by parts of triangles, squares, rectangles and circles; and calculate the areas of given objects made by parts of triangles, squares, rectangles and circles; and calculate the volume of given objects made by cubes, prisms, pyramids, cones, and irregular shapes; with a minimum score of 70%.

LINE D USE AND MAINTAIN TOOLS

Competency: D1 Use and Maintain Hand Tools

Learning Objectives:

After completion of the competency the apprentice will demonstrate practical competency in the use, care and maintenance of selected carpentry and drywall tools.

LEARNING TASKS

1. Describe the use and maintenance of fastening tools

2. Describe the use of bars

3. Describe the use of cutting and smoothing tools

4. Describe the use of tools used in carpentry

5. Describe drywall tools and their use

CONTENT

- Hammers, claw, sledge and stapler
- Screw drivers, slot, Phillips, Robertson
- Pliers, combination, needle nose, locking
- Wrenches, open end, box, socket, adjustable, hexagon key, pipe
- Clamps

- Crow bar, pry bar, nail puller

- Block plane
- Saws
- Files
- Sand papers
- Chisels

- Safety and maintenance

- Drywall Tools
- Use

Achievement Criteria:

At the completion of this competency, the apprentice shall successfully complete a written and practical assessment covering the use of the above tools, with a minimum score of 70%

LINE D USE AND MAINTAIN TOOLS

Competency: D2 Use and Maintain Power Tools

Learning Objectives:

After completion of the competency, the apprentice will demonstrate the proper use of portable tools and their bits or blades for a given project.

LEARNING TASKS

1. Describe the safe use and maintenance of portable power tools
2. Describe the operation of portable power saws
3. Describe the operation of portable power drills
4. Describe the operation of portable power routers
5. Describe the use of portable power sanders
6. Describe the use and maintenance of drills, bits, and blades

CONTENT

- Power cords
- Guards
- Operating rules
- Eye and ear protection
- Storage
- Circular saw
- Saber saw
- Reciprocating saws
- Types of blades
- Size, speed
- Variable speed
- Types and uses of drill bits
- Speeds
- Types and uses of bits
- Orbital
- Belt
- Storage
- Selection

Achievement Criteria:

The apprentice will complete a written and practical assessment with a minimum score of 70% demonstrating the proper use of such tools and describing the use of power tools for carpentry maintenance.

LINE D USE AND MAINTAIN TOOLS

Competency: D3 Use and Maintain Shop Tools

Learning Objectives:

After completion of the competency, the apprentice will be able to:

- Select the correct blades or tools for a given project
- Demonstrate the safe use of a table saw for ripping materials for a given project
- Demonstrate crosscutting materials for a given project
- Demonstrate making various cuts on a table saw
- Demonstrate how a table saw should be maintained and cared for.

LEARNING TASKS

CONTENT

- | | |
|--|--|
| 1. Identify the components of a table saw and state their function | <ul style="list-style-type: none"> • Table top • Fence • Mitre gauge • Control switch • Tilt controls • Blade height controls • Saw Guard • Anti-kickback features • Cabinet base |
| 2. Describe table saw operations | <ul style="list-style-type: none"> • Ripping • Cross cutting • Mitre cuts • Rabbets • Bevel cuts • Ploughs • Dado cuts |
| 3. Identify saw blades and dado cutters | <ul style="list-style-type: none"> • Cross cut blade • Ripping blade • Combination blade |
| 4. List safety rules for table saw operation | <ul style="list-style-type: none"> • Dado set • Adjustable dado head |
| 5. Describe the use of table saws for carpentry maintenance | <ul style="list-style-type: none"> • Housekeeping • Protective equipment • Type of materials to be cut • Safety rules |

Achievement Criteria:

The apprentice shall complete a written and practical assessment on the correct use, the various techniques, blade choice and tool choice for situation dependant projects, along with proper equipment care and maintenance of a table saw with a minimum score of 70%.

Line D USE AND MAINTAIN TOOLS

Competency: D4 Disassemble, Sharpen and Reassemble Cutting Tools

Learning Objectives:

After completion of the competency, the apprentice will be able to successfully set and sharpen handsaws, sharpen planes, sharpen chisels and knives, sharpen tool bits, disassemble, sharpen and reassemble mower blades and accurately demonstrate the safety precautions that must be taken in each situation.

LEARNING TASKS

1. Identify, disassemble, sharpen and reassemble saw blades
2. Demonstrate sharpening hand tools
3. Demonstrate sharpening mower blades

CONTENT

- Adjust the gauge
- Sharpen the blade
- Clean and lubricate
- Handsaws
- Planes
- Chisels
- Knives
- Bits
- Disassemble blades
- Straighten blades
- Sharpen blades
- Clean and lubricate

Achievement Criteria:

The apprentice shall complete a practical assessment demonstrating sharpening and safety techniques in the area of sharpening tools, blades, handsaws, chisels and other work place implements that require sharpening, with a minimum score of 70%.

LINE D USE AND MAINTAIN TOOLS

Competency: D5 Use Measuring and Testing Devices

Learning Objectives:

After completion of the competency, the apprentice will be able to demonstrate the use of measuring tools in imperial and metric, demonstrate the use of squares, stud finders, layout tools, levels and plumb bob.

LEARNING TASKS

1. Describe the use and maintenance of measuring tools
2. Describe the use and maintenance of layout tools
3. Describe the use and maintenance of leveling and plumbing tools
4. Describe the use and maintenance of squares
5. Describe the use of a testing tool

CONTENT

- Imperial system
- Metric system
- Pocket tape
- Steel tape

- Pencils
- Straight edge
- Chalk line
- Marking gauge
- Scriber

- Hand level
- Plumb bob
- Stud finder

- Framing square
- Combination square
- Sliding T bevel
- Angle divider

- Stud finder

Achievement Criteria:

The apprentice shall complete a written assessment on measurements metric and imperial, measuring techniques and the proper use of squares, stud finders, layout tools, levels and plumb bobs with a minimum score of 70%

LINE D USE AND MAINTAIN TOOLS

Competency: D6 Obtain Powder Actuated Tool Certification

Learning Objectives:

After completion of the competency, the apprentice will demonstrate the safe use of powder actuated tools, select the correct cartridge for a given project, select the correct fastener for the project, and successfully obtain a certificate for the operation of powder actuated tools.

LEARNING TASKS

1. Describe safety rules for using powder actuated tools
2. Describe the velocities of powder actuated tools and the method of propulsion
3. Identify types of cartridges and the coding system
4. Identify types of fasteners
5. State the rules for fastening with powder actuated tools
6. Obtain a certificate to operate powder actuated tools

CONTENT

- Types of tools
- Safe operation
- Safety precautions
- WCB rules and regulations
- Eye, ear and foot protection
- Storage of tools and cartridges
- Low velocity
- Medium velocity
- High velocity
- Method of propulsion
- Power levels
- Case types
- Firing methods
- Colour coding
- Headed pins
- Threaded studs
- Eyelets
- Knurled fasteners
- Holding action
- Concrete
- Placement of fasteners

Achievement Criteria:

The apprentice will complete a written and practical assessment on the safe use of powder actuated tools, how to select the correct cartridge for a given project, and how to identify the coding system along with selecting the correct fastener for the project, with a minimum score of 70%.

LINE E DESCRIBE BUILDING STRUCTURE AND DESIGN

Competency: E1 Apply Federal, Provincial and Local Codes and By-laws

Learning Objectives:

After completion of the competency, the apprentice will be able to identify relevant Federal and Provincial Codes and Local Bylaws for any work to be performed.

LEARNING TASKS

1. Identify section of the BC Building Code related to residential units
2. Inspect all units to ensure that they meet the Federal Fire Code
3. Review all local by-laws affecting work to be performed

CONTENT

- Review the BC building Code as needed
- Do regular inspections
- Keep up to date
- Apply for permits when required

Achievement Criteria:

The apprentice shall complete a written or verbal assessment explaining how they would ensure that all work meets the standards of the BC Building Code, ensure that all electrical work meets the standards of the Electrical Code, that all plumbing work meets the standards of the Plumbing Code, and that all permits are in place; and practical assessment to complete permit forms, and identify the steps needed to call for an inspection of electrical, plumbing, and building structure, along with identifying elements of the current building codes with a minimum score of 70%.

LINE E DESCRIBE BUILDING STRUCTURE AND DESIGN

Competency: E2 Interpret Blueprints

Learning Objectives:

After completion of the competency the apprentice demonstrate the use of scale rules in Metric and Imperial on a given drawing, identify the different types of views used on plans for house construction, successfully demonstrate the use of house plans to identify building problems, identify plumbing and electrical components on a given drawing, and review plans and specifications for errors or omissions.

LEARNING TASKS

CONTENT

- | | |
|---|--|
| 1. Use scales in Imperial and Metric | • Measurements |
| 2. Describe the use of plot plans and landscape drawings | • Lines, notes, abbreviations |
| 3. Describe the use of floor plans, elevations and sectional drawings | • Lines, notes abbreviations |
| 4. Describe the use of plumbing symbols | • Lines, symbols, abbreviations |
| 5. Describe the use of electrical symbols | • Lines, symbols, abbreviations |
| 6. Describe the use of specifications | • Identify relationship with drawings |
| 7. Describe the use of special features located on the drawings | • Notes, revisions, schedules |
| 8. Describe the use of as-built plans | • Review building plans |
| 9. Describe the different type of drawings | <ul style="list-style-type: none"> • Pictorial • Orthographic • Shop drawings • Perspective • Isometric |
| 10. Describe the alphabet of lines | <ul style="list-style-type: none"> • Object lines • Hidden lines • Center lines • Extension lines • Dimension lines |

Achievement Criteria:

The apprentice shall complete a written assessment demonstrating the ability to read plans, identify elements such as plumbing and electrical on these plans and do a detailed analysis of a given drawing reviewing it for errors and omissions with a minimum score of 70%.

LINE E DESCRIBE RESIDENTIAL CONCRETE TECHNOLOGY

Competency: E3 Identify Residential Concrete Technology

Learning Objectives:

After completion of the competency, the apprentice will be able to identify concrete products, identify materials needed for a simple pad form, order ready mix concrete sufficient for the needs of the project and level and smooth it to the satisfaction of the contractor or owner.

LEARNING TASKS

1. Identify concrete materials

2. Identify concrete formwork

CONTENT

- Cement, gravel, sand and water
- Pre-mixed concrete products
- Ready mix concrete

- 2 x 4 sidewall and pegs to keep it in place

Achievement Criteria:

The apprentice shall complete a written assessment on aspects of concrete forms and the difference in concrete along with the effective application of the concrete with a minimum score of 70%.

LINE E DESCRIBE BUILDING STRUCTURE AND DESIGN

Competency: E4 Identify Structural Elements of Wood Frame Construction

Learning Objectives:

After completion of the competency, the apprentice will identify types of construction, identify framing components on a given drawing, identify structural components on a given drawing, locate wall ceiling and floor framing members on a given drawing, identify types of roofs on housing units; and demonstrate an ability to relate this to real world situations.

LEARNING TASKS

CONTENT

- | | |
|--|---|
| <ol style="list-style-type: none"> 1. Identify framing systems
 2. Identify framing members
 3. Identify bearing walls 4. Identify sheathing
 5. Identify foundation walls and pony walls 6. Identify beams and teleposts | <ul style="list-style-type: none"> • Platform construction • Balloon frame construction • Log home construction
 • Floors and ceilings • Walls and partitions • Roofs • Studs and plates • Bracing and blocking • Sheathing • Headers • Floor joists, cross-bridging, anchors • Trusses
 • Walls supporting the roof or upper floors
 • Wall sheathing, plywood, OSB, ship-lap • Floor sheathing, T&G, finish flooring • Roof sheathing
 • Concrete foundation walls • Pony wall below floor level
 • Size and location |
|--|---|
-
- | | |
|--|---|
| <ol style="list-style-type: none"> 7. Identify building terms | <ul style="list-style-type: none"> • Foundation • Cantilever • Cornice • Dormers • Eaves • Gable • Soffit • Parapet |
|--|---|

8. Identify styles of roofs

- Flat
- Shed
- Gable
- Hip
- Intersecting
- Mansard
- Gambrel

Achievement Criteria:

The apprentice shall complete a written assessment on building terms, styles of roofs, identification of beams and teleposts, foundation walls, pony walls and sheathing along with various framing systems with a minimum score of 70%.

LINE E

DESCRIBE BUILDING STRUCTURE AND DESIGN

Competency: E5 Prepare Basic Shop Drawings

Learning Objectives:

After completion of the competency, the apprentice will interpret blueprints with the use of various plans and drawings, lines, abbreviations, symbols, and specifications; and draw simple shop drawings.

LEARNING TASKS

1. Interpret blueprints
2. Read multi-view drawings
3. Identify plans and drawings
4. Draft basic shop drawings

CONTENT

- Plan and drawing types
- Lines and abbreviations
- Scales
- Sections
- Symbols
- Types and specifications
- Shop drawings

Achievement Criteria:

The apprentice shall complete a written assessment demonstrating the ability to interpret blueprints and drawings with a minimum score of 70%.

LINE F PREVENT AND REMEDIATE MOULD ISSUES

Competency: F1 Describe Types and Causes of Mould

Learning Objectives:

After completion of the competency the apprentice will describe mould issues related to health; define what mould is and how it grows; recognize its characteristics; and recognize the health risks and symptoms associated with mould.

LEARNING TASKS	CONTENT
1. Describe mould issues	<ul style="list-style-type: none">• Issues
2. Define and recognize mould	<ul style="list-style-type: none">• Define• Growth• Recognition
3. Recognize health risks	<ul style="list-style-type: none">• Risks• Symptoms

Achievement Criteria:

The apprentice shall complete a written assessment demonstrating the ability to: identify the types and causes of mould, define and recognize mould, and recognize the risks and symptoms associated with mould; with a minimum score of 70%.

LINE F PREVENT AND REMEDIATE MOULD ISSUES

Competency: F2 Recognize and Prevent Mould Issues

Learning Objectives:

After completion of the competency, the apprentice will describe mould prevention issues; recognize industry responsibilities; and identify causes and solutions to prevent mould.

LEARNING TASKS

1. Recognize mould prevention issues
2. Recognize Industry responsibilities

3. Prevent mould

CONTENT

- Identify moisture sources
- Identify prevention issues

- Responsibilities
- Schedules
- Material handling
- Record keeping and controls

- Prevention
- Causes
- Solutions

Achievement Criteria:

The apprentice shall complete a written assessment demonstrating the ability to: identify sources of mould and related issues; describe the responsibilities of industry and its controls; describe how to prevent mould and determine its causes and solutions; with a minimum score of 70%.

LINE F PREVENT AND REMEDIATE MOULD ISSUES

Competency: F3 Remediate Mould Issues

Learning Objectives:

After completion of the competency, the apprentice will be able to identify mould remediation procedures and classifications of mould.

LEARNING TASKS

1. Identify mould remediation procedures

CONTENT

- Mould remediation
- Classifications

Achievement Criteria:

The apprentice shall complete a written assessment demonstrating the ability to identify the classifications of mould and mould remediation procedures; with a minimum score of 70%.

LINE G PERFORM CARPENTRY REPAIRS AND MAINTENANCE

Competency: G1 Identify Carpentry Materials

Learning Objectives:

After completing the competency, the apprentice will describe types and sizes of framing lumber; identify types of interior and exterior finishing materials; describe types of softwood and hardwood lumber; identify mouldings used in residential construction; identify all types of hardware used in residential construction; and identify miscellaneous hardware and materials used in housing.

LEARNING TASKS

1. Identify standard sizes, grades and dimensions of framing lumber

2. Describe grades of softwood and hardwood finish lumber

3. Interpret span tables

4. Identify mouldings

5. Identify door hardware and indicate its uses

6. Identify cabinet hardware and indicate its uses

CONTENT

- Light framing
- Joists
- Beams and posts
- Decking
- Siding
- Sheathing

- Softwood species and grades

- Hardwood species and grades
- Beam spans
- Floor joists
- Rafters and roof joists

- Baseboard
- Window and door casing
- Crown, cove, wainscoting etc.

- Entrance locks
- Keyed lock sets
- Passage lock sets
- Privacy lock set
- Dead bolts and night latches
- But hinges
- Miscellaneous door hardware
- Bi-fold and sliding door hardware

- Cabinet door hinges
- Door catches
- Drawer hardware
- Knobs and pulls
- Adjustable shelf hardware
- Specialty hardware

7. Identify miscellaneous hardware and indicate its uses
 - Hasp and staple hardware
 - Shelf hardware
 - Handrail hardware
 - Closet hardware
 - Window hardware

8. Identify exterior finishing materials
 - Wood shingles and shakes
 - Wood siding
 - Vinyl and aluminum siding
 - Stucco
 - Brick veneer
 - Sheet metal
 - Wood paneling

9. Identify miscellaneous materials
 - Concrete products
 - Pre-mixed cement
 - Sand, gravel
 - Fasteners
 - Nails
 - Screws
 - Bolts
 - Caulking
 - Adhesives

Achievement Criteria:

The apprentice shall complete a written assessment on the grades of lumber, softwood and hardwood, mouldings, and hardware needed for residential construction with a minimum score of 70%.

LINE G PERFORM CARPENTRY REPAIRS AND MAINTENANCE

Competency: G2 Repair and Maintain Stairs, Landings, Handrails and Decks

Learning Objectives:

After completion of the competency, the apprentice will: identify different types of stairs; describe the different components used in stair construction; calculate rise and run; describe types of stair construction; describe components used for handrails and guardrails; make repairs to stairs, handrails and decks as needed; and successfully demonstrate an ability to repair stairs, handrails, landings and decks to match existing materials.

LEARNING TASKS

1. Identify types of stairs and stairwells

2. Identify stair terms

3. Identify parts of stairs

4. Describe construction methods of stairs and stairwell

CONTENT

- Open stairwell
- Closed stairwell
- Combination stairwells
- Straight
- “L” shape

- Total rise
- Total run
- Unit rise
- Unit run
- Nosing projection
- Nosing line

- Treads
- Risers
- Stringers
- Platforms
- Landings
- Nosing
- Handrails
- Balusters
- Buttress caps
- Fillets
- Newel posts

- Cut out stringers
- Semi-housed stringers
- Mitered stringers
- Housed stringers
- Handrails
- Balusters

5. Repair or replace handrails
 - Match existing materials
6. Repair or replace treads, or stringers
 - Match existing materials
7. Replace or repair damaged decking
 - Match existing materials

Achievement Criteria:

The apprentice shall complete a written assessment on the identification of terms used in stairs and stairwells, types of stairs and stairwells, parts of stairs and construction methods, replacing of stairwells and the matching of materials with a minimum score of 70%.

LINE G PERFORM CARPENTRY REPAIRS AND MAINTENANCE

Competency: G3 Identify and Repair Cabinets, Counter Tops and Shelving

Learning Objectives:

After completion of the competency, the apprentice will: describe the installation of cabinets, counter tops and hardware; demonstrate the replacement of cabinets, shelves and drawers; describe the installation of counter tops; and demonstrate the installation of plastic laminate, mirrors, and caulking.

LEARNING TASKS	CONTENT
1. Describe the construction of cabinets	<ul style="list-style-type: none"> • Doors and drawers • Shelves fixed and adjustable • Standard dimensions
2. Describe the installation of prefinished cabinets	<ul style="list-style-type: none"> • Fastening methods
3. Identify and describe the proper mounting height	<ul style="list-style-type: none"> • Cabinets • Shelving • Counter tops
4. Describe the installation of counter tops	<ul style="list-style-type: none"> • Layout • Cutting and fitting • Attachment methods
5. Describe the cutting of openings for sub-trades	<ul style="list-style-type: none"> • Under the counter openings • Counter top openings • Heating and electrical openings
6. Describe the installation of cabinet hardware	<ul style="list-style-type: none"> • Cabinet hinges • Door catches • Knobs and pulls • Drawer slides • Shelf supports
7. Identify plastic laminates and describe their application	<ul style="list-style-type: none"> • Types and sizes • Handling and storage • Layout and cutting • Adhesive and bonding • Trimming and finishing
8. Describe the installation of specialty items	<ul style="list-style-type: none"> • Mirrors • Grab bars • Towel bars

9. Repair and replace cabinet doors and shelves
10. Repair or replace drawers
11. Repair or replace counter tops
12. Repair or replace hardware
13. Apply caulking

Achievement Criteria:

The apprentice shall complete a written and practical assessment of the proper installation of cabinets, counter tops and hardware, how and when to replace cabinets, shelves and drawers and what steps are needed to effect the installation of counter tops, and plastic laminate, mirrors, and caulking with a minimum score of 70%.

LINE G PERFORM CARPENTRY REPAIRS AND MAINTENANCE

Competency: G4 Repair, Maintain and Replace Hardware

Learning Objectives:

After completion of the competency, the apprentice will repair or replace door and window hardware.

LEARNING TASKS

1. Describe and demonstrate the installation, repair and maintenance of door hardware

2. Describe and demonstrate the installation, repair and maintenance of window hardware

CONTENT

- Lock sets
- Stoppers
- Panic hardware
- Door closures
- Hinges
- Tracks and rollers

- Screens
- Tracks
- Lock sets
- Hinges

Achievement Criteria:

The apprentice shall complete a written and practical assessment, with a minimum score of 70% of the proper replacement of door and window hardware and the difference types of hardware needed for a project.

LINE G PERFORM CARPENTRY REPAIRS AND MAINTENANCE

Competency: G5 Repair Concrete

Learning Objectives:

After completion of the competency, the apprentice will repair concrete sidewalks, concrete steps, effectively caulk or seal cracks in basement walls, and floors.

LEARNING TASKS

1. Remove and replace sidewalks

2. Repair concrete steps

3. Caulk cracks in basement walls

4. Seal, caulk or repair cracks in basement floors

5. Assess the need for a journey person to make the necessary repairs

CONTENT

- Remove damaged area
- Level surface
- Build the new form
- Determine concrete needs
- Replace and level concrete
- Finish concrete
- Remove forms

- Remove damaged materials
- Build forms
- Replace concrete
- Finish concrete
- Remove forms

Achievement Criteria:

The apprentice shall complete a written assessment of the different aspects of concrete as they apply to sidewalks, steps, leveling and forms; the repair, sealing and caulking of basement walls; with a minimum score of 70%.

LINE G PERFORM CARPENTRY REPAIRS AND MAINTENANCE

Competency: G6 Identify and Repair Structural Problems

Learning Objectives:

After completion of the competency, the apprentice will make adjustments to teleposts to level the floor, identify and locate structural problems, and make emergency repairs where needed to the satisfaction of the instructor; and demonstrate the ability to assess the need for a journey person to assess the damage.

LEARNING TASKS

1. Check floors for level
2. Check walls for plumb
3. Check ceiling for structural problem areas
4. Check roofs for structural problem areas
5. Adjust teleposts
6. Make emergency repairs to bearing walls

CONTENT

- Locate sagging foundations
- Locate structural problems with exterior walls
- Locate sagging ceiling areas
- Check for sagging areas in the roof surface
- Make adjustments to ensure a level floor area
- Temporary repairs only

Achievement Criteria:

The apprentice shall complete a written assessment on emergency repairs to bearing walls, adjusting teleposts, how to check ceilings and roofs for structural problem areas, and how to check for structural levels; with a minimum score of 70%.

LINE G PERFORM CARPENTRY REPAIRS AND MAINTENANCE

Competency: G7 Repair, Maintain and Replace Windows and Doors

Learning Objectives:

After completion of the competency, the apprentice will identify the various types of interior and exterior doors & various types of windows; and demonstrate the replacement of doors and windows as well as demonstrating the upgrading of windows and doors, and window and door openings for energy conservation purposes.

LEARNING TASKS

CONTENT

- | | |
|---|---|
| 1. Identify and describe various types of doors | <ul style="list-style-type: none"> • Solid core wood • Hollow core wood • Metal • Metal insulated • Pre hung • Bi-fold • Pocket • Sliding • Energy efficient |
| 2. Identify types of door jambs and describe methods of repair | <ul style="list-style-type: none"> • Wood jamb in concrete wall • Metal door jambs • Pre-hung door kits |
| 3. Describe methods of installing doors | <ul style="list-style-type: none"> • Determine the hand of a door • Fitting a door • Pre hung door kits |
| 4. Identify types of windows | <ul style="list-style-type: none"> • Double-hung • Casement • Awning • Hopper • Sliding • Fixed • Pivoting • Sealed window units |
| 5. Describe the installation of windows for energy conservation | <ul style="list-style-type: none"> • Poly wrap • Foam insulation • Caulking • Weather stripping |

Achievement Criteria:

The apprentice shall complete a written assessment of various types of interior and exterior doors, and various types of windows along with procedures for their replacement and effective energy conservation with a minimum score of 70%.

LINE G PERFORM CARPENTRY REPAIRS AND MAINTENANCE

Competency: G8 Repair and Maintain Baseboards, Mouldings and Casings

Learning Objectives:

After completion of the competency, the apprentice will replace damaged or missing moulding, and caulk around mouldings where needed.

LEARNING TASKS

1. Repair or replace interior mouldings

2. Repair or replace exterior moulding

CONTENT

- Remove damaged moulding
- Install new moulding matching the existing moulding

- Remove the damaged moulding
- Install new moulding matching the existing moulding
- Caulk/seal around the mouldings

Achievement Criteria:

The apprentice shall complete a written assessment on interior and exterior mouldings and caulking, with a minimum score of 70%.

LINE G PERFORM CARPENTRY REPAIRS AND MAINTENANCE

Competency: G9 Identify and Locate Cladding Problems

Learning Objectives:

After completion of the competency, the apprentice will replace damaged or missing siding or mouldings, make repairs to damaged siding, make repairs to damaged air barriers and apply caulking where needed.

LEARNING TASKS

1. Repair or replace damaged or missing siding
2. Make minor repair to air barrier
3. Apply caulking and sealant as needed

CONTENT

- Remove damaged materials
- Match new siding to existing materials

- Where damaged

- Match existing materials

Achievement Criteria:

The apprentice shall complete a written assessment of the aspects of repairing or replacing damaged or missing siding or mouldings, with a minimum score of 70%.

LINE G PERFORM CARPENTRY REPAIRS AND MAINTENANCE

Competency: G10 Identify Infestation Problems

Learning Objectives:

After completion of the competency, the apprentice will inspect attics and crawlspaces to check for rodent or bug infestation and determine the need for an exterminator.

LEARNING TASKS

1. Inspect attic spaces

2. Inspect crawl spaces

3. Assess the need for a specialist

CONTENT

- Check for rodent infestation
- Check for bug infestation

- Check for rodent infestation
- Check for bug infestation

- Determine when an exterminator is needed

Achievement Criteria:

The apprentice shall complete a written assessment, with a minimum score of 70%, of types of mold, rodent and bug infestations and what factors would necessitate the calling in of an exterminator.

LINE G PERFORM CARPENTRY REPAIRS AND MAINTENANCE

Competency: G11 Assess the Need for a Journeyperson or Licensed Contractor

Learning Objectives:

After completion of the competency, the apprentice will assess situations where and when a journey person or a BC Safety Authority licensed contractor is required to assess damage and do repair work.

LEARNING TASKS

1. Assess the need for a journey person

CONTENT

- For new additions or renovations
- Where the damage is such a journeyperson is needed to assess the repair required
- Structural damage
- Electrical or Gas regulated work

Achievement Criteria:

The apprentice shall complete a written assessment on the steps of assessment and policies of calling in journeyman to a minimum score of 70%.

Note: In British Columbia, all gas and electrical contractors doing regulated work are required, under the *Safety Standards Act*, to hold a valid license issued by the BC Safety Authority. The license ensures the contractor and the people employed by the contractor are qualified and can perform the work safely. Licenses must be renewed annually and require certain qualifications are met, including a \$10,000 surety bond. The RBMW program and training does not extend to these areas of technical training and/or certification.

LINE H REPAIR DRYWALL

Competency: H1 Identify Drywall Materials

Learning Objectives:

After completion of the competency, the apprentice will identify types of drywall, fasteners for drywall board, and identify and describe the use of drywall mud, tape and corners.

LEARNING TASKS

1. Identify drywall materials

2. Identify types of drywall

3. Identify types of drywall tape and corners

CONTENT

- Gyproc
- Adhesive, nails and screws
- Mud, dry and pre-mixed
- Tapes and corners

- Gypsum board
- Moisture resistant board

- Paper tape
- Middle crease tape
- Fiberglass mesh
- Corners

Achievement Criteria:

The apprentice shall complete a written assessment on types of drywall, and drywall materials with a minimum score of 70%.

LINE H REPAIR DRYWALL

Competency: H2 Patch Holes in Gyproc, Plaster and Lath

Learning Objectives:

After completion of the competency the apprentice will identify types of drywall, drywall materials, mud, nails, screws, tapes, and corners; will demonstrate patching holes in drywall while maintaining the original appearance.

LEARNING TASKS

1. Identify and locate the need for drywall repairs
2. Describe fastening loose drywall
3. Describe pre-filling
4. Describe and demonstrate hole patching

CONTENT

- Cracks
- Holes
- Water damage
- Nails or screws
- Gap size
- Uneven joints
- Install backing
- Tolerances
- Matching drywall
- Using overhanging paper

Achievement Criteria:

The apprentice shall complete a written assessment on the identification and proper use of drywall materials with a minimum score of 70%, and successfully demonstrate the patching of holes to the satisfaction of the instructor.

LINE H REPAIR DRYWALL

Competency: H3 Tape, Mud and Install Beads

Learning Objectives:

After completion of the competency the apprentice will: install selected drywall tape for repair work to cover joints; select the correct drywall mud for the project; install selected corner beads for a given project; install the finishing coat of drywall mud ready for sanding and painting to the satisfaction of the instructor.

LEARNING TASKS

1. Install the correct tape, using a selected mud

2. Install selected corner beads

CONTENT

- Paper tape
- Middle creased
- Fiberglass mesh
- Pre-mixed mud
- Fast set mud
- Polish coat

- Selected corner bead
- Correct type of mud
- Finish coat

Achievement Criteria:

The apprentice shall complete a written assessment of drywall muds, corner beads, and their proper use in given situations with a minimum score of 70%, and demonstrate drywall methods and techniques.

LINE H REPAIR DRYWALL

Competency: H4 Sand and Finish Gyproc

Learning Objectives:

After completion of the competency the apprentice will select the correct sand paper for a given project, demonstrate sanding a given project, and demonstrate the proper way to prepare a given surface for painting.

LEARNING TASKS

1. Identify and select the correct sand paper
2. Describe and demonstrate sanding techniques
3. Describe and demonstrate surface preparation

CONTENT

- Select the correct grit of sand paper

- Rough sanding
- Finish sanding
- Wet sanding

- Washing the surface
- Remove loose materials
- Seal discoloured areas

Achievement Criteria:

The apprentice shall complete a written and practical assessment on proper sanding techniques, site surface preparation for painting and the different types of sandpaper and the situations in which they would be used with a minimum score of 70%.

LINE H REPAIR DRYWALL

Competency: H5 Repair Insulation and Vapour Barriers

Learning Objectives:

After completion of the competency, the apprentice will replace or repair damaged or missing insulation, replace or repair damaged or missing vapour barriers.

LEARNING TASKS

1. Identify types of insulation

2. Demonstrate replacing damaged insulation

3. Replace or repair damaged vapour barriers

CONTENT

- Fiberglass, blown, bat, rigid
- Extruded polystyrene
- Expanded poly styrene
- Styrofoam

- Replace damaged or missing insulation

- Fasten vapour barrier
- Seal the joints with adhesive or tape

Achievement Criteria:

The apprentice shall complete a written and practical assessment on insulation identification, the different types of insulation and demonstrate how to properly create a vapour barrier and repair and replace the same with a minimum score of 70%.

LINE H REPAIR DRYWALL

Competency: H6 Assess the Need for a Journeyperson and/or Licensed Contractor

Learning Objectives:

After completion of the competency, the apprentice will accurately assess if a journey person is required for a given project.

LEARNING TASKS

1. Identify the need for a journey person

CONTENT

- To assess extensive damage
- The project is too extensive

Achievement Criteria:

The apprentice shall complete a written assessment on the criteria used to determine the need for a journeyperson in given situations with a minimum score of 70%.

LINE I

APPLY PUBLIC RELATIONS SKILLS

Competency: II Demonstrate Interpersonal Skills

Learning Objectives:

After completion of the competency, the apprentice will in individual and group settings, and using various communication techniques use interpersonal skills in dealing with others.

LEARNING TASKS

1. Demonstrate interpersonal skills in dealing with people on the phone, in writing and face to face

CONTENT

- Employers
- Employees
- Customers
- Inspectors
- Contractors
- Engineers

Achievement Criteria:

The apprentice shall complete a written and practical assessment on inter-personal relationships as they apply to contractors, inspectors, engineers, customers, employers and employees with a minimum score of 70%.

LINE I

APPLY PUBLIC RELATIONS SKILLS

Competency: I2 Maintain Effective Home Owner and Tenant Relations

Learning Objectives:

After completion of the competency, the apprentice will: in individual and group settings, and using various communication techniques visibly demonstrate his or her interpersonal skills in dealing with others to the satisfaction of the Instructor.

LEARNING TASKS

1. Identify relationships and skills required as a RBMW
2. Identify Acts, Regulations, and Guidelines

CONTENT

- Relationship Skills
- Acts, Regulations, Guidelines

Achievement Criteria:

The apprentice shall complete a written and practical assessment identifying the relationships and skills required by a RBMW; and identifying the Acts, Regulations, and Guidelines that may be used by a RBMW, with a minimum score of 70%.

PROGRAM OUTLINE FOR LEVEL 2

LINE B USE SAFE WORK PRACTICES

Competency: B5 Use and Maintain Personal Safety Equipment

Learning Objectives:

After completion of the competency, the apprentice will evaluate the roles of the worker, employer, and WCB and describe the general safety rules that apply to the RBMW.

LEARNING TASKS

1. Explain WCB Regulations
2. Describe general safety rules
3. Lift and move objects easily

CONTENT

- Roles
- Safety gear
- Tools and equipment
- Housekeeping
Compressed air
- Procedures

Achievement Criteria:

The apprentice will complete a written assessment, with a minimum score of 70%, and explain the roles of the worker, employer, and WCB; describe the general safety rules that apply to safety gear, tools and equipment, housekeeping, and compressed air; and in a simulated situation demonstrate safe procedures for lifting and moving various equipment and supplies.

LINE B USE SAFE WORK PRACTICES

Competency: B6 Use and Maintain Ladders, Scaffolding and Platforms

Learning Objectives:

After completion of the competency, the apprentice will demonstrate the proper procedures in handling, the set up and the use of step ladders, extension ladders and correctly identify the parts of steel scaffolding; and demonstrate to the satisfaction of the instructor how to set up steel scaffolding, describe how its design relates to stability and safety, and correctly make use of safety equipment such as guardrails and toe boards.

LEARNING TASKS	CONTENT
1. Describe the WCB regulations applicable to ladders and scaffolding	
2. Describe the use of ladders	<ul style="list-style-type: none"> • Step ladders • Extension ladders
3. Describe the erection procedures that apply to steel scaffolding	<ul style="list-style-type: none"> • Scaffold design • Construction and use • Members plumb and level • Stability • Guardrails and toe boards • Scaffold planks • Working platforms

Achievement Criteria:

The apprentice shall complete a written assessment on the parameters of steel scaffolding, scaffolding design, working platforms and safety issues and correctly detail the set up and use of step ladders and extension ladders with a minimum score of 70%.

LINE B USE SAFE WORK PRACTICES

Competency: B8 Identify Lock Out Procedures

Learning Objectives:

After completion of the competency, the apprentice will recognize the location of lock out valves for fuel, gas, propane, or oil and water supply valves; demonstrate safe lock out procedures for safely shutting off gas, propane or oil supply valves when required and prior to any work done on a system; and demonstrate safe shut of the main water supply valves when required and prior to any work done on the system.

LEARNING TASKS	CONTENT
1. Identify the location of shut off valves	<ul style="list-style-type: none">• FuelWater
2. Describe safe lock out procedures	<ul style="list-style-type: none">• Fuel• Water

Achievement Criteria:

The apprentice shall complete a written assessment describing safe methods of shutting down and locking out fuel supply valves, and safe methods of shutting water supply valves with a minimum score of 70%.

LINE D USE AND MAINTAIN TOOLS

Competency: D1 Use and Maintain Hand Tools

Learning Objectives:

After completion of the competency, the apprentice will demonstrate the ability to use tools used in carpentry, plumbing, heating, ventilation, and floor repair.

LEARNING TASKS

1. Identify carpentry hand tools used for plumbing, roofing and flooring and heating
2. Identify tools used for roofing
3. Identify tools used for plumbing
4. Identify tools used for flooring
5. Identify tools used for heating and ventilation

CONTENT

- Hammers
- Saws
- Screw drivers
- Pry bar
- Level
- Plumb bob
- Utility knife
- Stapler
- Propane torch
- Pipe cutter
- Pipe wrench
- Wrenches
- Utility knife
- Tin snips

Achievement Criteria:

The apprentice shall complete a written assessment on the identification and correct use of tools used in the different trades; and describe the situations the tools would be used; with a minimum score of 70%.

LINE D USE AND MAINTAIN TOOLS

Competency: D5 Use Measuring and Testing Devices

Learning Objectives:

After completion of the competency, the apprentice will demonstrate the ability to use measuring and layout tools to complete projects, and demonstrate an ability to use water testing equipment.

LEARNING TASKS

1. Describe the use and maintenance of measuring tools
2. Describe the use of layout tools
3. Describe the use of squares
4. Describe the use of leveling and plumbing tools
5. Describe the use of water testing equipment

CONTENT

- Imperial system
- Metric system
- Measuring tapes
- Straight edge
- Chalk line
- Scriber
- Marking gauges
- Framing square
- Sliding T bevel
- Level
- Plumb bob
- Procedures

Achievement Criteria:

The apprentice shall complete a written assessment, or series of examinations on metric and imperial measurements, measuring tapes, straight edge measurements, chalk line, scribes, gauges, framing squares, sliding T-Bevel, levels and plumb bobs, along with correct water testing procedures with a minimum score of 70%.

LINE E

DESCRIBE BUILDING STRUCTURE AND DESIGN

Competency: E1 Apply Federal, Provincial and Local Codes and Bylaws

Learning Objectives:

After completion of the competency, the apprentice will be able to identify relevant Provincial Codes for work to be performed and explain how they would ensure that all work meets the standards of the BC Building Code.

LEARNING TASKS

1. Identify sections of the BC Building Code related to residential units
2. Ensure that all water and sewage work meets the BC plumbing Code and the Federal Health Regulations

CONTENT

- Review applicable sections of the BC Building Code related to plumbing, heating, chimneys, ventilation, roofing, & flooring
- Keep up to date

Achievement Criteria:

The apprentice shall complete a written assessment covering identifying elements of the current building codes relating to the RBMW occupation, with a minimum score of 70%.

Note: In British Columbia, all gas and electrical contractors doing regulated work are required, under the *Safety Standards Act*, to hold a valid license issued by the BC Safety Authority. The license ensures the contractor and the people employed by the contractor are qualified and can perform the work safely. Licenses must be renewed annually and require certain qualifications are met, including a \$10,000 surety bond. The RBMW program and training does not extend to these areas of technical training and/or certification.

LINE E DESCRIBE BUILDING STRUCTURE AND DESIGN

Competency: E6 Identify Fire and Life Safety Systems

Learning Objectives:

After completion of the competency, the apprentice will demonstrate the ability to identify the use of fire and life safety systems including describing fire alarms, sprinkler systems, and demonstrate the use of fire extinguishers and manual fire suppression systems.

LEARNING TASKS

Introduction

1. Describe fire alarm systems

2. Describe fire sprinkler systems

3. Describe and use fire extinguishers

4. Describe and use manual fire suppression systems

CONTENT

Relationship of BC Codes & Standards

- Inspect and test system monthly
- Identify annual testing requirements
- Replace Heat/Smoke detector
- Assess need for JP
- Maintain records

- Identify & maintain manual controls for Wet & Dry Pipe Systems
- Identify annual testing requirements
- Replace sprinkler heads
- Assess need for JP
- Maintain records

- Execute monthly inspections
- Execute annual testing and inspections
- Identify units for 6yr and 12yr maintenance
- Maintain records

- Inspect hose stands & hoses, Siamese connections & hydrants
- Identify annual testing requirements

Achievement Criteria:

The apprentice shall complete a written assessment on fire alarm systems, fire sprinkler systems, fire extinguishers, and manual fire suppression systems, with a minimum score of 70%.

LINE I APPLY PUBLIC RELATIONS SKILLS

Competency: I3 Conduct Home Owner and Tenant Orientations and Training

Learning Objectives:

After completion of the competency, the apprentice will demonstrate the use of home owner and tenant orientations including heat and hot water, fire safety, septic tanks and fields, lawn service and lock out procedures to the satisfaction of instructor.

LEARNING TASKS

Introduction

1. Review the use of heating equipment

2. Review the use of the hot water tank

3. Review the use of appliances

4. Lawn service

5. Septic tank and field

6. Lock out procedures and locations

7. Fire safety

CONTENT

- Homeowner & tenant orientation
- Furnace location and shut off
 - Thermostats
 - Vent covers
 - Filters

 - Drain
 - Safety valve
 - Shut off valve

 - Kitchen range
 - Fridge
 - Washer and dryer
 - Exhaust fans

 - Winter shut off

 - Activation
 - Location

 - Water
 - Electrical
 - Fuel

 - Fire extinguisher
 - Smoke detectors
 - Carbon dioxide detectors
 - Escape routes

Achievement Criteria:

The apprentice shall complete a written assessment detailing the procedures used in each area of homeowner and tenant orientations with a minimum score of 70%.

LINE J REPAIR AND MAINTAIN PLUMBING

Competency: J1 Identify Plumbing Materials

Learning Objectives:

After completion of the competency, the apprentice will demonstrate the ability to identify plumbing lines, drains, vents, septic systems, wells, pumps, pressure systems and how they relate to a given scenario.

LEARNING TASKS

1. Identify cold water lines, identify shut off valves and main shut off to the unit
2. Identify hot water lines and hot water tanks
3. Identify drain and vent lines
4. Identify septic tanks and septic fields
5. Identify water wells and pumps, pressure systems
6. Identify lawn services
7. Identify fixtures and fixture components

CONTENT

- Piping, fittings
- Piping and fittings
- Pressure relief valve
- Hot water tank drain
- Check valve
- Mixing valves
- Piping and fittings
- Piping and fittings
- Access
- Protect the field
- Piping, fittings
- Protect from freezing
- Taps
- Sprinklers
- Protect from freezing
- Sinks
- Bath tubs
- Showers
- Toilets
- Taps
- Ball cock assembly
- Wax seals
- Stoppers
- P traps
- Shut-off valves
- Shower assembly

8. Identify type of material used for plumbing piping and describe their uses
 - ABS
 - PVC
 - Nylon
 - Plastic
 - PEX
 - Brass
 - Copper
 - Galvanized
 - Cast iron

Achievement Criteria:

The apprentice shall complete a written assessment identifying fixtures and fixture components, and parameters of use; identify and describe the differences between hot and cold water lines, identify drain and vent lines and correctly identify their parameters, identify septic tanks and septic fields and how they should be protected, identify and describe lawn services and their seasonal requirements, describe water wells and water pumps, pressure systems and the prerequisites surrounding the turning off or on of a main shut off valve to the satisfaction of the Instructor. In addition the apprentice will identify the materials used for piping and correctly identify their uses in different given work situations, with a minimum score of 70 % on each.

LINE J REPAIR AND MAINTAIN PLUMBING

Competency: J2 Repair and Maintain Plumbing Fixture Components

Learning Objectives:

After completion of the competency, the apprentice will demonstrate the repair and maintenance of fixture components.

LEARNING TASKS

1. Demonstrate the repair and maintenance of fixture components
2. Test and repair plumbing fixtures
3. Describe the repair of fixture trim
4. Describe the use of sealants
5. Replace fixture components

CONTENT

- Faucets
- Pressure balancing valves
- Mixing valves
- Kitchen faucets
- Sink strainers
- P traps
- Sinks
- Toilets
- Washers
- O rings
- Graphite packing
- Plumbers putty
- Grinding compounds
- Silicone caulking
- Ball cock assembly
- Flappers
- Strainers
- Faucets

Achievement Criteria:

The apprentice shall complete a written examination on the repair and maintenance of plumbing fixture components, test and repair plumbing fixtures, describe the repair of fixture trim, washers, O-rings and graphite packing, with a minimum score of 70% in a multiple-choice examination; and demonstrate the use of sealants on plumbing fixtures, and describe the replacement of fixture components to the satisfaction of the instructor.

LINE J REPAIR AND MAINTAIN PLUMBING

Competency: J3 Implement Replacement of Piping and Hot Water Tanks

Learning Objectives:

After completion of the competency, the apprentice will repair plumbing lines, demonstrate the proper techniques for soldering copper fittings and piping, demonstrate the use of valves in plumbing systems and describe the attributes of each to the satisfaction of the course instructor; and the apprentice will demonstrate the ability to service hot water tanks, service and replace water pumps, and correctly implement servicing and maintenance of septic systems.

LEARNING TASKS

1. Demonstrate the repair of piping and fitting
2. Describe the use of fittings and demonstrate soldering techniques
3. Describe the use of valves
4. Demonstrate draining hot water tanks
5. Demonstrate replacing heating elements in hot water tanks*
6. Demonstrate replacing hot water tanks*
7. Service and replace water pumps
8. Service Septic systems**

CONTENT

- Copper pipe, tubing and fittings
- Plastic pipe and fittings
- Galvanized pipe and fittings
- Solder joints
- Mechanical joint
- Compression fittings
- Gasket fittings
- Plastic fittings
- Globe valve
- Gate valve
- Solenoid valve
- Pressure relief valve
- Temperature reducing valve
- Pressure reducing valve
- Remove sediment from tank bottom
- Implement the pumping & servicing of septic tanks
- Activate septic systems
- Protect the septic field from vehicles and equipment

Achievement Criteria:

The apprentice shall complete an examination on the correct procedures and steps taken to implement the replacement of Piping and Service Hot Water Tanks and the correct servicing of septic systems and fields with a minimum score of 70%.

* All work with an asterisk is required to be done by either a BCSA certified/licensed contractor or by an RBMW with an Electrical and/or Gas Endorsement.

** All work with a double asterisk is required to be done by a Certified Waste Practitioner or Professional Engineer in BC.

Note: *In British Columbia, all gas and electrical contractors doing regulated work are required, under the *Safety Standards Act*, to hold a valid license issued by the BC Safety Authority. The license ensures the contractor and the people employed by the contractor are qualified and can perform the work safely. Licenses must be renewed annually and require certain qualifications are met, including a \$10,000 surety bond. The RBMW program and training does not extend to these areas of technical training and/or certification.

LINE J REPAIR AND MAINTAIN PLUMBING

Competency: J4 Identify and Locate Plumbing Problems

Learning Objectives:

After completion of the competency, the apprentice will be able identify and locate plumbing problems, identification of mold and the tools needed for general maintenance.

LEARNING TASKS

1. Identify and locate areas of mold
2. Identify and locate clogged drain and vent lines
3. Identify and locate leaking plumbing lines
4. Identify and locate shut off valves

CONTENT

- Around water tanks
- Bathrooms
- Sweating cold water lines
- Leaking pipes
- Use various types of snakes and augers to unplug lines
- Water lines
- Drain lines
- Fixture shut off valve
- System shut off valve
- Main water shut off valve
- Fuel shut off valve

Achievement Criteria:

The apprentice shall complete a written assessment on the identification and location of plumbing problems, areas of mold in a given workplace situation, identification and location of clogged drain lines and leaking plumbing lines and the procedures used to identify and locate shut off valves to the satisfaction of the instructor; with a minimum score of 70% in a multiple choice examination.

LINE J REPAIR AND MAINTAIN PLUMBING

Competency: J5 Assess the need for a Journeyperson and or Licensed Contractor

Learning Objectives:

After completion of the competency, the apprentice will be able to accurately describe the parameters used for assessment and the indicators used to assess the need for bringing in a journeyman to identify the extent of repairs or replacement required.

LEARNING TASKS	CONTENT
1. Assess the need for a journey person or licensed contractor to identify the extent of repairs or replacement of plumbing.	

Achievement Criteria:

The apprentice shall complete a written assessment dealing with the parameters surrounding identification and Assessment for the need for a Journey Person with a minimum score of 70%.

Note: In British Columbia, all gas and electrical contractors doing regulated work are required, under the *Safety Standards Act*, to hold a valid license issued by the BC Safety Authority. The license ensures the contractor and the people employed by the contractor are qualified and can perform the work safely. Licenses must be renewed annually and require certain qualifications are met, including a \$10,000 surety bond. The RBMW program and training does not extend to these areas of technical training and/or certification.

A journeyperson plumber or apprentice plumber is required to perform installation, alteration or repairs on a plumbing system unless you are the registered owner and occupant or intended occupant of a single family dwelling in which the plumbing work will occur, and can provide evidence that you can satisfactorily complete the work. BC Building Code Division B – Part 7.1.4.1(1) (a-c).

LINE K REPAIR AND MAINTAIN ROOFING

Competency: K1 Identify Roofing Materials

Learning Objectives:

After completion of the competency, the apprentice will be able to demonstrate the ability to determine roofing materials and gutter systems to be used on a given project.

LEARNING OBJECTIVES

1. Identify roofing materials

2. Identify types of flashings

3. Identify miscellaneous roofing products

4. Roofing terms

5. Identify gutters and down spouts

CONTENT

- Cedar shakes and shingles
- Asphalt shingles
- Metal shingles
- Clay tile
- Metal paneling
- Rolled roofing
- Build-up roofing (flat)

- Valley
- Wall
- Drip edge
- Step
- Vents

- Roofing felts
- Sealants and solvents
- Roof patch
- Neoprene closures
- Fasteners

- Slope
- Pitch
- Overhang
- Gable
- Ridge
- Flat Roof

- Type and shape
- Metal
- Vinyl
- Sealers
- Splash pads

Achievement Criteria:

The apprentice shall complete a written and/or practical assessment on the identification of roofing materials, when each is used and in what circumstances, and identify the various terms and materials used in roofing; and identify and describe roofing materials, identify and describe the use of miscellaneous roofing materials, identify and describe the use of flashings and flashing material, identify types and materials for gutters and downspouts, identify location of splash pads; with a minimum score of 70%.

LINE K REPAIR AND MAINTAIN ROOFING

Competency: K2 Repair, Maintain and Replace Gutters and Down Spouts

Learning Objectives:

After completion of the competency, the apprentice will demonstrate the ability to repair and maintain gutter systems.

LEARNING TASKS

1. Repair and maintain gutters

2. Repair and maintain down spouts

CONTENT

- Inspect and clean gutters
- Seal any leaks
- Replace missing or broken gutters

- Inspect and secure fasteners
- Seal joints
- Replace missing or broken down spouts
- Replace or install splash pads

Achievement Criteria:

The apprentice shall complete a written and practical assessment describing the proper repair and replacement of gutters and down spouts, procedures for inspection; and be able to inspect, clean and seal gutters, replace missing or broken gutters, inspect, fasten and seal down spouts, replace missing or damaged down spouts, replace or install splash pads to the satisfaction of the Instructor, with a minimum score of 70%.

LINE K REPAIR AND MAINTAIN ROOFING

Competency: K3 Repair and Replace Flashings

Learning Objectives:

After completion of the competency, the apprentice will demonstrate the ability to repair and replace flashing.

LEARNING TASKS

1. Inspect flashing
2. Replace flashing

CONTENT

- Secure
- Weather proof
- Remove damaged flashing
- Install new flashing
- Seal flashing
- Refasten flashing

Achievement Criteria:

The apprentice shall complete a written and practical assessment to describe and inspect flashing to ensure it is secure and weather proof, and to replace missing or damaged flashing, with a minimum score of 70% in a multiple-choice examination.

LINE K REPAIR AND MAINTAIN ROOFING

Competency: K4 Repair and Maintain Shakes and Shingles

Learning Objectives:

After completion of the competency, the apprentice will be able to determine the procedures needed to repair and maintain shingles.

LEARNING TASKS

1. Inspect and identify the need for repairs
2. Describe the repairs to shingle roofs
3. Install temporary covering

CONTENT

- Lifting shingles
- Missing shingles
- Loose or missing fasteners
- Eave protection
- Ice damming

- Roof patch
- Sealants
- Re-nail shingles
- Replace shingles

- Install tarps or poly to cover leaks
- Install plywood to cover holes

Achievement Criteria:

The apprentice shall complete a written assessment covering the procedures needed to repair and maintain shingles, and install temporary covering to stop leaks on damaged roofs; with a minimum score of 70% in a multiple-choice examination.

LINE K REPAIR AND MAINTAIN ROOFING

Competency: K5 Repair and Maintain Panel Roofing Systems

Learning Objectives:

After completion of the competency, the apprentice will be able to repair and maintain Panel Roofing Systems.

LEARNING TASKS

1. Inspect and identify different roofing panel systems
2. Determine the need for fastener replacement
3. Determine the need for caulking
4. Repair or replace loose or damaged panels

CONTENT

- Panel locking systems
- Corrugated
- Type of metal sheathing
- Missing screws
- Worn out washers
- Weather proofing
- Type of caulking
- Neoprene closures
- Inspect for mold or moisture problems
- Identify fastener problems
- Identify other problems

Achievement Criteria:

The apprentice shall complete a written and/or practical assessment identifying various types of roofing panel systems, demonstrating the need to replace fasteners, demonstrate the need for applying caulking, make repairs to, or replace damaged or missing panels to the satisfaction of the Instructor; with a minimum score of 70% in a multiple-choice examination.

LINE K REPAIR AND MAINTAIN ROOFING

Competency: K6 Apply Roof Patching Materials

Learning Objectives:

After completion of the competency, the apprentice will prepare and patch asphalt shingle roofs.

LEARNING TASKS

1. Surface preparation
2. Apply roof patching materials

CONTENT

- Roof inspection
- Clean and free of debris
- Compatible materials
- Fibre gum
- Solvents
- Peel and stick
- Temporary covering

Achievement Criteria:

The apprentice shall complete a written and/or practical assessment to properly prepare surfaces for roof patching, select and apply the correct roof patching materials to the satisfaction of the Instructor, with a minimum score of 70 %.

LINE K REPAIR AND MAINTAIN ROOFING

Competency: K7 Repair and Maintain Venting Systems

Learning Objectives:

After completion of the competency, the apprentice will repair and maintain all aspects of venting systems.

LEARNING OBJECTIVES

1. Gable end vents
2. Replace or repair roof vents
3. Repair or replace whirly birds
4. Repair or replace soffit venting
5. Describe other venting areas
6. Identify potential venting problems

CONTENT

- Match existing materials
- Match existing materials
- Caulk and seal
- Match existing material
- Caulk and Seal
- Lubricate
- Match existing materials
- Clean venting
- Bathrooms
- Kitchens
- Dryer vents
- Mold
- Moisture problems
- Heat build up

Achievement Criteria:

The apprentice shall complete a written and/ or practical assessment to repair or replace gable end vents, repair or replace roof vents, repair or replace whirly birds, describe areas requiring venting, and identify potential venting problems to the satisfaction of the Instructor, with a minimum score of 70% theory.

LINE K REPAIR AND MAINTAIN ROOFING

Competency: K8 Repair Roof Decks and Sheathing

Learning Objectives:

After completion of the competency, the apprentice will describe the need for repair of roof decking, select the correct materials, install backing and make repairs to roof decking.

LEARNING TASKS

1. Identify roof decking requirements

2. Repair minor damage to roof decking

CONTENT

- Materials
- Backing
- Inspect trusses

- Square the hole
- Install backing
- Install sealer or caulking
- Replace shingles

Achievement Criteria:

The apprentice shall complete a written examination on the repair of Roof Decks and Sheathing with a minimum score of 70% in a multiple-choice examination.

LINE K REPAIR AND MAINTAIN ROOFING

Competency: K9 Identify Roofing and Weatherproofing Problems

Learning Objectives:

After completion of the competency, the apprentice will describe methods of inspection and procedures for identifying roofing and weather proofing problems.

LEARNING TASKS

1. Inspect roofs and identify problems

CONTENT

- Moisture
- Mold
- Vegetation
- Ventilation
- Ice damming
- Underlayment
- Insect
- Aging
- Wind
- Insects
- Improper installation

2. Describe methods of roof repair

- Re-nail
- Replace shingles
- Replace flashing
- Caulking
- Re fasten metal panels
- Replace vents

Achievement Criteria:

The apprentice shall complete a written assessment on the inspection and identification of methods of roof repair and problems, with a minimum score of 70% in a multiple-choice examination.

LINE K REPAIR AND MAINTAIN ROOFING

Competency: K10 Assess the Need for a Journeyperson and/or Licensed Contractor

Learning Objectives:

After completion of the competency, the apprentice will describe the methods and parameters used to assess the need for a journey person.

LEARNING TASKS

1. Identify the need for a journey person

CONTENT

- To assess the extend of repairs needed
- Renovations
- Additions

Achievement Criteria:

The apprentice shall complete a written assessment with a minimum score of 70% in a multiple-choice examination, describing the procedures and parameters used in identifying the necessity to bring in a journey person for assistance.

LINE L REPAIR AND MAINTAIN FLOORING

Competency: L1 Identify Flooring Materials

Learning Objectives:

After completion of the competency, the apprentice will describe the accurate assessment and procedures used to identify flooring materials.

LEARNING TASKS

1. Identify and describe the different types of carpets and underlay
2. Identify and describe the different types of sheet goods
3. Identify the different types of hardwood flooring
4. Identify and describe the different types of ceramic tiles
5. Identify adhesives and their uses for fastening carpet, sheet goods and ceramic tiles
6. Identify types of grout used for ceramic tiles

CONTENT

- Underlay
- Chipped foam
- Foam
- Rubber
- Carpet
- Tufted cut pile
- Loop pile
- Woven
- Sheet vinyl
- Linoleum
- Floor tiles
- Glued/nailed
- Floating
- Pre-finished
- Solid hardwoods
- Flat finish floor tiles
- Matt finish floor tiles
- Gloss finish floor tiles
- Ceramic wall tiles
- Multi-purpose
- Contact
- Seaming
- Cement slurry
- Other

Achievement Criteria:

The apprentice shall complete a written assessment identifying the different types of carpet and underlay materials, different types of sheet goods, different types of ceramic tiles used, different types of adhesives, the type of cement used to apply ceramic tiles and identifying ceramic tile grout; with a minimum score of 70% in a multiple-choice examination.

LINE L PERFORM FLOORING REPAIRS AND MAINTENANCE

Competency: L2 Prepare Substrate for Flooring Materials (Lino, Tile and Carpet)

Learning Objectives:

After completion of the competency, the apprentice will demonstrate the methods and procedures used to prepare a sub-floor for flooring materials.

LEARNING TASKS	CONTENT
1. Install new underlayment over existing flooring	
2. Replace or repair existing sub-floor	<ul style="list-style-type: none"> • Test for squeaks • Re-nail existing sub-floor • Level existing sub-floor • Check for moisture damage • Remove contaminants • Remove existing sub-floor
3. Install underlayment or U-lay	<ul style="list-style-type: none"> • Match existing materials
4. Identify and cover up asbestos containing flooring materials	<ul style="list-style-type: none"> • Taking care of personal protective equipment and breathing protection

Achievement Criteria:

The apprentice shall complete a written and/or practical assessment to successfully demonstrate how to install new underlayment materials, replace or repair existing sub-floor materials, level existing sub-floors and install underlayment or U-lay materials; with a minimum score of 70% on theory.

LINE L REPAIR AND MAINTAIN FLOORING

Competency: L3 Repair and Replace Ceramic Tiles

Learning Objectives:

After completing the competency, the apprentice will demonstrate the ability to repair and replace ceramic tiles.

LEARNING TASKS

1. Demonstrate the repair and replacement of ceramic tiles

2. Apply grouting and water proofing as needed

CONTENT

- Remove damaged tiles and debris
- Install new tiles
- Matching existing materials

- Dry-set grout
- Mixing grout
- Applying grout
- Curing grout
- Cleaning tile surfaces
- Matching existing materials

Achievement Criteria:

The apprentice shall complete a written assessment on how to repair or replace damaged or missing ceramic tiles and successfully demonstrate the procedures used in repairing tiles and applying grout to the satisfaction of the instructor; with a minimum score of 70% theory.

LINE L

REPAIR AND MAINTAIN FLOORING

Competency: **L4 Repair, Maintain and Replace Underlay, Carpets, Rolled Goods and Tile**

Learning Objectives:

After completion of the competency, the apprentice will demonstrate the ability to repair, maintain and replace underlay, carpets, rolled goods, and tiles.

LEARNING TASKS

1. Identify the types of underlay, and demonstrate the installation over sub-floors
2. Demonstrate installing underlay repair work
3. Identify types of carpet and demonstrate repairing and installing carpet
4. Identify types of sheet goods and demonstrate the repair and installation

CONTENT

- Chipped foam
- Foam
- Rubber
- Repair or replace underlay
- Repair carpets
- Install carpets
- Linoleum
- Vinyl floor covering
- Floor tiles

Achievement Criteria:

The apprentice shall complete a written and/or practical assessment to demonstrate the installation and repair of underlay materials, demonstrate the installation and repair of carpets, and successfully demonstrate the installation and repairs of sheet goods to the satisfaction of the instructor; with a minimum score of 70% theory.

LINE L REPAIR AND MAINTAIN FLOORING

Competency: L5 Maintain Hardwood Flooring

Learning Objectives:

After completion of the competency, the apprentice will demonstrate the ability to repair and maintain hardwood floors.

LEARNING TASKS

1. Describe the repairs of hardwood flooring
2. Describe the maintenance of hardwood floors

CONTENT

- Re-nail
- Re-glue
- Sanding
- Re-coat
- Cleaning
- Waxing

Achievement Criteria:

The apprentice shall complete a written and/or practical assessment to successfully demonstrate repairs to and maintenance of hardwood flooring; with a minimum score of 70% theory.

LINE L REPAIR AND MAINTAIN FLOORING

Competency: L6 Identify and Locate Flooring Problems

Learning Objectives:

After completion of the competency, the apprentice will demonstrate the procedures used in identifying and locating flooring problems.

LEARNING TASKS

1. Identify and locate moisture problems
2. Identify and locate squeaky floor areas
3. Identify and locate sagging floor areas
4. Identify and locate carpet problems
5. Identify and locate sheet good floor problems
6. Identify and locate floor tile problems

CONTENT

- Check for mold and rot

- Re-nail

- Level areas

- Tears or bunching

- Loose areas, tears or breaks

- Loose, damaged or missing tile

Achievement Criteria:

The apprentice shall complete a written assessment to identify, locate and correct: moisture problems, correct squeaky floor problems, sagging floor areas, carpet problems, sheet good flooring problems, and floor tile problems; with a minimum score of 70% theory.

LINE L REPAIR AND MAINTAIN FLOORING

Competency: L7 Repair and Lay Vinyl Flooring

Learning Objectives:

After completion of the competency, the apprentice will demonstrate the ability to repair and lay vinyl flooring.

LEARNING TASKS

1. Repair vinyl flooring
2. Lay new vinyl flooring

CONTENT

- Spot repairs
- Install new flooring in small areas

Achievement Criteria:

The apprentice shall complete a written and/or practical assessment of the procedures used in installing vinyl flooring to complete spot repairs to vinyl flooring and lay new vinyl flooring in small areas; with a minimum score of 70% theory.

LINE L

REPAIR AND MAINTAIN FLOORING

Competency: **L8 Assess the Need for a Journeyperson and/or Licensed Contractor**

Learning Objectives:

After completion of the competency, the apprentice will be able to verbally describe the need for bringing in a journey person.

LEARNING TASKS

1. Identify the need for a journey person

CONTENT

- To assess the extend of repairs required
- For extensive repair work
- For renovations

Achievement Criteria:

Complete a written or verbal assessment on the procedures used in identifying and assessing the need for a journey person with a minimum score of 70% theory.

LINE M REPAIR AND MAINTAIN HEATING AND VENTILATION SYSTEMS

Competency: M1 Identify Heating System Materials

Learning Objectives:

After completion of the competency, the apprentice will describe heating system materials and its components.

LEARNING TASKS

1. Identify duct repair materials

2. Identify duct components

3. Identify furnace components

CONTENT

- Duct tape
- Caulking
- Fasteners

- Registers
- Duct hangers
- Diffusers

- Belts
- Filters
- Fans
- Fan motors

Achievement Criteria:

The apprentice shall complete a written assessment on how to identify duct repair materials, duct components and furnace components; with a minimum score of 70% in a multiple-choice examination.

LINE M REPAIR AND MAINTAIN HEATING AND VENTILATION SYSTEMS

Competency: M2 Implement Replacement of thermostats

Learning Objectives:

After completion of the competency, the apprentice will describe the replacement of damaged thermostats and the installation of programmable thermostats.

LEARNING TASKS

1. Replace damaged thermostats

CONTENT

- Manufacturers' recommendations
- Programmable

Achievement Criteria:

The apprentice shall complete a written assessment covering the replacement and installation of thermostats with a minimum score of 70% in a multiple-choice examination.

Note: In British Columbia, all gas and electrical contractors doing regulated work are required, under the *Safety Standards Act*, to hold a valid license issued by the BC Safety Authority. The license ensures the contractor and the people employed by the contractor are qualified and can perform the work safely. Licenses must be renewed annually and require certain qualifications are met, including a \$10,000 surety bond. The RBMW program and training does not extend to these areas of technical training and/or certification.

LINE M REPAIR AND MAINTAIN HEATING AND VENTILATION SYSTEMS

Competency: M3 Implement Replacement of Baseboard Heater Thermostats

Learning Objectives:

After completion of the competency, the apprentice will demonstrate the correct procedures for replacing a Baseboard Heater Thermostat.

LEARNING TASKS

1. Implement Replacement of baseboard heater thermostats*

CONTENT

- Contact journey person and/or licensed contractor
- Lock out the power
- Remove the damaged thermostat
- Install new thermostat
- Test the unit

Achievement Criteria:

The apprentice shall complete a written and/or verbal assessment on the replacement of damaged baseboard heater thermostats, installation of a new thermostat, and testing of the unit; with a minimum score of 70% theory.

* All work with an asterisk is required to be done by either a BCSA certified/licensed contractor or by an RBMW with an Electrical and/or Gas Endorsement

LINE M REPAIR AND MAINTAIN HEATING AND VENTILATION SYSTEMS

Competency: M4 Inspect and Maintain Chimneys

Learning Objectives:

After completion of the competency, the apprentice will describe the maintenance of chimneys, and chimney parts.

LEARNING TASKS

1. Inspect chimneys for gas, oil and wood/electric furnaces
2. Inspect fire place chimneys
3. Repair damages and install new rain caps
4. Replace metal chimneys
5. Clean chimneys

CONTENT

- Inspect for damage
- Check for rain caps
- Identify need for cleaning
- Inspect for damage
- Check for rain caps
- Identify need for cleaning

Achievement Criteria:

The apprentice shall complete a written assessment on how to: inspect furnace and fireplace chimneys and make repairs as needed; install new rain caps where needed; clean chimneys or have the chimneys cleaned; and replace metal chimneys or have them replaced; with a minimum score of 70% theory.

LINE M REPAIR AND MAINTAIN HEATING AND VENTILATION SYSTEMS

Competency: M5 Inspect and Replace Furnace Belts, Fans and Filters

Learning Objectives:

After completion of the competency, the apprentice will demonstrate the ability to replace furnace belts, fans, filters, and other components.

LEARNING TASKS

CONTENT

Introduction:

1. Inspect fans, belts and filters
2. Replace fans, belts and filters

- Gas Safety Regulation
- Worn belts
- Dirty filters
- Fans out of alignment

Clean furnaces

- Wood / Electric
- Gas
- Propane
- Oil

4. Clean oil tanks
5. Replace oil furnace components

- Oil filters
- Oil pumps
- Nozzles
- Electrodes

Achievement Criteria:

Complete a written assessment on how to inspect and clean furnaces, replace furnace components: fans, belts and filters, check the efficient operation of furnaces and replace oil furnace components; with a minimum score of 70% theory.

Note: In British Columbia, all gas and electrical contractors doing regulated work are required, under the *Safety Standards Act*, to hold a valid license issued by the BC Safety Authority. The license ensures the contractor and the people employed by the contractor are qualified and can perform the work safely. Licenses must be renewed annually and require certain qualifications are met, including a \$10,000 surety bond. The RBMW program and training does not extend to these areas of technical training and/or certification.

LINE N PERFORM RBMW ADMINISTRATIVE DUTIES

Competency: N1 Maintain Records

Learning Objectives:

After completion of the competency, the apprentice will demonstrate the use of and explain the parameters required for log books, times sheets, work orders and unit files, and the procedures used in inventory control.

LEARNING TASKS

1. Demonstrate the use of logbooks

2. Demonstrate the use of time sheets

3. Demonstrate the use of work orders

4. Demonstrate the use of unit files

5. Inventory

CONTENT

- WCB
- Equipment
- Vehicles

- Add to unit file on completion

- Showing all work done on the unit

- Materials
- Equipment
- Tools

Achievement Criteria:

The apprentice shall complete a written and/or practical assessment accurately demonstrating the use of log books and time sheets, work orders, unit files, and inventory control to the satisfaction of the Instructor with a minimum score of 70% theory.

LINE N PERFORM RBMW ADMINISTRATIVE DUTIES

Competency: N2 Complete Forms and Permits

Learning Objectives:

After completion of the competency, the apprentice will fill out application forms for permits, maintenance, renovation, unit condition, and funding.

LEARNING TASKS

1. Fill out applications for permits

2. Fill out forms

CONTENT

- Construction permits
- Burning permits
- Health permits

- Maintenance
- Renovation
- Unit Condition checklist
- Funding

Achievement Criteria:

The apprentice shall complete a simulated examination on applications and forms with a minimum score of 70%.

PROGRAM OUTLINE FOR LEVEL 3

LINE B USE SAFE WORK PRACTICES

Competency: B6 Use and Maintain Ladders, Scaffolding and Platforms

Learning Objectives:

After completion of the competency, the apprentice will describe the safe and effective use of ladders, scaffolding and platforms.

LEARNING TASKS

1. Describe WCB regulations regarding ladders
2. Describe WCB regulations regarding scaffolding
3. Describe the WCB regulations and describe the use of working platforms

CONTENT

- Step ladders
- Extension ladders
- Steel scaffolding
- Set up and use
- Set up and use
- Secure
- Outriggers

Achievement Criteria:

The apprentice shall complete a written assessment accurately defining and giving reasons for WCB regulations regarding ladders, scaffolding, and working, with a minimum score of 70%; and shall successfully demonstrate the safe use of working platforms to the satisfaction of the instructor.

LINE B USE SAFE WORK PRACTICES

Competency: B8 Identify Lockout Procedures

Learning Objectives:

After completion of the competency, the apprentice will accurately demonstrate locking out power to electrical circuits and to an entire unit.

LEARNING TASKS

1. Demonstrate the use of lockout procedures

CONTENT

- Electric power circuits
- Main electrical power breaker

Achievement Criteria:

The apprentice shall complete a written multiple-choice assessment on the proper identification of lock out procedures, with a minimum score of 70%.

LINE C PERFORM TRADES MATH AND FINANCIAL CALCULATIONS

Competency: C4 Perform Estimating Calculations for Materials and Services

Learning Objectives:

After completion of the competency, the apprentice will estimate and calculate materials and services used for a project.

LEARNING TASKS

1. Estimate material quantities
2. Estimate time requirements
3. Estimate manpower needs
4. Estimate tools and equipment needs

CONTENT

- Imperial and metric measurements
- Material list
- Number of hours or days required
- Number of men required
- Other trades required
- Own tools required
- Rental equipment needed
- Contractor equipment needed

Achievement Criteria:

The apprentice will complete a written assessment estimating the type and quantities of material required for a given project the number of hours required for a given project, the number of people required for a given project and the tools and equipment required to complete a given project with a minimum score of 70%.

LINE C PERFORM TRADES MATH AND FINANCIAL CALCULATIONS

Competency: C5 Perform Budget Calculations

Learning Objectives:

After completion of the competency, the apprentice will calculate the different aspects of estimation for project budgets using trade Math.

LEARNING TASKS

1. Obtain prices and costs of materials
2. Calculate labour costs
3. Calculate equipment rental costs
4. Monitor project costs
5. Stay within the projected maintenance budget

CONTENT

- Estimate project costs
- Estimate costs for a given project
- For a project
- Within budget
- Monitor maintenance costs

Achievement Criteria:

The apprentice will complete a written multiple-choice assessment to estimate and monitor costs of a given project, calculate the number of hours and the manpower needed for a given project, and stay within a given maintenance budget, with a minimum score of 70%.

LINE C PERFORM TRADES MATH AND FINANCIAL CALCULATIONS

Competency: C6 Prepare Basic Budget Spreadsheets

Learning Objectives:

After completion of the competency, the apprentice will demonstrate the ability to develop spreadsheets to estimate, create, and monitor budgets.

LEARNING TASKS

1. Basic templates

2. Create a spreadsheet

3. Insert and edit data

4. Format workbooks

5. View and print

6. Use formulas and functions

7. Add charts and pictures

8. Monitor project costs

9. Forecast for budgets

CONTENT

- To estimate project costs
- To monitor project costs
- To monitor maintenance costs
- To prepare budgets

- Computer and hand done spreadsheets
- Programs (Excel, MS Works)

- Set up from template and from scratch
- Formulas for calculations
- Functions

- Estimating
- Monitoring
- Forecasting budgets/cash flow

Achievement Criteria:

The apprentice shall complete a practical examination to set up basic budget spreadsheets to estimate and monitor costs of a given project; and prepare spreadsheets for budgets with a minimum score of 70%.

LINE D USE AND MAINTAIN TOOLS

Competency: D1 Use and Maintain Hand Tools

Learning Objectives:

After completion of the competency, the apprentice will describe the identification and maintenance of hand tools, and describe their uses.

LEARNING TASKS

1. Describe the use of carpentry tools used for electrical work and painting
2. Describe the use of tools for electrical work
3. Describe the use of testing tools used for electrical work
4. Describe the use of tools used for painting

CONTENT

- Hammers
- Chisels
- Saws

- Screw drivers
- Needle nose pliers

- Multi meter
- Circuit tester

- Brushes
- Rollers
- Scrapers
- Putty knives
- Sand paper

Achievement Criteria:

The apprentice shall complete a written assessment to describe the use of tools used for electrical work, tools used for painting, and the use of testing tools used for electrical work, with a minimum score of 70%.

LINE D USE AND MAINTAIN TOOLS

Competency: D5 Use Measuring and Testing Devices

Learning Objectives:

After completion of the competency, the apprentice will describe how to use electrical testing tools and what they are used for.

LEARNING TASKS

1. Describe the use of testing tools used for electrical work

CONTENT

- Multi meter
- Circuit tester

Achievement Criteria:

The apprentice shall complete a written assessment on the use of electrical testing tools, with a minimum score of 70%.

LINE D USE AND MAINTAIN TOOLS

Competency: D7 Use Lifting and Hoisting Equipment

Learning Objectives:

After completion of the competency, the apprentice will describe the safe use of lifting and hoisting equipment.

LEARNING TASKS	CONTENT
1. Describe WCB OHS Regulations Part 14 for <i>Cranes & Hoists</i> and Part 15 for <i>Rigging</i>	<ul style="list-style-type: none"> • WCB regulations Part 14 & 15
2. Describe safe methods of lifting loads with cranes and hoists	<ul style="list-style-type: none"> • Hoist types and uses • Loading
3. Describe the types and uses of rigging, hardware items, and methods of installing them	<ul style="list-style-type: none"> • Tag lines • Use and maintenance • Storage
4. Describe the use of hoisting equipment	<ul style="list-style-type: none"> • Rigging components • Sling configurations
5. Describe the maintenance and safe storage of rigging and hoisting equipment	<ul style="list-style-type: none"> • Hooking up • Basic knots and hitches
6. Describe methods to connect a tag line to a load, and to use a tag line safely	<ul style="list-style-type: none"> • Procedures • Safety tips
7. Describe signals for crane and hoist operations	<ul style="list-style-type: none"> • Hand signals for hoist and crane operations • Sound and light signals

Achievement Criteria:

The apprentice shall complete a written assessment describing WCB regulations related to hoists and rigging; the safe use of hand, sound and light signals when lifting or hoisting materials; the safe use of hoists and rigging; with a minimum score of 70%.

LINE D USE AND MAINTAIN TOOLS

Competency: D8 Use a Personal Computer

Learning Objectives:

After completion of the competency, the apprentice will demonstrate the ability to use a personal computer, its hardware and software such as Excel, Word, and email components.

LEARNING TASKS	CONTENT
1. Identify computer and components	<ul style="list-style-type: none"> • Central processing unit • Monitor • Key board
2. E-Mail	<ul style="list-style-type: none"> • Correspondence • Obtain prices • Obtain information
3. Word	<ul style="list-style-type: none"> • Unit files • Correspondence • Reports
4. Excel	<ul style="list-style-type: none"> • Estimating • Budgets • Project cost

Achievement Criteria:

The apprentice shall complete a written and practical assessment identifying the components of a computer; describing the use of E-Mail to obtain information and material prices; describing the use of Word for unit files, reports and correspondence; describing the use of Excel for budgets, estimating and tracking project costs; to the satisfaction of the instructor and with a minimum score of 70% on theory.

LINE E

DESCRIBE BUILDING STRUCTURE AND DESIGN

Competency:

E1 Apply Federal, Provincial and Local Codes and Bylaws

Learning Objectives:

After completion of the competency the apprentice will be able to identify relevant Provincial Codes for work to be performed or maintained.

LEARNING TASKS

1. Describe applicable sections of the BC Building Code related to residential units
2. Describe applicable sections of the BC Fire Code related to residential units and fire & life safety
3. Ensure that all electrical work is to the standard of the Electrical Code

CONTENT

- Review sections of the BC Building Code related to heating, chimneys, ventilation, & wall finishes (9.9; 9.10; 9.11; 9.18; 9.19; 9.25; 9.29; 9.31.6; 9.32; 9.33; 9.34; 9.36; Part 10)
- Egress: doors in a means of egress, obstructions, egress from dwelling units, signage, lighting, door hardware
- Alarms and detection systems (smoke, carbon monoxide)
- Service rooms
- Emergency lighting
- Firefighting (9.10.20)
- Fire protection for gas, propane, and electric ranges
- Sound control
- Crawlspace: access & ventilation
- Roof spaces: access & ventilation
- Heat transfer, air leakage, and condensation control
- Interior wall & ceiling finishes
- Service water heating facilities
- Ventilation
- Heating & air conditioning
- Electrical facilities
- Part 10: Energy and Water Efficiency
- Division B – Part 2: applicable sections for residential units

Achievement Criteria:

The apprentice shall complete a written assessment covering applicable elements of the current building codes related to the RBMW occupation, with a minimum score of 70%.

LINE E DESCRIBE BUILDING STRUCTURE AND DESIGN

Competency: E6 Identify Fire and Life Safety Systems

Learning Objectives:

After completion of the competency, the apprentice will describe fire and life safety related systems associated with the RBMW.

LEARNING TASKS

1. Identify related systems in relationship to other trade competencies
2. Identify statutory requirements regarding fire and life safety systems

CONTENT

- Fire Doors, crash hardware and door hold-opens
- Stairwell refuges
- Exit Signs and Emergency lighting
- Test & replace batteries
- Ventilation system shutdowns
- Smoke alarm devices – Standalone, battery or hardwired (not F/A system smoke detectors)
- Carbon monoxide detectors

Achievement Criteria:

The apprentice shall complete a written assessment identifying the fire code requirements and other systems related to fire and life safety systems; with a minimum score of 70%.

LINE I APPLY PUBLIC RELATIONS SKILLS

Competency: I2 Maintain Effective Home Owner and Tenant Relations

Learning Objectives:

After completion of the competency, the apprentice will describe the relationships and skills required by a RBMW to maintain effective homeowner/tenant relations.

LEARNING TASKS

1. Communicate with homeowner and tenant

2. Administration

CONTENT

- Professional & courteous
- Service approach
- Timely responses
- Notices & complaints
- Service requests
- Inspection requests
- Fire drills

- Correspondence
- Maintenance request forms
- Scheduling

Achievement Criteria:

The apprentice shall complete a written and/or practical assessment in individual and group settings, using various communication techniques to visibly demonstrate his or her interpersonal skills in dealing with others to the satisfaction of the Instructor with a minimum score of 70%.

LINE I APPLY PUBLIC RELATIONS SKILLS

Competency: I3 Conduct Home Owner and Tenant Orientations and Training

Learning Objectives:

After completion of the competency, the apprentice will demonstrate the ability to conduct orientation and training programs for tenants and homeowners.

LEARNING TASKS

1. Conduct orientation and training

CONTENT

- Responsibilities of landlord and tenant
- Operation of appliances, heating system, utilities
- Warranties
- Maintenance
- Residential Tenancy Act - BC

Achievement Criteria:

The apprentice shall complete a practical assessment of an orientation and training program for new tenants and homeowners to the satisfaction of the instructor based on a minimum score of 70%.

LINE I

APPLY PUBLIC RELATIONS SKILLS

Competency: I4 Liaise with Regulatory Officials and Inspectors

Learning Objectives:

After completion of the competency, the apprentice will demonstrate the ability to liaise with officials, inspectors, and agencies.

LEARNING TASKS

1. Communicate with Inspectors and other Officials

CONTENT

- Building
- Fire
- Health
- Engineers
- Other bodies & agencies

Achievement Criteria:

The apprentice shall complete a written and/or practical assessment to communicate with various officials, bodies, and agencies to the satisfaction of the instructor; based on a minimum score of 70%.

LINE M REPAIR AND MAINTAIN HEATING AND VENTILATION SYSTEMS

Competency: M6 Describe Heat Recovery Ventilation Systems

Learning Objectives:

After completion of the competency, the apprentice will describe HRV Systems, their operation, maintenance and how to troubleshoot problems.

LEARNING TASKS

1. Describe HRV systems, components, and how they work
2. Describe how HRVs operate
3. Describe routine maintenance, problems, and solutions

CONTENT

- Components
- Air distribution
- Balancing

- Controls
Operation

- Schedule
Troubleshooting

Achievement Criteria:

The apprentice shall complete a written multiple-choice assessment to describe HRV systems, their operation, routine maintenance, and how to troubleshoot problems and provide solutions; with a minimum score of 70%.

LINE M REPAIR AND MAINTAIN HEATING AND VENTILATION SYSTEMS

Competency: M7 Describe Basic Refrigeration and Boiler Theory

Learning Objectives:

After completion of the competency, the apprentice will describe basic refrigeration and boiler theory, and determine the criteria leading up to the need for a journeyperson and/or licensed contractor.

LEARNING TASKS

1. Describe refrigeration & air conditioning fundamentals
2. Identify maintenance schedules and assess need for a journeyperson and/or licensed contractor
3. Describe boiler fundamentals
4. Identify maintenance schedule and assess need for a journeyperson and/or licensed contractor

CONTENT

- Refrigeration & air conditioning occupational description
- Basics
- Maintenance schedule
- Journeyperson and/or licensed contractor required
- Boilermaker occupational description
- Basics
- Maintenance schedule
- Journeyperson and/or licensed contractor required

Achievement Criteria:

The apprentice shall complete a written assessment describing the fundamentals of refrigeration and air conditioning, identifying maintenance scheduling and the need for a journeyperson and/or licensed contractor; describing boiler fundamentals, identifying maintenance scheduling and the need for a journeyperson and/or licensed contractor; with a minimum score of 70%.

LINE M REPAIR AND MAINTAIN HEATING AND VENTILATION SYSTEMS

Competency: M8 Identify and Locate Heating Problems

Learning Objectives:

After completion of the competency, the apprentice will demonstrate the ability to identify and locate heating problems based on the parameters and techniques used in the trade.

LEARNING TASKS	CONTENT
1. Locate problems in the heating system	<ul style="list-style-type: none"> • No heat • Not enough heat • Too much heat • Noises • Odours
2. Check fuel system	
3. Check electrical system	<ul style="list-style-type: none"> • Fuel lines open
4. Check ductwork for blockages or dirty filters	<ul style="list-style-type: none"> • Power on
5. Check for sufficient combustion air	
6. Check chimney	

Achievement Criteria:

The apprentice shall complete a written and/or practical assessment to locate heating problems, inspect and check the fuel system, check for combustion air, check for blockages in ductwork and chimneys and describe the processes used in different real world situations; based on a minimum score of 70%.

Note: In British Columbia, all gas and electrical contractors doing regulated work are required, under the *Safety Standards Act*, to hold a valid license issued by the BC Safety Authority. The license ensures the contractor and the people employed by the contractor are qualified and can perform the work safely. Licenses must be renewed annually and require certain qualifications are met, including a \$10,000 surety bond. The RBMW program and training does not extend to these areas of technical training and/or certification.

LINE M REPAIR AND MAINTAIN HEATING AND VENTILATION SYSTEMS

Competency: M9 Identify and Test for Ventilation Problems

Learning Objectives:

After completion of the competency, the apprentice will distinguish the identification, location and testing of ventilation problems.

LEARNING TASKS

1. Identify problems in the ventilation system
2. Clear ductwork and screens

CONTENT

- Bathroom fans
- Kitchen exhaust
- Dryer vents
- Attic ventilation

Achievement Criteria:

The apprentice shall complete a written and practical assessment to identify and locate problems with ventilation systems, replace fans that are not working, clean screen on ventilation outlets, clear ductwork if required; with a minimum score of 70%.

LINE M REPAIR AND MAINTAIN HEATING AND VENTILATION SYSTEMS

Competency: M10 Perform Minor Repairs and Implement Maintenance of Furnaces

Learning Objectives:

After completion of the competency, the apprentice will describe oil furnace systems, determine and correct problems, and assess the need for a journeyman and/or licensed contractor.

LEARNING TASKS

1. Identify components of an oil furnace heating system
2. Describe maintenance and troubleshooting of furnace
3. Assess need for a journeyman and/or licensed contractor

CONTENT

- Components: tanks, lines, filter, pump, transformer, burner assembly
- Lockout
- Maintenance
- Troubleshooting
- Journeyman and/or licensed contractor required

Achievement Criteria:

The apprentice shall complete a written assessment to identify oil furnace system components; describe maintenance and troubleshooting of oil furnaces; and assess the need for a journeyman mechanic; with a minimum score of 70%.

LINE M REPAIR AND MAINTAIN HEATING AND VENTILATION SYSTEMS

Competency: M11 Assess the Need for a Journeyperson and/or Licensed Contractor

Learning Objectives:

After completion of the competency, the apprentice will be able to assess the need for a journeyperson and/or licensed contractor to correct heating problems or provide maintenance.

LEARNING TASKS

1. Assess the need for a journey person/licensed contractor to assist you

CONTENT

- Work needs more than your expertise
- Work required is more than a minor repair

Achievement Criteria:

The apprentice shall complete a written assessment to identify, locate and test for possible heating problems; evaluate heating repairs, taking into account all factors and considerations before calling in a qualified journey person and determine the parameters used to assess if a journey person is required for a given project; based on a minimum score of 70% in a multiple choice examination.

Note: In British Columbia, all gas and electrical contractors doing regulated work are required, under the *Safety Standards Act*, to hold a valid license issued by the BC Safety Authority. The license ensures the contractor and the people employed by the contractor are qualified and can perform the work safely. Licenses must be renewed annually and require certain qualifications are met, including a \$10,000 surety bond. The RBMW program and training does not extend to these areas of technical training and/or certification.

LINE N PERFORM RBMW ADMINISTRATIVE DUTIES

Competency: N5 Estimate Costs Including Sub-Contractor Prices

Learning Objectives:

After completion of the competency, the apprentice will be able to estimate all project costs.

LEARNING TASKS

1. Identify project costs

2. Describe the use of estimate sheets

3. Determine total project costs

CONTENT

- Materials
- Labor
- Subcontractors
- Engineers, design, other
- Delivery costs & miscellaneous
- Permits and fees
- Legal fees
- Overhead
- Profit
- Contingency fund

- Spreadsheet use

- Material quantities & pricing
- Labor costs
- Subcontractor costs
- Other costs as noted above
- Allowing for contingencies
- Adding in overhead and profit
- Total cost of project

Achievement Criteria:

The apprentice shall complete a written/practical assessment to identify project costs, using estimate sheets to determine project costs; with a minimum score of 70%.

LINE N PERFORM RBMW ADMINISTRATIVE DUTIES

Competency: N6 Perform Maintenance Planning

Learning Objectives:

After completion of the competency, the apprentice will explain and perform maintenance planning duties.

LEARNING TASKS

1. Describe different types of maintenance
2. Describe short and long term planning
3. Describe work order use
4. Explain procurement of equipment, tools, materials, and supplies for cost savings
5. Explain scheduling of deliveries, contractors, and equipment use for cost savings

CONTENT

- Emergency maintenance
- Preventative maintenance
- Regular maintenance
- Extra-ordinary maintenance

- Renovations
- Replacement

- Work orders

- Individual and group rates
- Discounts and buying in bulk

- Contractors
- Equipment rental
- Deliveries

Achievement Criteria:

The apprentice shall complete a written assessment describing the different types of maintenance; the use of work orders; and explain how to gain cost savings through the procurement of goods and scheduling of work and equipment; with a minimum score of 70%.

LINE O DESCRIBE BASIC BUILDING SCIENCES

Competency: O1 Describe the Forces Acting on a Building

Learning Objectives:

After completion of the competency, the apprentice will describe forces acting on a building.

LEARNING TASKS

1. Describe Units of measurement

CONTENT

- Force
- Mass
- Acceleration
- Gravity
- Pressure

2. Describe types of loads

- Wind loads
- Snow and rain loads
- Earthquake loads
- Occupant loads
- Uniformly distributed loads
- Point loads
- Live and dead loads
- Deflection of beams

3. Describe the forces acting on a building envelope

- Compression, tension, torsion, shear
- Hydrostatic forces
- Soil gas pressure
- Climatic forces: sun, UV rays, thermal gain, expansion
- Temperature and pressure differences
- Wind
- Wind driven rain and snow

Achievement Criteria:

The apprentice shall complete a written multiple-choice assessment describing units of measurement, loads, and forces acting on a building envelope; with a minimum score of 70%.

LINE 0 DESCRIBE BASIC BUILDING SCIENCES

Competency: O2 Describe Heat and Sound Transfer Principles

Learning Objectives:

After completion of the competency, the apprentice will describe the principles of heat and sound transfer.

LEARNING TASKS

1. Describe methods of heat transmission
2. Describe R/RSI Values
3. Describe sound transmission

CONTENT

- Conduction
- Convection
- Radiation
- Combined methods: Thermal bridging

- Different building materials

- Absorption and reflection
- Vibration
- Sound Transmission Class

Achievement Criteria:

The apprentice shall complete a written multiple-choice assessment demonstrating knowledge of the principles of heat and sound transfer; with a minimum score of 70%.

LINE O DESCRIBE BASIC BUILDING SCIENCES

Competency: O3 Describe Air and Moisture Movement in a Building

Learning Objectives:

After completion of the competency, the apprentice will describe the principles air and moisture movement in a building.

LEARNING TASKS

1. Describe natural and mechanical ventilation

2. Describe methods of moisture movement

CONTENT

- Principal exhaust fan
- Make-up air
- Soil gas
- Air infiltration and air exfiltration
- Stack effect
- Flue effect
- Pressure differentials
- Combustion air

- Phases of moisture: solid, liquid, vapour
- Relative humidity
- Condensation
- Gravity flow
- Capillary action
- Vapour diffusion
- Air flow

Achievement Criteria:

The apprentice shall complete a written multiple-choice assessment demonstrating knowledge of the principles of air and moisture movement in a building; with a minimum score of 70%.

LINE P REPAIR AND MAINTAIN ELECTRICAL

Competency: P1 Identify Electrical Materials

Learning Objectives:

After completion of the competency, the apprentice will describe the uses and identification of electrical materials including ground connections, main panel and breakers, service entrances, switches and receptacles, light fixtures and extension cords.

LEARNING TASKS	CONTENT
1. Identify service entrance	<ul style="list-style-type: none"> • Wiring, insulation • Mast, fasteners
2. Identify ground connections	<ul style="list-style-type: none"> • Water system • Ground rods • Ground wires
3. Identify main panel and type of breakers	<ul style="list-style-type: none"> • Main panel/make • Breaker size • GFI ground fault interrupter
4. Identify switches and receptacles	<ul style="list-style-type: none"> • Single pole switch • Double pole switch • Three way switch • Dimmer switch • Two prong receptacle • Three prong receptacle • Split receptacle • Special receptacles
5. Identify light fixtures	<ul style="list-style-type: none"> • GFI receptacles • Indoor light fixtures • Outdoor light fixtures • Track lighting • Low voltage lighting • Sensor lights
6. Extension cords	<ul style="list-style-type: none"> • Type • Size • Rating • Two-wire, three-wire

Achievement Criteria:

The apprentice shall complete a written multiple-choice assessment to identify the service entrance, required ground wiring and ground rods, the main panel, the make of the main panel, and the size and type of the breakers for individual circuits, GFI ground fault interrupter breakers, and receptacles, various types of switches, various types of receptacles, and various types of light fixtures and extension cords; with a minimum score of 70%.

Note: In British Columbia, all gas and electrical contractors doing regulated work are required, under the *Safety Standards Act*, to hold a valid license issued by the BC Safety Authority. The license ensures the contractor and the people employed by the contractor are qualified and can perform the work safely. Licenses must be renewed annually and require certain qualifications are met, including a \$10,000 surety bond. The RBMW program and training does not extend to these areas of technical training and/or certification.

LINE P REPAIR AND MAINTAIN ELECTRICAL

Competency: P2 Replace and Relocate Existing Receptacles and Switches

Learning Objectives:

After completion of the competency, the apprentice will perform the replacement of existing light switches and cover plates, existing receptacle and cover plates, and test and replace GFI receptacles.

LEARNING TASKS

1. Replace existing light switches and cover plates*
2. Test and replace GFI receptacles*
3. Replace receptacles and cover plates*

CONTENT

- Single pole switch
- Three way switch
- Dimmer switch
- Switch ratings

- Test and replace if needed

- Standard receptacle
- Split receptacle
- Ratings

Achievement Criteria:

The apprentice shall complete a practical demonstration performing the testing and replacement of existing receptacles and switches; to the satisfaction of the instructor.

* All work with an asterisk is required to be done by either a BCSCA certified/licensed contractor or by an RBMW with an Electrical Endorsement.

Note: In British Columbia, all gas and electrical contractors doing regulated work are required, under the *Safety Standards Act*, to hold a valid license issued by the BC Safety Authority. The license ensures the contractor and the people employed by the contractor are qualified and can perform the work safely. Licenses must be renewed annually and require certain qualifications are met, including a \$10,000 surety bond. The RBMW program and training does not extend to these areas of technical training and/or certification.

LINE P REPAIR AND MAINTAIN ELECTRICAL

Competency: P3 Test for Household Appliance Problems

Learning Objectives:

After completion of the competency, the apprentice will test and perform repairs to household appliances.

LEARNING TASKS

1. Repair and maintain fridges
2. Repair and maintain kitchen ranges
3. Repair and maintain washers and dryers

CONTENT

- Check electrical circuit
- Check electrical circuits
- Replace fan motors
- Replace fuses
- Replace elements
- Test electrical circuits
- Replace motors
- Replace elements

Achievement Criteria:

The apprentice shall perform repairs and maintenance to fridges, kitchen ranges, washers and dryers, to the satisfaction of the Instructor.

Note: In British Columbia, all gas and electrical contractors doing regulated work are required, under the *Safety Standards Act*, to hold a valid license issued by the BC Safety Authority. The license ensures the contractor and the people employed by the contractor are qualified and can perform the work safely. Licenses must be renewed annually and require certain qualifications are met, including a \$10,000 surety bond. The RBMW program and training does not extend to these areas of technical training and/or certification.

LINE P REPAIR AND MAINTAIN ELECTRICAL

Competency: P4 Test for Electrical Problems

Learning Objectives:

After completion of the competency, the apprentice will test electrical components and perform electrical repairs and maintenance.

LEARNING TASKS

1. Entrance wiring*
2. Ground wiring*
3. Circuit wiring*
4. Hot circuits*

CONTENT

- Visual inspection only
- May require power shut down
- Visual inspection only
- Will require shut down
- Test circuit
- Replace receptacles
- Replace switches
- Replace fixture
- Shut down circuit
- Shut down circuit

Achievement Criteria:

The apprentice shall complete a practical assessment to provide visual inspections on entrance and ground wiring, identify hot circuits and shut them down, test circuits, and replace receptacles and switches, to the satisfaction of the instructor.

* All work with an asterisk is required to be done by either a BCSCA certified/licensed contractor or by an RBMW with an Electrical Endorsement.

Note: In British Columbia, all gas and electrical contractors doing regulated work are required, under the *Safety Standards Act*, to hold a valid license issued by the BC Safety Authority. The license ensures the contractor and the people employed by the contractor are qualified and can perform the work safely. Licenses must be renewed annually and require certain qualifications are met, including a \$10,000 surety bond. The RBMW program and training does not extend to these areas of technical training and/or certification.

LINE P REPAIR AND MAINTAIN ELECTRICAL

Competency: P5 Assess the need for a Journeyperson and/or Licensed Contractor

Learning Objectives:

After completion of the competency, the apprentice will assess the need for a journey person and or licensed contractors in situations requiring electrical repairs and maintenance and determine whether the repair should be immediate or at the next scheduled maintenance.

LEARNING TASKS

1. Assess the need for a journey person and/or licensed contractor

CONTENT

- Shut down power and request immediate attention of a journey person and or licensed contractor
- Shut down power and list the work for next visit of a journey person and or licensed contractor

Achievement Criteria:

The apprentice shall complete a written multiple-choice assessment to assess if work requires immediate attention or if it can be listed for attention for the next visit of a journey person and or licensed contractor; based on a minimum score of 70%.

Note: In British Columbia, all gas and electrical contractors doing regulated work are required, under the *Safety Standards Act*, to hold a valid license issued by the BC Safety Authority. The license ensures the contractor and the people employed by the contractor are qualified and can perform the work safely. Licenses must be renewed annually and require certain qualifications are met, including a \$10,000 surety bond. The RBMW program and training does not extend to these areas of technical training and/or certification.

LINE Q APPLY PAINT AND WALL COVERINGS

Competency: Q1 Identify Painting Materials

Learning Objectives:

After completion of the competency, the apprentice will be able to identify painting materials and their uses.

LEARNING TASKS

1. Identify and describe the use of water based paints
2. Identify and describe the use of oil based paints
3. Identify and describe the use of solvents and thinners
4. Identify and describe the use of special paints
5. Identify and describe the use of wood finishes
6. Identify and describe the use of wall coverings
7. Paint use and purpose

CONTENT

- Latex primer
- Flat paint
- Egg shell finish
- Semi-gloss
- High gloss

- Primer
- Flat
- Semi-gloss
- High gloss

- Thinning
- Clean up

- Floor paint
- Paint to cover metal

- Varnish
- Lacquer
- Urethane
- Stain

- Vinyl wall covering
- Wall paper
- Paste and adhesives

- Protect the surface
- Decorating
- Exterior
- Interior

Achievement Criteria:

The apprentice shall complete a written assessment of the identification of different types of paints, wood finishes, wall coverings, and the identification of the differences between interior and exterior paints and accurately identifying situations where each would be used; with a minimum score of 70%.

LINE Q APPLY PAINT AND WALL COVERINGS

Competency: Q2 Prepare Surfaces for Paint and Stain

Learning Objectives:

After completion of the competency, the apprentice will demonstrate the ability to prepare surfaces for painting and demonstrate how to apply caulking and other sealants.

LEARNING TASKS

1. Demonstrate the preparation of the surface
2. Describe the preparation of a wood surface
3. Demonstrate the application of caulking and sealants

CONTENT

- Cleaning
- Sanding
- Patching

- Remove old finish
- Sanding
- Patching

- Product knowledge
- Timing

Achievement Criteria:

The apprentice shall complete a written multiple-choice assessment on the correct procedures to be used when preparing a surface for painting or staining with a minimum score of 70%.

LINE Q

APPLY PAINT AND WALL COVERINGS

Competency: Q3 Prime, Paint and Stain Surfaces

Learning Objectives:

After completion of the competency, the apprentice will be able to select and apply the proper products to interior and exterior surfaces.

LEARNING TASKS

1. Select and apply the appropriate primer, paint and sealer
2. Select and apply the appropriate wood finishing products
3. Select and apply the correct caulking and sealants

CONTENT

- Interior
- Exterior
- Floor paint
- Paint for metal surfaces
- Wood fillers
- Wood stain
- Wood sealer

Achievement Criteria:

The apprentice shall complete a written multiple-choice assessment on the proper procedures to prime, paint and stain surfaces; with a minimum score of 70%.

LINE Q

APPLY PAINT AND WALL COVERINGS

Competency: Q4 Apply Wall Coverings

Learning Objectives:

After completion of the competency, the apprentice will prepare surfaces for the application of wall coverings and demonstrate the correct procedures for the installation of wall coverings.

LEARNING TASKS

1. Planning and selection

2. Prepare the surface for wall covering

3. Cut and match wall covering

4. Install wall covering

CONTENT

- Planning
- Selection
- Measuring and ordering
- Types

- Cleaning
- Removal of old covering
- Patch and fill holes

- Plain pattern
- Straight pattern
- Repeat pattern
- Lap seams

- Positioning pattern
- Butt joints
- Inside and outside corners
- Doors and window openings
- Wall fixtures

Achievement Criteria:

The apprentice shall complete a written assessment on wall coverings describing the proper means of preparing the surface, the process needed for cutting and matching wall covering for installation and detail effective installation techniques with a minimum score of 70%; and complete a practical demonstration to the satisfaction of the instructor.

LINE Q

APPLY PAINT AND WALL COVERINGS

Competency: Q5 Assess the Need for a Journeyperson and/or Licensed Contractor

Learning Objectives:

After completion of the competency, the apprentice will assess the need for a journeyperson and/or licensed contractor to complete projects.

LEARNING TASKS

1. Assess the need for a journey person to do the work

CONTENT

- Special coatings
- Special finishes
- Alligatoring
- Blistering
- Chalking
- Contamination
- Cracking and flaking
- Cratering
- Crawling
- Efflorescence
- Fading
- Mildew
- Peeling and lifting
- Sagging
- Spotting
- Staining
- Wrinkling

Achievement Criteria:

The apprentice shall complete a written multiple-choice assessment on the processes of determination and the various types of wall deterioration requiring the intervention of a trained journey person with a minimum score of 70%.

SECTION 3

TRAINING PROVIDER STANDARDS

RECOMMENDED & MANDATORY REFERENCE TEXTBOOKS

All RBMW instructors and trainees are required to ensure they use the most current standard for safety (WorkSafeBC), Building Codes, Industry specifications, SkilledTradesBC policies, etc.

- BC Building Code 2006 includes Plumbing Code (most current available) - Mandatory
- Canadian Wood Council “The Span Book” 2004 Edition (use most current)
- BC Fire Code 2006 (most current available) - Mandatory
- WorkSafeBC Safety Regulations (most current available) - Mandatory
- Government of BC ~ Office of the Fire Commissioner website for Fire Safety Plan
<http://www.pssg.gov.bc.ca/firecom/fsp/index.htm>
- **Electrical Code Simplified – House Wiring Guide 14th Edition**
(BC Book 1, 22206-2010) by P.S. Knight - Mandatory
- Building Access Handbook - 2007 (most current available) - Mandatory
- **Building Envelope Guide for Houses** - Mandatory
This guide can be found and ordered from the Homeowner Protection Office website at:
<http://www.hpo.bc.ca/Publications/BEG.php>
- See other Reference Materials for each Level (after Table of Contents)

Note: Most written assessments should be provided using multiple choice answers, as final examinations are also given as multiple choices.

TRAINING FACILITIES STANDARDS

Due to the types of projects, RBMW training shops require relatively large training areas.

The following is a general guideline for training facility size:

Indoor shop area: 115 to 170 sq. ft. per student. Ceiling height 18 ft. minimum
Note: RBMW Level 1 can be delivered in a smaller facility (e.g.: 100 to 125 sq. ft.)

Outdoor shop area: 275 to 300 sq. ft. per student

Material Storage: 35 to 40 sq. ft. per student

Tool Storage: 10 sq. ft. per student

Instructor's Office/Small meeting area: 120 to 150 sq. ft.

Clean-up / waste area: 120 to 175 sq. ft. per student

INSTRUCTOR QUALIFICATIONS

An RBMW instructor should possess the following qualifications in order to teach RBMW program modules:

- A Certificate of Qualification in RBMW and/or Inter-Provincial Red Seal Certificate in one or more trades related to the RBMW program, particularly Carpentry, Electrical or Plumbing;
- A Provincial (BC) Instructors Diploma or completion of a Train the Trainer/Instructional Techniques program;
- A minimum of 5 years experience working in the residential construction industry, including at least 2 years specific experience related to the RBMW program module(s) the instructor is teaching.

Experience of 2 years or more teaching or training is also preferred.

The requirement for a trades credential may be waived by the RBMW Accreditation Committee if the individual has substantial industry and training experience.

TRAINING RESOURCES

Note: Since training shops differ from place to place, the following is only a guideline for shop equipment.

The tool list is based on the following assumptions:

- 16 students per class
- Students will do shop activities in two person teams (i.e. odd numbered teams promote the “odd person out”, and leave one person doing little learning)
- Projects can be staggered between groups, thus reducing the demand for high numbers of equipment
- Tools are listed in groups of 2, 4 or 8 to accommodate 8 - two person teams
- The shop has adequate tool shortage cabinets

Student owned tools:

- Safety glasses and hearing protection (personal or disposable)
- 25 foot (carpenter quality) metric and imperial tape measures
- Framing square
- 22 oz. anti vibration framing hammer
- Utility knife
- Quality multi-driver screwdriver
- Needle nose pliers
- Linesman pliers
- Cats paw (nail puller)
- Carpenter pencils
- Leather work gloves
- Safety boots
- Carpenter quality tool belt

Note: If policy requires, the above tools may be provided by the training institution.

Equipment such as scaffolds, chainsaws, generators and other large/costly items can be rented to reduce costs.

TRAINING RESOURCES

TOOLS LIST

Shop Tools Required for All Levels

<p>Hand Tools</p> <p>Crosscut hand saws 2</p> <p>Electric hand planes 1</p> <p>9.5 mm (3/8") wood chisels 2</p> <p>19 mm (3/4") wood chisels 4</p> <p>Wire cutters 4</p> <p>Pliers - needle nose 1</p> <p>Pliers - linesman 1</p> <p>Hand staplers 4</p> <p>Crow bars 4</p> <p>Nail pullers and cat's paws 4</p> <p>Hand levels, 24" and 48" 8</p> <p>Surveyor's steel tape 2</p> <p>Squares: framing, tri, t-bevel, combination etc. 8 of each</p> <p>C clamps - various sizes 3" & larger 24</p> <p>Bar clamps 24</p> <p>Chalk line and refills 4</p> <p>String line 6</p> <p>Plumb bobs 4</p>	<p>Power Tools and Accessories</p> <p>3/8" corded electric drills 2</p> <p>1/2" corded electric drills 2</p> <p>3/8" 18 volt cordless drill 1</p> <p>Wood bits 1 set</p> <p>Metal bits 1 set</p> <p>Various screwdriver bits 2 sets each</p> <p>Electric screw drivers 2</p> <p>Rotary hammer drill 1</p> <p>Jig saws 2</p> <p>Circular saws 8</p> <p>Table saws 2</p> <p>Circular saw blades 30 (for all learning requirements)</p> <p>Chain saw 1</p> <p>Portable electric generator 1</p> <p>Air compressors and hoses 4</p> <p>Pneumatic nailers and nail guns (various sizes) 6</p> <p>Reciprocating saws & blades 4</p> <p>Chop saws 2</p> <p>Sliding mitre saw 1</p> <p>Coping saw 4</p> <p>Powder actuated tools 4</p> <p>Router and bits 2 sets</p>
<p>Miscellaneous Other Equipment</p> <p>Builder's levels and tripods 2</p> <p>Nail magnets 1</p> <p>Scaffold One set for 2 levels</p> <p>Ladders (various sizes) 4</p> <p>Electric power cords: various lengths 16</p> <p>Flood lights 4</p> <p>Shop vac 1</p> <p>Brooms and Scoops 2</p> <p>Wheel barrows 2</p> <p>Shovels (square mouth) 2</p> <p>Shovel (spade) 2</p> <p>Salvage bin 1</p> <p>Garbage bin 1</p> <p>Heavy duty plastic tool storage boxes 8</p>	<p>Safety Equipment</p> <p>Fire Extinguishers (various types) 4</p> <p>Level 2 First Aid kits 2</p> <p>Hard hats 16</p>

Note: See next page for additional tools required for each level.

TRAINING RESOURCES

TOOLS LIST

Additional Tools for Level 1

Drywall mud box (hand held)	8
Drywall sanders or sanding sponges	8
Drywall knives (various sizes)	20
Drywall hocks	4
Drywall patches (various sizes)	16

Additional Tools for Level 2

Roofing hammer	4
Lino knives	4
Tile cutter	1
Set of wrenches (various sizes)	2 sets
Socket set (metric and imperial)	2 sets
Pipe wrenches	4
Tin snips	4

Additional Tools for Level 3

Set of wrenches (various sizes)	2 sets
Socket set (metric and imperial)	2 sets
Pipe wrenches	4
Tin snips	4
Multi meter	2
Circuit tester	2
Paint tray	8
Roller frames	8
Angle brushes (various sizes & paint types)	16
Roller handles	8
Paint tarps	4
Paint brush & roller cleaner	2
Hand sanders or sanding sponges	8
Wallpaper tray	4
Wallpaper smoothing sponge	4

Note: Other tools and equipment as required