

# **Sloped Roofer**

## **ACKNOWLEDGEMENTS**

Apprenticeship Manitoba wishes to express sincere appreciation for the contribution of the Industry Working Group who contributed, directly or indirectly, to this publication. For this analysis, the Industry Working Group preferred to use the term “Sloped Roofer” rather than “Shingler.”

Special acknowledgement is extended to the Industry Working Group (IWG) composed of:

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## **OTHER RELATED OCCUPATIONAL TITLES**

In developing this analysis, the Industry Working Group (IWG) consulted the following National Occupational Analyses prepared by Human Resources Skills Development Canada:

Roofer National Occupational Analysis

2006

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# GUIDE TO ANALYSIS

## **DEVELOPMENT OF ANALYSIS**

A draft analysis is developed by a knowledgeable consultant who, with the assistance of a committee of experts in the field, identifies all the tasks performed in the occupation.

### **STRUCTURE OF ANALYSIS**

To facilitate the understanding of the nature of the occupation, the work performed is divided into the following divisions:

- BLOCK** - is the largest division within the analysis and reflects a distinct operation relevant to the occupation.
- TASK** - is the distinct activity that, combined with others, makes up the logical and necessary steps the worker is required to perform to complete a specific assignment within a "BLOCK."
- SUB-TASK** - is the smallest division into which it is practical to subdivide any work activity and, combined with others, fully describes all duties constituting a "TASK."

### **Supporting Knowledge and Abilities**

The element of skill and knowledge that an individual must acquire to adequately perform the task is identified under this heading.

### **Trends**

Any shifts or changes in technology or the working environment which affect the block are identified under this heading.

## VALIDATION METHOD

Sloped Roofers validated the sub-tasks and applied percentage ratings to blocks and tasks. This method for the validation assisted in the completion of the time weighting section of the position description.

### DEFINITIONS

- YES:** You perform this sub-task.
- NO:** You do **not** perform this sub-task.
- BLOCK %:** The percentage of time you spend on a monthly basis performing this component.
- TASK %:** The percentage of time you spend on a monthly basis performing this task.

### TOOLS AND EQUIPMENT (APPENDIX "A")

### GLOSSARY (APPENDIX "B")

### PIE CHART (APPENDIX "C")

The graph depicts the percentages the Committee assigned to blocks in the analysis during validation.

### DACUM CHART (APPENDIX "D")

The listing of all the blocks, tasks and sub-tasks as established by the Industry Working Group and validated by several Sloped Pitch Roofers.



## SCOPE OF THE OCCUPATION

This occupational analysis identifies the tasks performed by qualified Sloped Roofers across Manitoba. Sloped Roofers install, replace and repair sloped roofs (e.g., shingles, asphalt, metal, tile, wood, slate, composite and rolled product roofing) in order to shed water. Sloped Roofers also install attic ventilation systems and flashing. They can also install roof accessories, such as brackets and skylights.

Sloped Roofers generally work on residential buildings but also work on commercial buildings having sloped roofs. Besides installing sloped roofs, Sloped Roofers perform roof maintenance and diagnose issues with existing structures.

In general, Sloped Roofers perform the following main duties:

- Read blueprints and specifications to lay out the work
- Remove existing roof and prepare substrate
- Unload, stack and hoist materials
- Install watershed roofing systems including flashing and venting
- Maintain roofs and systems.

Most Sloped Roofers are employed by roofing companies, general contractors or may be self-employed. In the construction industry, Sloped Roofers work on a short-term project basis and are required to frequently travel from job to job.

To be successful in the trade, Sloped Roofers need the ability to work at heights and to use good judgment with regards to safety equipment. The work is physically demanding and requires considerable effort in lifting, climbing, bending, kneeling and balancing on high, steep pitched and slippery surfaces. Sloped Roofers require the ability to work outdoors in extreme weather conditions and in teams or crews. The capability to travel and work with different crews is important.

## OCCUPATIONAL OBSERVATIONS

Sloped Roofers are using more automated equipment to move roofing materials and install roofing systems. Newer, innovative roofing products, more ergonomic practices and automated equipment such as lifts, cranes and mechanical platforms help Sloped Roofers maintain safety, reduce daily fatigue and extend their physical capacity for this occupation.

Current housing trends influencing roofing systems include: the demand for more energy efficient, lower maintenance roofing systems; the urban trend for decorative roofs, and the increased supply of older homes that need retrofitting.

The increasing number of roof projections cause Sloped Roofers to spend more time detailing and accommodating features. Sloped Roofers are producing roofing systems with more uniform features. They must also consider the architectural design and esthetics of panels and siding.

Refuse material is often required to be separated and recycled, especially with regard to asphalt products, metals and other materials generated by Sloped Roofer trade projects.

The work of a Sloped Roofer, by its nature, possesses inherent hazards. Safe work procedures and job hazard analysis assist in eliminating jobsite injuries. The use of personal protective equipment, such as respirators or hand and eye-protection, is becoming more important. There is an increased use of fall protection and restraint equipment.

Sloped Roofers must possess physical ability, manual dexterity and balance. They must have basic mathematics, basic physics, problem solving skills communication skills. Sloped Roofers must maintain constant attention to the application of safety procedures.

## ANALYSIS

## BLOCK A

### OCCUPATIONAL SKILLS

*Trends: New tools and equipment have been introduced to make tasks easier for Sloped Roofers. There are more cordless tools available to roofers. Safety equipment and Personal Protective Equipment (PPE) are being used more consistently by roofers. Worksite and public safety has become more important. Use of documentation by roofers has increased in order to demonstrate due diligence and compliance with regulations.*

#### Task 1 Uses tools.

##### Sub-task

#### 1.01 Inspect hand, power and pneumatic tools.

##### Supporting Knowledge and Abilities

- 1.01.01 knowledge of types of roofing hand tools such as measuring, cutting, ripping, fastening and applications
- 1.01.02 knowledge of power and pneumatic tools such as caulking guns, nailers, drills, staplers and saws
- 1.01.03 ability to select hand, power and pneumatic tools for specific jobs
- 1.01.04 ability to store hand, power and pneumatic tools
- 1.01.05 ability to recognize worn, damaged and defective hand, power and pneumatic tools
- 1.01.06 ability to do minor repairs or recalibrate tools

##### Sub-task

#### 1.02 Maintains hand, power and pneumatic tools.

##### Supporting Knowledge and Abilities

- 1.02.01 knowledge of manufacturers' specifications and maintenance requirements
- 1.02.02 ability to recognize worn, damaged and defective hand, power and pneumatic tools

1.02.03 ability to perform required maintenance

**Sub-task**

**1.03 Lock-out and tag-out tools.**

**Supporting Knowledge and Abilities**

1.03.01 knowledge of function of hand, power and pneumatic tools

1.03.02 knowledge of tag out procedures

1.03.03 ability to identify safe or unsafe tools

1.03.04 ability to document the tag out  
ability to tag out unsafe equipment

**Sub-task**

**1.04 Uses hand, power and pneumatic tools.**

**Supporting Knowledge and Abilities**

1.04.01 knowledge of types of hand, power and pneumatic tools

1.04.02 knowledge of manufacturer specifications

1.04.03 knowledge of safe operation

1.04.04 ability to select hand, power and pneumatic tools

1.04.05 ability to store hand, power and pneumatic tools

1.04.06 ability to adjust tool to manufacturers' specifications for specific tasks

**Task 2 Uses specialty equipment.**

**Sub-task**

**2.01 Drives trucks and hauls trailers.**

**Supporting Knowledge and Abilities**

2.01.01 knowledge of load restrictions

2.01.02 knowledge of capacity of truck and trailer

2.01.03 knowledge of transportation regulations

- 2.01.04 knowledge of *Manitoba Highway Traffic Act*
- 2.01.05 knowledge of maintenance of vehicles
- 2.01.06 knowledge of loading and unloading procedures
- 2.01.07 knowledge of hydraulics operation
- 2.01.08 ability to secure loads
- 2.01.09 ability to operate the truck and trailer with and without a load

**Sub-task**

**2.02 Uses forklift and hoisting equipment.**

**Supporting Knowledge and Abilities**

- 2.02.01 knowledge of types of hoists such as hand, ladder and forklift
- 2.02.02 knowledge of safe work practices for hoisting and lifting
- 2.02.03 knowledge of regulations for hoisting
- 2.02.04 knowledge of manufacturer specifications
- 2.02.05 knowledge of training and certification requirements
- 2.02.06 knowledge of operating procedures
- 2.02.07 knowledge of weight distribution when lifting
- 2.02.08 ability to protect roof and substrate from counterweights and frame
- 2.02.09 ability to maintain hoisting and lifting equipment
- 2.02.10 ability to secure loads
- 2.02.11 ability to recognize worn, damaged and defective hoisting and lifting equipment

**Task 3 Follows safety procedures.**

**Sub-task**

**3.01 Uses personal protective equipment.**

**Supporting Knowledge and Abilities**

- 3.01.01 knowledge of types of PPE such as harnesses, respirators, eye protections, safety boots, gloves and hearing protection
- 3.01.02 knowledge of safety equipment such as warning lines, guard rails, fire extinguishers and first aid kits
- 3.01.04 knowledge of operating procedures for PPE and safety equipment
- 3.01.05 knowledge of company safety policies
- 3.01.06 knowledge of safety regulations and legislation
- 3.01.07 knowledge of training and certification requirements
- 3.01.08 ability to select PPE for specific job
- 3.01.09 ability to install safety equipment
- 3.01.10 ability to maintain PPE and safety equipment
- 3.01.11 ability to store PPE and safety equipment
- 3.01.12 ability to recognize worn, damaged and defective PPE and safety equipment
- 3.01.13 ability to document usage of PPE and safety equipment

**Sub-task**

**3.02 Installs safety barriers.**

**Supporting Knowledge and Abilities**

- 3.02.01 knowledge of types of safety barriers
- 3.02.02 knowledge of workplace health and safety regulations

- 3.02.03 knowledge of safety fences and walkways for the public
- 3.02.04 knowledge of company safety policies
- 3.02.05 knowledge of equipment required to install safety barriers
- 3.02.06 ability to identify hazards in or to protect work crew, property and the public
- 3.02.07 ability to install and maintain safety barriers
- 3.02.08 ability to document use of safety barriers

**Sub-task**

**3.03 Uses fall protection.**

**Supporting Knowledge and Abilities**

- 3.03.01 knowledge of types of fall protection
- 3.03.02 knowledge of workplace health and safety regulations
- 3.03.03 knowledge of company safety policies
- 3.03.04 knowledge of training and certification requirements
- 3.03.05 ability to select appropriate style of fall protection for the job
- 3.03.06 ability to inspect and maintain equipment
- 3.03.07 ability to identify worn, damaged or expired equipment

**Sub-task**

**3.04 Conducts hazard assessment.**

**Supporting Knowledge and Abilities**

- 3.04.01 knowledge of potential hazards
- 3.04.02 knowledge of documentation procedures
- 3.04.03 knowledge of company safe work procedures
- 3.04.04 knowledge of job requirements



- 3.04.05 ability to work in confined spaces
- 3.04.06 ability to recognize hazards
- 3.04.07 ability to control or eliminate potential hazards
- 3.04.08 ability to communicate the hazards to the workforce, clients and other trades
- 3.04.09 ability to identify and protect onsite utilities such as electrical outlets and gas lines

**Task 4 Uses staging equipment.**

**Sub-task**

**4.01 Uses ladders.**

**Supporting Knowledge and Abilities**

- 4.01.01 knowledge of types of ladders
- 4.01.02 knowledge of capacities and restrictions of ladders
- 4.01.03 knowledge of safe work procedures
- 4.01.04 ability to erect a ladder
- 4.01.05 ability to select job specific ladder
- 4.01.06 ability to secure ladder to building
- 4.01.07 ability to recognize worn, damaged and defective ladders
- 4.01.08 ability to transport ladders
- 4.01.09 ability to ensure solid footing for ladders

**Sub-task**

**4.02 Installs scaffolding equipment.**

**Supporting Knowledge and Abilities**

- 4.02.01 knowledge of types and capacity of scaffolding
- 4.02.02 knowledge of certification requirements for the operation or erection of scaffolding
- 4.02.03 knowledge of regulations for the use of scaffolding

- 4.02.04 knowledge of maintenance schedule
- 4.02.05 ability to ensure solid footing for scaffolding
- 4.02.06 ability to assemble scaffolding
- 4.02.07 ability to erect scaffolding
- 4.02.08 ability to level scaffolding
- 4.02.09 ability to secure scaffolding to building
- 4.02.10 ability to recognize worn, damaged and defective scaffolding
- 4.02.11 ability to maintain and erect scaffolding

**Task 5 Uses trade documents.**

**Sub-task**

**5.01 Reads blueprints and job specifications.**

**Supporting Knowledge and Abilities**

- 5.01.01 knowledge of blueprint reading
- 5.01.02 knowledge of mathematical skills
- 5.01.03 knowledge of imperial and metric conversions
- 5.01.04 knowledge to identify trade specific sections
- 5.01.05 knowledge of codes and regulations
- 5.01.06 ability to translate blueprint information to practice
- 5.01.07 ability to measure dimensions such as area, length and volume

**Sub-task**

**5.02 Estimates job and materials.**

**Supporting Knowledge and Abilities**

- 5.02.01 knowledge of types of materials and production capabilities
- 5.02.02 knowledge of manufacturer specifications

- 5.02.03 knowledge of coverage rates of roofing materials
- 5.02.04 ability to measure dimensions such as area, length and volume
- 5.02.05 ability to minimize material waste
- 5.02.06 ability to perform basic mathematical calculations
- 5.02.07 ability to convert metric and imperial measurements
- 5.02.08 ability to apply manufacture specifications

**Task 6 Organizes work.**

**Sub-task**

**6.01 Provides customer service.**

**Supporting Knowledge and Abilities**

- 6.01.01 knowledge of company public relations policies
- 6.01.02 knowledge of residential regulations
- 6.01.03 knowledge of contracts
- 6.01.04 knowledge of communication skills
- 6.01.05 ability to educate customer on roofing products and procedures
- 6.01.06 ability to communicate using various media

**Sub-task**

**6.02 Communicates with other trades and suppliers.**

**Supporting Knowledge and Abilities**

- 6.02.01 knowledge of scope of work for trades
- 6.02.02 knowledge of scheduling requirements
- 6.02.03 ability to implement scheduling timelines
- 6.02.04 ability to coordinate material delivery
- 6.02.05 ability to communicate with other trades using various media

**Sub-task**

**6.03 Orders supplies.**

**Supporting Knowledge and Abilities**

- 6.03.01 knowledge of supplier products and capabilities
- 6.03.02 knowledge to estimate take offs
- 6.03.03 knowledge of supplier inventory and shipping practices
- 6.03.04 knowledge of current pricing lists
- 6.03.05 ability to communicate to supplier
- 6.03.06 ability to document orders
- 6.03.07 ability to adhere to timelines for shipping

**Sub-task**

**6.04 Arranges worksite scheduling.**

**Supporting Knowledge and Abilities**

- 6.04.01 knowledge of deadlines and contracts
- 6.04.02 knowledge of labour force and capabilities
- 6.04.03 knowledge of daily weather conditions
- 6.04.04 knowledge of available transportation modes
- 6.04.05 knowledge of tools and equipment required
- 6.04.06 ability to adjust or alter schedule
- 6.04.07 ability to document schedules
- 6.04.08 ability to contact employees

## BLOCK B

### ROOF PREPARATIONS

*Trends: There is an increased demand to sort materials for recycling and reuse. New technologies have been developed to assess the condition of the roof. More emphasis is placed on safety management, controlled debris management and protection of the environment.*

**Task 7 Removes and demolishes watershed materials.**

#### Sub-task

**7.01 Arranges debris management.**

#### **Supporting Knowledge and Abilities**

7.01.01	knowledge of types of existing materials
7.01.02	knowledge of testing procedures
7.01.03	knowledge of safe work procedures
7.01.04	knowledge of approved disposal facilities
7.01.05	knowledge of signage procedures
7.01.06	knowledge of components of material disposal systems such as wheelbarrows, garbage bags, chutes and disposal bins
7.01.07	knowledge of regulations regarding separation of materials such as waste and recyclable materials
7.01.08	ability to erect and disassemble chutes and counterweights
7.01.09	ability to arrange debris removal and cartage
7.01.10	ability to place signage in suitable location

**Sub-task**

**7.02 Protects job site.**

**Supporting Knowledge and Abilities**

- 7.02.01 knowledge of protection equipment such as tarps, sheeting and barriers
- 7.02.02 knowledge of proper signage procedures
- 7.02.03 ability to identify areas of potential or previous damage
- 7.02.04 ability to erect barriers to protect area of non-operation
- 7.02.05 ability to place equipment and materials to prevent damage
- 7.02.06 ability to use tarps for protection and hoarding

**Sub-task**

**7.03 Removes existing materials.**

**Supporting Knowledge and Abilities**

- 7.03.01 knowledge of types of existing materials
- 7.03.02 knowledge of testing procedures
- 7.03.03 knowledge of safe work procedures
- 7.03.04 knowledge of approved disposal facilities
- 7.03.05 knowledge of signage procedures
- 7.03.06 knowledge of components of material disposal systems such as wheelbarrows, garbage bags, chutes and disposal bins
- 7.03.07 knowledge of regulations regarding separation of materials such as waste and recyclable materials
- 7.03.08 ability to erect and disassemble chutes and counterweights
- 7.03.09 ability to arrange debris removal and cartage
- 7.03.10 ability to place signage in suitable location

**Task 8          Assesses project.**

**Sub-task**

**8.01      Evaluates substrate and structures.**

**Supporting Knowledge and Abilities**

- 8.01.01      knowledge of vapour barriers
- 8.01.02      knowledge of basic carpentry skills
- 8.01.03      knowledge of types of deck substrates such as wood sheeting and dimensional lumber
- 8.01.04      knowledge of substrate defects
- 8.01.05      knowledge of structural defects
- 8.01.06      ability to clean substrate
- 8.01.07      ability to secure loose substrate components
- 8.01.08      ability to conduct visual inspection
- 8.01.09      ability to document evaluation

**Sub-task**

**8.02      Assesses roofing components.**

**Supporting Knowledge and Abilities**

- 8.02.01      knowledge of roofing components such as flashings, stacks, chimneys and watershed materials
- 8.02.02      knowledge of type and quality of insulation and existing venting
- 8.02.03      ability to differentiate between reusable and expired materials
- 8.02.04      ability to document assessment

**Sub-task**

**8.03 Modifies job specifications.**

**Supporting Knowledge and Abilities**

- 8.03.01 knowledge of different roofing systems
- 8.03.02 knowledge of types of materials and production capabilities
- 8.03.03 knowledge of manufacturer specifications
- 8.03.04 knowledge of coverage rates of roofing materials
- 8.03.05 ability to measure dimensions such as area, length and volume
- 8.03.06 ability to minimize material waste
- 8.03.07 ability to perform basic mathematical calculations
- 8.03.08 ability to convert metric and imperial measurements
- 8.03.09 ability to apply manufacturer's specifications

**Task 9 Prepares decking.**

**Sub-task**

**9.01 Performs non-structural repairs.**

**Supporting Knowledge and Abilities**

- 9.01.01 knowledge of basic carpentry skills
- 9.01.02 knowledge of fasteners
- 9.01.03 knowledge of restoration procedures
- 9.01.04 knowledge of tools and equipment
- 9.01.05 ability to perform basic carpentry
- 9.01.06 ability to perform repairs in a timely fashion



**Sub-task**

**9.02 Prepares substrate.**

**Supporting Knowledge and Abilities**

- 9.02.01 knowledge of types of deck substrates
- 9.02.02 knowledge of substrate defects
- 9.02.03 knowledge of structural defects
- 9.02.04 ability to clean substrate
- 9.02.05 ability to secure loose substrate components

**Sub-task**

**9.03 Builds cricket.**

**Supporting Knowledge and Abilities**

- 9.03.01 knowledge of crickets
- 9.03.02 knowledge of local building code and requirements
- 9.03.03 knowledge of basic carpentry skills
- 9.03.04 knowledge of problem solving
- 9.03.05 ability to design and build cricket

## BLOCK C

### ROOF CAVITY VENTILATION

*Trends: Changes in building code regulations requires more specific venting. The trend for more energy efficient homes has created more types of ventilation challenges. The new venting systems create the need to retrofit older character homes.*

#### **Task 10 Installs Eave (Intake) Venting.**

##### **Sub-task**

##### **10.01 Installs ventilation chutes. Supporting Knowledge and Abilities**

- 10.01.01 knowledge of ventilation requirements
- 10.01.02 knowledge of building codes
- 10.01.03 knowledge of manufacturer specifications
- 10.01.04 knowledge of types of chute products such as styrofoam
- 10.01.05 knowledge of evidence of lack of ventilation
- 10.01.06 knowledge of venting options
- 10.01.07 ability to remove and re-install roof deck
- 10.01.08 ability to cut, fit and fasten chute
- 10.01.09 ability to install soffit vents as required such as cutting plywood and fitting
- 10.01.10 ability to cut-in and install venting

##### **Sub-task**

##### **10.02 Installs soffit venting. Supporting Knowledge and Abilities**

- 10.02.01 knowledge of ventilation requirements
- 10.02.02 knowledge of building codes
- 10.02.03 knowledge of manufacturer specifications
- 10.02.04 knowledge of types of chute products such as styrofoam

- 10.02.05 knowledge of evidence of lack of ventilation
- 10.02.06 knowledge of venting options
- 10.02.07 ability to remove and re-install roof deck
- 10.02.08 ability to cut, fit and fasten chute
- 10.02.09 ability to install soffit vents as required (cutting plywood and fitting)
- 10.02.10 ability to cut-in and install venting

**Sub-task**

**10.03 Installs eave venting.**

**Supporting Knowledge and Abilities**

- 10.03.01 knowledge of ventilation requirements
- 10.03.02 knowledge of building codes
- 10.03.03 knowledge of manufacturer specifications
- 10.03.04 knowledge of types of chute products such as styrofoam
- 10.03.05 knowledge of evidence of lack of ventilation
- 10.03.06 knowledge of venting options
- 10.03.07 ability to remove and re-install roof deck
- 10.03.08 ability to cut, fit and fasten chute
- 10.03.09 ability to install soffit vents as required (cutting plywood and fitting)
- 10.03.10 ability to cut-in and install venting

**Task 11 Installs Roof Venting.**

**Sub-task**

**11.01 Calculates venting requirements.**

**Supporting Knowledge and Abilities**

- 11.01.01 knowledge of venting systems
- 11.01.02 knowledge of venting types
- 11.01.03 knowledge of building codes

- 11.01.04 knowledge of manufacturer requirements
- 11.01.05 knowledge of mathematics and communication skills
- 11.01.06 ability to apply venting requirements, communicate number and type of venting needed
- 11.01.07 ability to calculate number of vents, type and location

**Sub-task**

**11.02 Installs roof vents.**

**Supporting Knowledge and Abilities**

- 11.02.01 knowledge of roof ventilation requirements, systems and products
- 11.02.02 knowledge of building codes
- 11.02.03 knowledge of manufacturer requirements
- 11.02.04 knowledge of roofing systems and installation procedures
- 11.02.05 knowledge of types of vents and products
- 11.02.06 ability to use basic carpentry to modify opening of roof deck to fit on vents
- 11.02.07 ability to cut, shape and modify shingles
- 11.02.08 ability to install and secure vents to ensure watershed

**Sub-task**

**11.03 Installs power vents.**

**Supporting Knowledge and Abilities**

- 11.03.01 knowledge of power ventilation requirements, systems and products
- 11.03.02 knowledge of building codes
- 11.03.03 knowledge of manufacturer requirements
- 11.03.04 knowledge of roofing systems and installation procedures
- 11.03.05 knowledge of types of vents and products

- 11.03.04 ability to co-ordinate installation with electrician
- 11.03.06 ability to use basic carpentry to modify opening of roof deck to fit on vents
- 11.03.07 ability to cut, shape and modify shingles
- 11.03.08 ability to install and secure vents to ensure watershed

**Sub-task**

**11.04 Installs ridge vents.**

**Supporting Knowledge and Abilities**

- 11.04.01 knowledge of ridge ventilation requirements, systems and products
- 11.04.02 knowledge of building codes
- 11.04.03 knowledge of manufacturer requirements
- 11.04.04 knowledge of roofing systems and installation procedures
- 11.04.05 knowledge of types of vents and products
- 11.04.06 ability to use basic carpentry to modify opening of roof deck to fit on vents
- 11.04.07 ability to cut, shape and modify shingles
- 11.04.08 ability to install and secure vents to ensure watershed

## BLOCK D

### INSTALLATION OF SLOPED ROOF

*Trends: Designs for shingles, tiles and metals have changed significantly. Roof components are increasingly designed to meet architectural and longevity concerns. Customer choice in these products has increased. Underlayment materials and application methods have enhanced watershed capabilities.*

#### **Task 12 Installs roofing accessories.**

##### **Sub-task**

##### **12.01 Installs skylights.**

##### **Supporting Knowledge and Abilities**

- |          |   |
|----------|---|
| 12.01.01 | knowledge of roofing systems, flashing system and membranes                               |
| 12.01.02 | knowledge of basic carpentry, mathematics, physics and weather effect                     |
| 12.01.03 | ability to read and follow installation procedures of manufacturer specifications         |
| 12.01.04 | ability to cut and fit membrane   |
| 12.01.05 | ability to cut and fit flashing   |
| 12.01.06 | ability to cut, shape and modify roofing materials  |
| 12.01.07 | ability to understand water flow, watershed principles and to calculate angles and volume |

##### **Sub-task**

##### **12.02 Installs brackets.**

##### **Supporting Knowledge and Abilities**

- |          |  |
|----------|--|
| 12.02.01 | knowledge of types of brackets and bracket materials         |
| 12.02.02 | knowledge of types of fasteners and application to substrate |
| 12.02.03 | knowledge of load demands of bracket and substrate           |
| 12.02.04 | ability to remove and re-install bracket                     |
| 12.02.05 | ability to recognize when to use sealant                     |

## Sub-task

### 12.03 Installs eavestroughs.

#### Supporting Knowledge and Abilities

- |          |   |
|----------|---|
| 12.03.01 | knowledge of watershed principles   |
| 12.03.02 | knowledge of types of eavestrough materials and accessories                               |
| 12.03.03 | knowledge of local building codes for drainage and downpipe directions                    |
| 12.03.04 | knowledge of downpipe location and drain water management                                 |
| 12.03.05 | knowledge of the relation between the roofing system and eavestrough drainage             |
| 12.03.06 | knowledge of physics, mathematics and weather effect                                      |
| 12.03.07 | ability to cut, fit and install eavestrough   |
| 12.03.08 | ability to determine downpipe location  |
| 12.03.09 | ability to determine direction of drainage  |
| 12.03.10 | ability to understand water flow, watershed principles and to calculate angles and volume |

## Task 13 Installs roofing materials.

### Sub-task

#### 13.01 Installs eave protection.

#### Supporting Knowledge and Abilities

- |          |   |
|----------|---|
| 13.01.01 | knowledge of types of eave protection such as felt, peel and stick, membrane, mineral surface |
| 13.01.02 | knowledge of compatibility of products  |
| 13.01.03 | knowledge of factors contributing to ice damming  |
| 13.01.04 | knowledge of product requirement and coverage based on different slopes and overhangs         |

- 13.01.05 knowledge of building code and/or manufacturer recommended installation
- 13.01.06 knowledge of basic mathematics, physics and weather effect
- 13.01.07 ability to apply types of eave protection, ensure product compatibility and follow installation procedure
- 13.01.08 ability to measure, cut and fit materials

**Sub-task**

**13.02 Installs underlay.**

**Supporting Knowledge and Abilities**

- 13.02.01 knowledge of types of underlay
- 13.02.02 knowledge of product requirements for coverage based on different slopes and angles
- 13.02.03 knowledge of compatibility of products based on different slopes and overhangs
- 13.02.04 knowledge of basic mathematics, physics and weather effect
- 13.02.05 knowledge of building code and/or manufacturer recommendation for installation
- 13.02.06 ability to apply types of underlay, ensure product compatibility and follow installation procedure
- 13.02.07 ability to measure, cut and fit materials

**Sub-task**

**13.03 Installs asphalt shingles.**

**Supporting Knowledge and Abilities**

- 13.03.01 knowledge of watershed principles and techniques
- 13.03.02 knowledge of asphalt shingles, fasteners and flashing, and compatibility of underlay and eave protection



- 13.03.03 knowledge of roofing accessory requirements and installation of asphalt shingles
- 13.03.04 knowledge of flashing requirements
- 13.03.05 knowledge of venting requirements
- 13.03.06 knowledge of installation procedures
- 13.03.07 ability to cut, shape, modify and fasten asphalt shingles based on product specifications
- 13.03.08 ability to fasten or secure asphalt shingles
- 13.03.09 ability to use and install flashing components
- 13.03.10 ability to use and install venting components

**Sub-task**

**13.04 Installs metal roofing.**

**Supporting Knowledge and Abilities**

- 13.04.01 knowledge of watershed principles and techniques
- 13.04.02 knowledge of metal roofing, fasteners and flashing, and compatibility of underlay and eave protection
- 13.04.03 knowledge of roofing accessory requirements and installation of metal roofing
- 13.04.04 knowledge of flashing requirements
- 13.04.05 knowledge of venting requirements
- 13.04.06 knowledge of installation procedures
- 13.04.07 ability to cut, shape, modify and fasten metal roofing based on product specifications
- 13.04.08 ability to fasten or secure metal roofing
- 13.04.09 ability to use and install flashing components

13.04.10 ability to use and install venting components

**Sub-task**

**13.05 Installs tile shingles.**

**Supporting Knowledge and Abilities**

- 13.05.01 knowledge of watershed principles and techniques
- 13.05.02 knowledge of tile shingles, fasteners and flashing, and compatibility of underlay and eave protection
- 13.05.03 knowledge of roofing accessory requirements and installation of tile shingles
- 13.05.04 knowledge of flashing requirements
- 13.05.05 knowledge of venting requirements
- 13.05.06 knowledge of installation procedures
- 13.05.07 ability to cut, shape, modify and fasten tile shingles based on product specifications
- 13.05.08 ability to fasten or secure tile shingles
- 13.05.09 ability to use and install flashing components
- 13.05.10 ability to use and install venting components

**Sub-task**

**13.06 Installs slate shingles.**

**Supporting Knowledge and Abilities**

- 13.06.01 knowledge of watershed principles and techniques
- 13.06.02 knowledge of slate shingles, fasteners and flashing, and compatibility of underlay and eave protection
- 13.06.03 knowledge of roofing accessory requirements and installation of slate shingles
- 13.06.04 knowledge of flashing requirements

- 13.06.05 knowledge of venting requirements
- 13.06.06 knowledge of installation procedures
- 13.06.07 ability to cut, shape, modify and fasten slate shingles based on product specifications
- 13.06.08 ability to fasten or secure slate shingles
- 13.06.09 ability to use and install flashing components
- 13.06.10 ability to use and install venting components

**Sub-task**

**13.07 Installs wood shingles (shakes).**

**Supporting Knowledge and Abilities**

- 13.07.01 knowledge of watershed principles and techniques
- 13.07.02 knowledge of wood shingles, fasteners and flashing, and compatibility of underlay and eave protection
- 13.07.03 knowledge of roofing accessory requirements and installation of wood shingles
- 13.07.04 knowledge of flashing requirements
- 13.07.05 knowledge of venting requirements
- 13.07.06 knowledge of installation procedures
- 13.07.07 ability to cut, shape, modify and fasten wood shingles based on product specifications
- 13.07.08 ability to fasten or secure wood shingles
- 13.07.09 ability to use and install flashing components
- 13.08.10 ability to use and install venting components

## Sub-task

### 13.08 Installs rolled products.

#### Supporting Knowledge and Abilities

- |          |   |
|----------|---|
| 13.08.01 | knowledge of watershed principles and techniques  |
| 13.08.02 | knowledge of rolled products, fasteners and flashing, and compatibility of underlay and eave protection |
| 13.08.03 | knowledge of roofing accessory manufacturer requirements and installation of rolled products            |
| 13.08.04 | knowledge of flashing requirements  |
| 13.08.05 | knowledge of venting requirements   |
| 13.08.06 | knowledge of installation procedures  |
| 13.08.07 | ability to cut, shape, modify and fasten rolled products based on product specifications                |
| 13.08.08 | ability to fasten or secure rolled products   |
| 13.08.09 | ability to use and install flashing components  |
| 13.08.10 | ability to use and install venting components   |

## BLOCK E

### INSTALLATION OF FLASHING

*Trends: There has been an increase in new roofing products. These products require customized flashing or modification to existing structures, particularly for older character homes. Existing flashing is maintained where possible and replaced if not salvageable.*

**Task 14 Installs perimeter flashing.**

#### Sub-task

**14.01 Installs drip edge.**

#### **Supporting Knowledge and Abilities**

- |          |  |
|----------|--|
| 14.01.01 | knowledge of types of drip edges such as low slope, standard and steep pitches |
| 14.01.02 | knowledge of manufacturer specifications                                       |
| 14.01.03 | knowledge of building specifications   |
| 14.01.04 | knowledge of types of metal flashing for drip edges                            |
| 14.01.05 | knowledge of types of fasteners  |
| 14.01.06 | knowledge of compatibility of fasteners and flashings                          |
| 14.01.07 | knowledge of fitting methods   |
| 14.01.08 | knowledge of watershed design principles                                       |
| 14.01.09 | knowledge of expansion and contraction of flashings                            |
| 14.01.10 | knowledge of basic physics principles of volume, velocity and inertia          |
| 14.01.11 | ability to cut, fit and fasten drip edge metal flashings                       |
| 14.01.12 | ability to apply sealant   |

**Sub-task****14.02 Installs rake edge.****Supporting Knowledge and Abilities**

- |          |  |
|----------|--|
| 14.02.01 | knowledge of types of rake edges such as low slope, standard and steep pitches |
| 14.02.02 | knowledge of manufacturer specifications                                       |
| 14.02.03 | knowledge of building specifications   |
| 14.02.04 | knowledge of types of metal flashing for rake edges                            |
| 14.02.05 | knowledge of types of fasteners  |
| 14.02.06 | knowledge of compatibility of fasteners and flashings                          |
| 14.02.07 | knowledge of fitting methods   |
| 14.02.08 | knowledge of watershed design principles                                       |
| 14.02.09 | knowledge of expansion and contraction of flashings                            |
| 14.02.10 | knowledge of basic physics principles of volume, velocity and inertia          |
| 14.02.11 | ability to cut, fit and fasten rake edge metal flashings                       |
| 14.02.12 | ability to apply sealant   |

**Sub-task****14.03 Installs peak flashing.****Supporting Knowledge and Abilities**

- |          |   |
|----------|---|
| 14.03.01 | knowledge of types of peak flashing such as low slope, standard and steep pitches |
| 14.03.02 | knowledge of manufacturer specifications  |
| 14.03.03 | knowledge of building specifications  |
| 14.03.04 | knowledge of types of metal flashing for peak edges                               |
| 14.03.05 | knowledge of types of fasteners   |

- 14.03.06 knowledge of compatibility of fasteners and flashings
- 14.03.07 knowledge of fitting methods
- 14.03.08 knowledge of watershed design principles
- 14.03.09 knowledge of expansion and contraction of flashings
- 14.03.10 knowledge of basic physics principles of volume, velocity and inertia
- 14.03.11 ability to cut, fit and fasten peak edge metal flashings
- 14.03.12 ability to apply sealant
- 14.03.13 ability to communicate details for specific flashing requirements
- 14.03.14 ability to calibrate various pitch angles

**Task 15 Installs wall to roof intersection flashing.**

**Sub-task**

**15.01 Installs step flashing.**

**Supporting Knowledge and Abilities**

- 15.01.01 knowledge of roofing systems and flashing requirements
- 15.01.02 knowledge of types of metal flashings such aluminum, copper and steel for wall to roof intersection flashing
- 15.01.03 knowledge of types of fasteners
- 15.01.04 knowledge of compatibility of fasteners and flashings
- 15.01.05 knowledge of fitting methods
- 15.01.06 knowledge of watershed design principles
- 15.01.07 knowledge of expansion and contraction of flashings
- 15.01.08 ability to cut, fit, finish and fasten metal flashings
- 15.01.09 ability to apply sealants

**Sub-task**

**15.02 Installs wall flashing.**

**Supporting Knowledge and Abilities**

- 15.02.01 knowledge of roofing systems and flashing requirements
- 15.02.02 knowledge of types of metal flashings such aluminum, copper and steel for wall to roof intersection flashing
- 15.02.03 knowledge of types of fasteners
- 15.02.04 knowledge of compatibility of fasteners and flashings
- 15.02.05 knowledge of fitting methods
- 15.02.06 knowledge of watershed design principles
- 15.02.07 knowledge of expansion and contraction of flashings
- 15.02.08 ability to cut, fit, finish and fasten metal flashings
- 15.02.09 ability to apply sealants

**Sub-task**

**15.03 Installs counter flashing.**

**Supporting Knowledge and Abilities**

- 15.03.01 knowledge of roofing systems and flashing requirements
- 15.03.02 knowledge of types of metal flashings such aluminum, copper and steel for wall to roof intersection flashing
- 15.03.03 knowledge of types of fasteners and wall construction types
- 15.03.04 knowledge of compatibility of fasteners and flashings
- 15.03.05 knowledge of fitting methods
- 15.03.06 knowledge of watershed design principles
- 15.03.07 knowledge of expansion and contraction of flashings



- 15.03.08 knowledge of grout lines of exterior finishes
- 15.03.09 ability to cut, fit, finish and fasten metal flashings
- 15.03.10 ability to adapt flashing to accommodate exterior finish
- 15.03.11 ability to apply sealants

**Sub-task**

**15.04 Installs cap flashing.**

**Supporting Knowledge and Abilities**

- 15.04.01 knowledge of roofing systems and flashing requirements
- 15.04.02 knowledge of types of metal flashings such aluminum, copper and steel for wall to roof intersection flashing
- 15.04.03 knowledge of types of fasteners
- 15.04.04 knowledge of compatibility of fasteners and flashings
- 15.04.05 knowledge of fitting methods
- 15.04.06 knowledge of watershed design principles
- 15.04.07 knowledge of expansion and contraction of flashings
- 15.04.08 knowledge of fire code requirements regarding firewall cap flashing
- 15.04.09 ability to cut, fit, finish and fasten metal flashings
- 15.04.10 ability to apply sealants

**Task 16 Installs valley flashing.**

**Sub-task**

**16.01 Installs exposed valley flashing.**

**Supporting Knowledge and Abilities**

- 16.01.01 knowledge of building codes
- 16.01.02 knowledge of installation procedures for valley flashing
- 16.01.03 knowledge of types of valley options
- 16.01.04 knowledge of types of fasteners
- 16.01.05 knowledge of compatibility of fasteners and flashings
- 16.01.06 knowledge of fitting methods
- 16.01.07 knowledge of watershed design principles
- 16.01.08 knowledge of expansion and contraction of flashings
- 16.01.09 ability to cut, fit finish and fasten metal flashings
- 16.01.10 ability to apply sealant

**Sub-task**

**16.02 Installs backpan flashing.**

**Supporting Knowledge and Abilities**

- 16.02.01 knowledge of building codes
- 16.02.02 knowledge of installation procedures for backpan flashing
- 16.02.03 knowledge of types of backpan options
- 16.02.04 knowledge of types of fasteners
- 16.02.05 knowledge of compatibility of fasteners and flashings
- 16.02.06 knowledge of fitting methods
- 16.02.07 knowledge of watershed design principles

- 16.02.08 knowledge of expansion and contraction of flashings
- 16.02.09 ability to cut, fit finish and fasten metal flashings
- 16.02.10 ability to apply sealant

**Sub-task**

**16.03 Installs cricket flashing.**

**Supporting Knowledge and Abilities**

- 16.03.01 knowledge of building codes
- 16.03.02 knowledge of installation procedures for cricket flashing
- 16.03.03 knowledge of types of cricket options
- 16.03.04 knowledge of types of fasteners
- 16.03.05 knowledge of compatibility of fasteners and flashings
- 16.03.07 knowledge of fitting methods
- 16.03.08 knowledge of watershed design principles
- 16.03.09 knowledge of expansion and contraction of flashings
- 16.03.10 ability to cut, fit finish and fasten metal flashings
- 16.03.11 ability to apply sealant

**Task 17 Installs protrusion flashing.**

**Sub-task**

**17.01 Installs cone chimney flashing.**

**Supporting Knowledge and Abilities**

- 17.01.01 knowledge of types of metal flashings for cone flashing such as aluminum, copper and steel
- 17.01.02 knowledge of types of fasteners
- 17.01.03 knowledge of compatibility of fasteners and flashings

- 17.01.04 knowledge of fitting methods
- 17.01.05 knowledge of watershed design principles
- 17.01.06 knowledge of expansion and contractions of flashings
- 17.01.07 ability to cut, fit, finish and fasten metal flashings
- 17.01.08 ability to apply sealant

**Sub-task**

**17.02 Installs plumbing flashing.**

**Supporting Knowledge and Abilities**

- 17.02.01 knowledge of types of metal flashings for plumbing flashing such as aluminum, copper and steel
- 17.02.02 knowledge of types of fasteners
- 17.02.03 knowledge of compatibility of fasteners and flashings
- 17.02.04 knowledge of fitting methods
- 17.02.05 knowledge of watershed design principles
- 17.02.06 knowledge of expansion and contractions of flashings
- 17.02.07 knowledge of hazardous materials, specifically lead
- 17.02.08 knowledge of plumbing ventilation
- 17.02.09 ability to cut, fit, finish and fasten metal flashings
- 17.02.10 ability to apply sealant

**Sub-task**

**17.03 Installs exhaust vents.**

**Supporting Knowledge and Abilities**

- 17.03.01 knowledge of types of metal flashings for cone flashing such as aluminum, copper and steel
- 17.03.02 knowledge of types of fasteners

- 17.03.03 knowledge of compatibility of fasteners and flashings
- 17.03.04 knowledge of fitting methods
- 17.03.05 knowledge of watershed design principles
- 17.03.06 knowledge of expansion and contractions of flashings
- 17.03.07 knowledge and basic understanding of mechanical exhaust systems
- 17.03.08 knowledge of expandable sealants
- 17.03.09 ability to cut, fit, finish and fasten metal flashings
- 17.03.10 ability to apply sealant
- 17.03.11 ability to air seal duct and vent

## BLOCK F

### INSPECTS ROOFING SYSTEMS

*Trends: The demand for more energy efficient homes creates challenges with the new technology and older character homes. Roofing systems are being updated to new systems and components such as venting, underlay, eave protection and insulation. The industry is using a more holistic approach to assess roofing needs and to identify problems. This includes consideration of the client's lifestyle, furnace type, humidity levels, etc.*

**Task 18 Diagnoses roofing problems.**

#### Sub-task

**18.01 Conducts visual inspection.**

#### Supporting Knowledge and Abilities

- |          |   |
|----------|---|
| 18.01.01 | knowledge of PPE and safety procedures  |
| 18.01.02 | knowledge of types of roofing products, systems and vulnerabilities                                   |
| 18.01.03 | knowledge of compatible roofing systems such as asphalt, metal, tile, slate, wood and rolled products |
| 18.01.04 | knowledge of effects of weather on the roofing system such as wind, snow, rain                        |
| 18.01.05 | ability to access roof  |
| 18.01.06 | ability to work at heights  |
| 18.01.07 | ability to understand when to use PPE and safety procedures   |
| 18.01.08 | ability to understand roofing products and their vulnerabilities                                      |
| 18.01.09 | ability to diagnose the effects of the weather  |
| 18.01.10 | ability to document conditions and deficiencies   |

## Sub-task

### 18.02 Disassembles roof components.

#### Supporting Knowledge and Abilities

- |          |   |
|----------|---|
| 18.02.01 | knowledge of PPE and safety procedures  |
| 18.02.02 | knowledge of types of roofing products, systems and vulnerabilities                                   |
| 18.02.03 | knowledge of compatible roofing systems such as asphalt, metal, tile, slate, wood and rolled products |
| 18.02.04 | knowledge of effects of weather on the roofing system such as wind, snow, rain                        |
| 18.02.05 | knowledge of hand, power and pneumatic tools required   |
| 18.02.06 | knowledge when to disassemble a roofing component   |
| 18.02.07 | knowledge of where to disassemble a roofing component   |
| 18.02.08 | ability to access roof  |
| 18.02.10 | ability to work at heights  |
| 18.02.11 | ability to understand when to use PPE and safety procedures   |
| 18.02.12 | ability to understand roofing products and their vulnerabilities                                      |
| 18.02.13 | ability to diagnose the effects of the weather  |
| 18.02.14 | ability to record and temporarily prevent water entry   |

## Sub-task

### 18.03 Recommends repair solutions.

#### Supporting Knowledge and Abilities

- |          |   |
|----------|---|
| 18.03.01 | knowledge of PPE and safety procedures  |
| 18.03.02 | knowledge of types of roofing products, systems and vulnerabilities                                   |
| 18.03.03 | knowledge of compatible roofing systems such as asphalt, metal, tile, slate, wood and rolled products |
| 18.03.04 | knowledge of effects of weather on the roofing system such as wind, snow, rain                        |
| 18.03.05 | knowledge of roofing materials and resources  |
| 18.03.06 | knowledge of time management  |
| 18.03.07 | ability to access roof  |
| 18.03.08 | ability to work at heights  |
| 18.03.09 | ability to understand when to use PPE and safety procedures   |
| 18.03.10 | ability to understand roofing products and their vulnerabilities                                      |
| 18.03.11 | ability to diagnose the effects of the weather  |
| 18.03.12 | ability to prioritize repairs   |
| 18.03.13 | ability to provide estimate for materials, resources and time required                                |
| 18.03.14 | ability to identify extent of damage  |



**Task 19      Roof maintenance.**

**Sub-task**

**19.01    Maintains sealants.**

**Supporting Knowledge and Abilities**

- 19.01.01      knowledge of roofing systems and products
- 19.01.02      knowledge of sealant product, application and compatibility
- 19.01.03      ability to use sealant and dispensing tools
- 19.01.04      ability to identify sealant failure or when sealant is required

**Sub-task**

**19.02    Replaces damaged or missing roofing products.**

**Supporting Knowledge and Abilities**

- 19.02.01      knowledge of roofing systems and products
- 19.02.02      knowledge of manufacturer specifications and products
- 19.02.03      knowledge of product compatibility
- 19.02.04      knowledge of PPE and safety procedures
- 19.02.05      knowledge of repair techniques
- 19.02.06      knowledge of hand, power and pneumatic tools required
- 19.02.07      ability to recognize roofing systems and products
- 19.02.08      ability to recognize and assess extent of damage or missing product
- 19.02.09      ability to complete repair according to extent of the damage
- 19.02.10      ability to use of PPE and safety procedures

**Sub-task**

**19.03 Cleans roofs and eavestroughs.**

**Supporting Knowledge and Abilities**

- 19.03.01 knowledge of characteristics of roofing systems and products
- 19.03.02 knowledge of watershed principles
- 19.03.03 knowledge of cleaning techniques for various roofing systems and troughs
- 19.03.04 knowledge of PPE and safety procedures
- 19.03.05 ability to apply watershed principles
- 19.03.06 ability to use tools and equipment to clean roof
- 19.03.07 ability to use PPE and safety procedures

**Sub-task**

**19.04 Secures loose flashings.**

**Supporting Knowledge and Abilities**

- 19.02.01 knowledge of roofing systems and products
- 19.02.02 knowledge of manufacturer specifications and products
- 19.02.03 knowledge of product compatibility
- 19.02.04 knowledge of PPE and safety procedures
- 19.02.05 knowledge of repair techniques
- 19.02.06 knowledge of hand, power and pneumatic tools required
- 19.02.07 knowledge of types of fasteners and application
- 19.02.08 knowledge of types of sealants and application
- 19.02.09 ability to recognize roofing systems and products

- 19.02.10 ability to recognize and assess extent of damage or missing product
- 19.02.11 ability to complete repair according to extent of the damage
- 19.02.12 ability to use of PPE and safety procedures
- 19.02.13 ability to secure loose flashing with fasteners
- 19.02.14 ability to apply sealant

## APPENDICES

## **Appendix “A” Tools and Equipment**

### **Hand Tools**

Adhesive spreader	Power shears
Air and material hoses	Pry bar
Aviation snips (left , right handed)	Rake
Broom	Riveting gun
Bucket/pail	Roof jack
Caulking gun	Roof rake
Chalk line	Roofer knife
Chisels	Roofing nail cutter
Crowbar	Sawhorse
Drill (power, cordless)	Scissors
Fan rake	Scoop shovel
Flashlight	Scraper
Folding pliers	Screwdriver
Gutter scoop	Seam roller
Hacksaw	Shingle remover
Hammer	Shovel
Hammer stapler	Slate bar
Hand roller	Slater punch
Hand saw	Sliding T-bevel
Hand seamer	Spade
Hatchet	Staple gun
Magnets	Tin snips
Measuring tape	Trowel
Nail puller	Wheelbarrow
Pipe wrench	Wrench
Pitchfork	

### **Power Tools, Pneumatic Tools and Equipment**

Air compressor	Nibbler
Backpack blower	Pneumatic caulking gun
Concrete cutting tools	Power saws (quick-cut, reciprocating, circular)
Electrical cord	Primer machine
Generator	Roller
Hammer drill	Screw gun
Hot air gun	Spray gun and nozel
Industrial vacuum	Tile cutter

## Hoisting, Lifting and Staging Equipment

Crane  
Hand hoist  
Hydraulic hoist  
Ladder  
Ladder hoist

Lifting form  
Mechanical lift  
Pump jacks  
Planks  
Scaffolding

## Motorized Equipment

Forklift  
Man-lift  
Scissor lift

Skid steer loader  
Snow blower

## Personal Protective Equipment and Safety Equipment

Anchor (permanent, removable)  
Communications device  
Ear muffs  
Eye wash bottle  
Face shield  
Fall arresters  
First aid kit  
Full body harness  
Gloves  
Guard rails  
Hard hat  
Kneepads

Lanyard (retractable, non-retractable)  
Long sleeves  
Mask  
Portable fire extinguisher  
Respirator  
Rope grabs  
Safety boots  
Safety fence  
Safety glasses, goggles  
Safety harness  
Safety vest

## Disposal Equipment

Disposal bin and trailers  
Disposal chute  
Garbage bags  
Garbage chute

Tarps  
Tray  
Wheelbarrow

## Appendix “B” Glossary

ITEM	DESCRIPTION
<b>Asphalt</b>	Although there are natural occurring asphalts, those used in roofing in Canada are from the heavy end of petroleum distillation and can be obtained in a great range of viscosities and softening points.
<b>Bitumen</b>	A generic term describing any mixture of heavy hydrocarbons in viscous or solid form; in the roofing industry, the work covers both asphalt and coal tar pitch.
<b>Caulking/sealant</b>	Any of a wide range of bituminous, rubber, plastic or other materials suitable for filling seams or cracks to make them tight against water leakage and remain plastic for an extended time after application.
<b>Cricket</b>	A device that is used to divert water at the intersections of roofs or at the intersection of a roof and chimney (also called saddle).
<b>Deck</b>	The structural roof to the top surface of which a roof covering system is applied.
<b>Drip edge</b>	The formed edge on metal installed at the eaves of a roof.
<b>Eave</b>	The edge of a sloped roof.
<b>Fabric</b>	A woven cloth of organize or inorganic filaments treated with bitumen and being strong than felt, used in special flashing applications.
<b>Fascia</b>	Any cover board at the edge or eaves of a flat or sloping overhanging roof.
<b>Felt</b>	A mat of organic or inorganic fibres, in sheet form impregnated with asphalt or coal tar, and supplied in roll form.
<b>Flashing – base flashing (metal)</b>	Sheet metal covering the can and up the vertical surface, protecting the membranes.
<b>Flashing – cap flashing</b>	The covering, usually sheet metal, over the base flashing, or capping a higher wall, such as a parapet
<b>Flashing – counter flashing</b>	Sometimes used for the upper portion of the sheet metal flashing when the metal flashing is divided into two pieces (see also cap flashing).
<b>Flashing – membrane flashing</b>	A continuation of the roofing proper to cover any element of the roof structure departing from the roof deck incline.
<b>Flashing – tep flashing</b>	Individual pieces of flashing material used to flash the sides of chimneys and dormers and similar projections on sloping shingled roofs; the individual pieces are overlapped and stepped up the slope.
<b>Flashing – thru-wall flashing</b>	Flashing extending completely through a masonry wall to prevent water infiltrating behind lower elements of the flashing system and of the roofing system.
<b>Hip</b>	The high point where 2 sloped planes meet.
<b>Insulation</b>	See roof insulation.
<b>Lap</b>	The part of the shingles, roll roofing or felt covered in application by the following course or ply.
<b>Edge lap</b>	The overlap of the edge of a ply over the previous ply.
<b>End lap</b>	The overlap of the start of a roll over the end of the previous roll.
<b>Membrane</b>	A waterproof covering; it may be a single-ply system or a multi-ply system.

## Glossary - continued

ITEM	DESCRIPTION
<b>Plastic cement</b>	Although all caulking cements could be called plastic cements, there is a commonly help acceptance in the roofing industry that plastic cement means bituminous cement; these can be either asphalt or coal tar base with the former much more common; these are a mixture of bitumen, asbestos fibres, filler and suitable solvent; see also caulking cement.
<b>Plastic pan</b>	Also called pitch pan, pitch pocket, gum box. These comprise a flanged collar placed around items that project through the roof systems; the flange is properly set into the roof membrane and the pan is well filled with plastic cement; these pans are a constant source of trouble and should only be used when no other solution can be found.
<b>Primer</b>	A thin liquid compound applied to a surface to improve the adhesion of a thicker liquid compound; the most commonly used is asphalt primer.
<b>Ridge</b>	The top of a sloped roof.
<b>Saddle</b>	A small false roof or the elevation of a part of the roof surface used to divert water from behind an obstacle, such as a chimney (also called cricket).
<b>Slope</b>	The incline of a roof surface (also called pitch).
<b>Snow guards</b>	A roofing projection that is installed on sloped roofs to ensure that large sheets of ice or snow do not fall; similar to snow rails.
<b>Stapling</b>	The use of a specially designed staple gun and staples instead of a hammer and roofing nails in roofing application.
<b>Starter strip</b>	A roofing material applied at the eaves and serving as a base for the first course of roofing.
<b>Surfacing</b>	Any aggregate or granular material used as a protective covering on the weather surface of a roof.
<b>Underlayment</b>	Material that is laid under the roofing and provides a secondary form of protection.
<b>Valley</b>	The low point where two sloped planes meet.
<b>Vapour retarder</b>	Material used to retard the passage of vapour or moisture into the roof system where harmful condensation of vapour within the system could take place.
<b>Venting</b>	In built-up roofing, the installation of special provisions to allow the roof insulation to vent to the outside; this can be done at roof edges, at parapet walls by installation of special roof vents and expedited by using roof insulation which will allow air and vapour movement.

Source Canada Human Resources and Skills Development: Occupational Analyses Series: Roofer 2006.

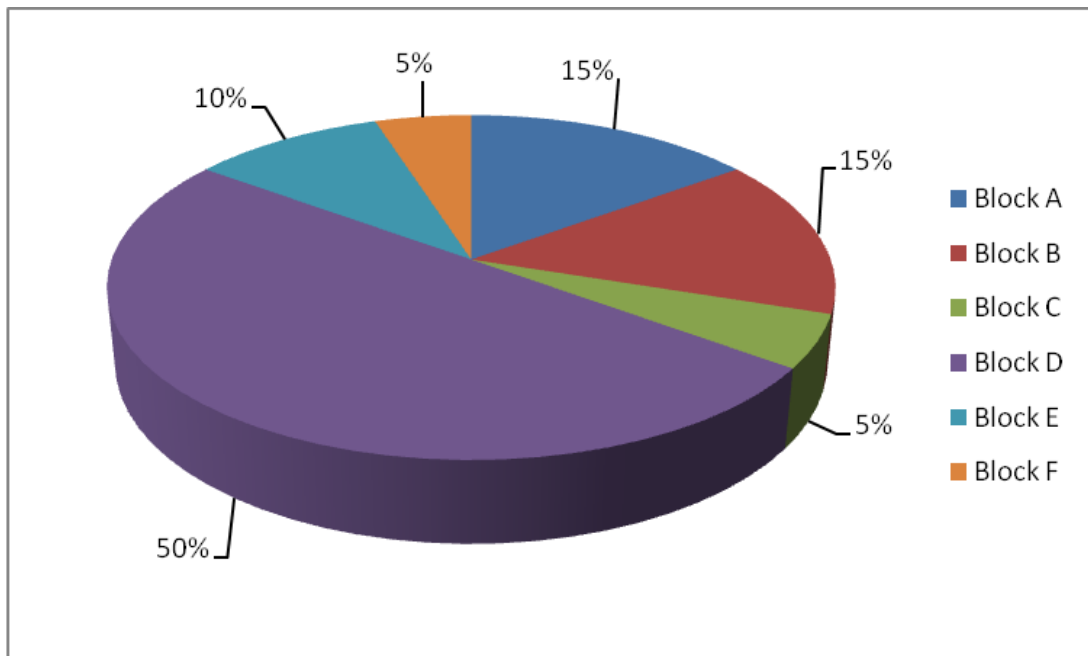


## Appendix “C” Pie Chart

Titles of Blocks	Percentage <sup>1</sup>
Block A Occupational Skills	15%
Block B Roof Preparation	15%
Block C Roof Cavity Ventilation	5%
Block D Installation of Sloped Roof	50%
Block E Installation of Flashing	10%
Block F Inspects Roofing Systems	<u>5%</u>
<b>TOTAL:</b>	<b>100%<sup>1</sup></b>

Percentages reflect the average amount of time workers within the occupation spend performing these tasks on a yearly basis.

Pie Chart



## Appendix “D” DACUM Chart

### Sloped Roofer

BLOCKS	TASKS	SUB-TASKS			
<b>A OCCUPATIONAL SKILLS</b>	<b>1. Uses tools.</b>	1.01 Inspect hand, power and pneumatic tools.	1.02 Maintains hand, power and pneumatic tools.	1.03 Lock-out and tag-out tools.	1.04 Uses hand, power and pneumatic tools.
	<b>2. Uses specialty equipment.</b>	2.01 Drives trucks and hauls trailers.	2.02 Uses forklift and hoisting equipment.		
	<b>3. Follows safety procedures.</b>	3.01 Uses personal protective equipment.	3.02 Installs safety barriers.	3.03 Uses fall protection.	3.04 Conducts hazard assessment.
	<b>4. Uses staging equipment.</b>	4.01 Uses ladders.	4.02 Uses scaffolding equipment.		
	<b>5. Uses trade documents.</b>	5.01 Reads blueprints and job specifications	5.02 Estimates job and materials.		
	<b>6. Organizes work.</b>	6.01 Provides customer service.	6.02 Communicates with other trades and supplies.	6.03 Orders supplies.	6.04 Arranges worksite scheduling.
<b>B ROOF PREPARATION</b>	<b>7. Removes and demolishes watershed materials.</b>	7.01. Arranges debris management.	7.02 Protects job site.	7.03 Removes existing materials.	
	<b>8. Assesses project.</b>	8.01 Evaluates substrate structures.	8.02 Assesses roofing components.	8.03 Modifies job specifications.	
	<b>9. Prepares decking.</b>	9.01 Performs non-structural repairs.	9.02 Prepares substrate.		

BLOCKS	TASKS	SUB-TASKS				
<b>C</b> <b>ROOF CAVITY VENTILATION</b>	<b>10. Installs eave (intake) venting.</b>	10.01 Installs ventilation chutes.	10.02 Installs soffit venting.	10.03 Installs eave venting.		
	<b>11. Installs roof venting.</b>	11.01 Calculates venting requirements.	11.02 Installs roof vents.	11.03 Installs power vents.	11.04 Installs ridge vents.	
<b>D</b> <b>INSTALLATION OF SLOPED ROOF</b>	<b>12. Installs roofing accessories.</b>	12.01 Installs skylights.	12.02 Installs brackets.	12.03 Installs eavestroughs.		
	<b>13. Installs roofing materials.</b>	13.01 Installs eave protection.	13.02 Installs underlay.	13.03 Installs asphalt shingles.	13.04 Installs metal roofing.	13.05 Installs tile shingles.
		13.06 Installs slate shingles.	13.07 Installs wood shingles (shakes).	13.08 Installs rolled products.		
<b>E</b> <b>INSTALLATION OF FLASHING</b>	<b>14. Installs perimeter flashing.</b>	14.01 Installs drip edge.	14.02 Installs rake edge.	14.03 Installs peak flashing.		
	<b>15. Installs wall to roof intersection flashing.</b>	15.01 Installs step flashing.	15.02 Installs wall flashing.	15.03 Installs counter flashing.	15.04 Installs cap flashing.	
	<b>16. Installs valley flashing.</b>	16.01 Installs exposed valley flashing.	16.02 Installs backpan flashing.	16.03 Installs cricket flashing.		
	<b>17. Installs roofing materials.</b>	17.01 Installs cone chimney flashing.	17.02 Installs plumbing flashing.	17.0 Installs exhaust vent.		

BLOCKS	TASKS	SUB-TASKS			
<b>F</b> <b>INSPECTS</b> <b>ROOFING</b> <b>SYSTEMS</b>	<b>18.</b> <b>Diagnoses</b> <b>roof</b> <b>problems.</b>	18.01 Conducts visual inspection.	18.02 Disassembles roof components.	18.03 Recommends repair solutions.	
	<b>19. Roof</b> <b>maintenance.</b>	19.01 Maintains sealants.	19.02 Replaces damaged or missing roofing products.	19.03 Cleans roofs and eavestroughs.	19.04 Secures loose flashings.