

ONTARIO COLLEGE OF TRADES

ORDRE DES MÉTIERS DE L'ONTARIO

Apprenticeship
Curriculum Standard

Terrazzo, Tile and Marble Setter

Level 1

241A

2009

Please Note:

Apprenticeship Training and Curriculum Standards were developed by the Ministry of Training, Colleges and Universities (MTCU). As of April 8th, 2013, the Ontario College of Trades (College) has become responsible for the development and maintenance of these standards. The College is carrying over existing standards without any changes.

However, because the Apprenticeship Training and Curriculum Standards documents were developed under either the *Trades Qualification and Apprenticeship Act* (TQAA) or the *Apprenticeship and Certification Act, 1998* (ACA), the definitions contained in these documents may no longer be accurate and may not be reflective of the *Ontario College of Trades and Apprenticeship Act, 2009* (OCTAA) as the new trades legislation in the province. The College will update these definitions in the future.

Meanwhile, please refer to the College's website (www.collegeoftrades.ca) for the most accurate and up-to-date information about the College. For information on OCTAA and its regulations, please visit: www.collegeoftrades.ca/about/legislation-and-regulations.

TABLE OF CONTENTS

Introduction	3
Program Summary of Reportable Subjects	5
S1133. Trade Practices and Procedures I	
S1133.1 – Trade History and Organization.....	8
S1133.2 – Health and Safety	10
S1133.3 – General Construction Features	13
S1133.4 – Applied Trade Calculations	16
S1133.5 – Material Specifications	17
S1133.6 – Tools and Equipment	21
S1133.7 – Applied Communications.....	24
S1133.8 – Restoring Existing Surfaces	26
S1134. Blueprint Reading and Construction Geometry I	
S1134.1 – Alphabet of Lines for Blueprints.....	28
S1134.2 – Construction Geometry	29
S1134.3 – Drafting Equipment.....	30
S1134.4 – Material Layout and Job Organization.....	32
S1134.5 – Drawing to Scale	33
S1135. Construction Techniques & Procedures I	
S1135.1 – General Building Construction.....	35
S1135.2 – General Installation Techniques	37
S1136. Terrazzo Installation I	
S1136.1 – Introduction to Terrazzo Materials	40
S1136.2 – Introduction to Terrazzo Installation	42
S1137. Tile Installation I	
S1137.1 – Introduction to Tile Materials	46
S1137.2 – Introduction to Tile Installation.....	48

S1138. Natural Stone Installation I

S1138.1 – Introduction to Natural Stone Materials	52
S1138.2 – Introduction to Natural Stone Installation of Floors, Walls & Columns	54
S1138.8 – Introduction to Natural Stone Installation of Counter Tops	57
Recommended Tools and Equipment Required for Level I.....	60
Level I Suggested Projects.....	63

Introduction

This new curriculum standard for the Terrazzo, Tile and Marble Setter trade or modular program is based upon the on-the-job performance objectives, located in the industry-approved training standard.

The curriculum is organized into 2 levels of training or 6 reportable subjects per Level. The Program Summary of Reportable Subjects chart summarizes the training hours for each reportable subject.

The curriculum identifies only the learning that takes place off-the-job. The in-school program focuses primarily on the theoretical knowledge and the essential skills required to support the performance objectives of the Apprenticeship or Modular Training Standards. Employers/Sponsors are expected to extend the apprentices or trainee's knowledge and skills through practical training on the work site. Regular evaluations of the apprentice's or trainee's knowledge and skills are conducted throughout training to ensure that all apprentices **or** trainees have achieved the learning outcomes identified in the curriculum standard.

It is not the intent of the in-school curriculum to perfect on-the-job skills. The practical portion of the in-school program is used to reinforce theoretical knowledge. Skill training is provided on the job.

Terrazzo, Tile and Marble Setter

Level 1

PROGRAM SUMMARY OF REPORTABLE SUBJECTS

Number	Reportable Subjects	Hours Total	Hours Theory	Hours Practice
S1133	Trade Practices and Procedures I	75	61	14
S1134	Blueprint Reading and Construction Geometry I	33	25	8
S1135	Construction Techniques & Procedures I	72	10	62
S1136	Terrazzo Installation I	60	10	50
S1137	Tile Installation I	60	17	43
S1138	Natural Stone Installation I	60	15	45
	Total	360	138	222

Reference Materials:

Product information as supplied by the manufacturer:

- General installation procedures
- Tool adjustments
- Warranty requirements
- Required installation material
- Conditions for installation

S1133.1 TRADE HISTORY AND ORGANIZATION

Duration:	Total Hours:	4
	Theory:	4
	Practical:	0

Cross-Reference to Training Standard Performance Objectives:

U0853.09

General Learning Outcome:

On successful completion, the apprentice is able to:

Describe the history and related regulations and organizations for the Terrazzo, Tile and Natural Stone Setter Industry.

Learning Outcomes and Content:

On successful completion, the apprentice is able to:

- S1133.1.1 Identify the early beginnings of the role of Terrazzo, Natural Stone and Tile craft persons in society and trace its evolution to the present time.
 - Use of decorative, glazed clay walls

- S1133.1.2 Describe the associated unions and the non-union contractors and sub-contractors in the private sector.

- S1133.1.3 Identify the relationship of the Terrazzo, Tile and Natural Stone Setter trades to the brick and stone mason, floor covering installer, cement finisher and other trades on the job site.

- S1133.1.4 State the progress made in the trade for technological advances in materials, tools and processes.
 - Code changes
 - Maintenance-free surfaces
 - Material choices

- S1133.1.5 Outline the importance and methods for keeping up to date in the trade.
- Advantages of keeping up to date
 - Training programs available

S1133.2 HEALTH AND SAFETY

Duration:	Total Hours	8
	Theory:	4
	Practical:	4

Cross-Reference to Training Standard Performance Objectives:

U0851.01, U0851.02, U0851.03, U0851.04, U0851.05, U0851.06, U0851.07

General Learning Outcome:

On successful completion, the apprentice is able to:

Describe the Health and Safety Acts and Regulations and safe work practice procedures required to work in the Terrazzo, Tile and Natural Stone Industry in accordance with government safety regulations, manufacturer's recommendations and approved industry standards.

Learning Outcomes and Content:

On successful completion, the apprentice is able to:

- S1133.2.1 Identify the benefits for physical fitness, strength, and safe material handling techniques as a tradesperson and the need for appropriate warm-up on the job.
- S1133.2.2 Identify the different types and specific functions of personal protective equipment (PPE's).
 - Protective clothing
 - Headgear
 - Hearing protection
 - Eyewear
 - Footwear
 - Kneewear
 - Breathing apparatus
 - Fall arrest equipment

- S1133.2.3 Apply the Occupational Health & Safety Act, Workers' Compensation Act, and the Environmental Protection Act and identify hazards such as:
- Obstacles
 - Inadequate Ventilation
 - Construction Debris
- S1133.2.4 State the requirements for Workers' Compensation Coverage, WHMIS training and Material Safety Data Sheets, Emergency First-Aid, Fire Procedures and Safety committees.
- S1133.2.5 Determine the appropriate safe and correct methods for waste disposal.
- S1133.2.6 Identify the nature and the severity of hazardous materials and handle or dispose of them in accordance with WHMIS guidelines.
- Define the Workplace Hazardous Material Information System
 - Identify WHMIS labels
 - Data sheets
 - Report workplace hazards to supervisor
- S1133.2.7 Select, fit, wear, and maintain personal protective equipment in accordance with the Occupational Health & Safety Act.
- Protective clothing
 - Headgear
 - Hearing protection
 - Eyewear
 - Footwear
 - Kneewear
 - Breathing apparatus
 - Fall arrest equipment

- S1133.2.8 Use and maintain ladders safely by placing them on a firm footing at an appropriate angle, tying them off securely at the top, employing a safety harness, and never painting them, according to the Construction regulations of OHSA.
- S1133.2.9 Use and maintain mechanical lifting devices and working platforms (such as scaffolds, person lifts, material lifts) according to the manufacturers' instructions and OHSA.
- S1133.2.10 Outline posting requirements for pertinent safety regulations and policies and Material Safety Data Sheets (MSDS).
- S1133.2.11 Apply safety measures in the shop and on the job site by using appropriate measures for lifting and handling material and equipment, using electrical protection and safety devices on tools and equipment, and by following good housekeeping practices.
- S1133.2.12 Apply fire safety practices in the workplace: select appropriate fire extinguishers for class A, B, C, and D fires, activate alarms, and communicate the danger to others.
- S1133.2.13 Practice drug and alcohol awareness, and abstain from substance abuse at the job site.

S1133.3 GENERAL CONSTRUCTION FEATURES

Duration:	Total Hours	8
	Theory:	4
	Practical:	4

Cross-Reference to Training Standard Performance Objectives:

U0855.03, U0855.04, U0856.01 to U0856.13

General Learning Outcome:

On successful completion, the apprentice is able to:

Describe general construction features in accordance with government safety regulations, manufacturer's recommendations and specifications and approved industry standards.

Learning Outcomes and Content:

On successful completion, the apprentice is able to:

S1133.3.1 Identify the characteristics and applications of structural slabs.

- Above grade
- Suspended
- On grade
- In-door/outdoor

S1133.3.2 Describe the types, properties and applications of wall substrates for terrazzo, natural stone and tile.

- Brick
- Stone
- Masonry
- Concrete block
- Drywall
- Plywood
- Poured concrete
- Stud

- S1133.3.3 Describe the types and basic construction features of ceilings requiring flat, curved and angular work.
- Flat
 - Dome
 - Cathedral
- S1133.3.4 Describe the types and construction features of stairs made of concrete, wood and steel.
- Spiral
 - Platform
 - Pre-cast
 - Straight
- S1133.3.5 Describe the types and basic construction features of terrazzo floors.
- Standard Portland Cement
 - Venetian
 - Epoxy Bonded
 - conductive
 - Polyacrylate
 - Exposed Aggregate
 - Floating
 - Palladiana Terrazzo
 - Precast Terrazzo
 - Epoxy Resin Thin-set Terrazzo
- S1133.3.6 Explain the features and locations of work area related building services.
- Plumbing
 - Electrical
- S1133.3.7 Identify the types and characteristics of underlayment material.
- Plywood
 - Cementitious Backer Unit (CBU)
 - Oriented Strand Board (O.S.B.)
 - Mortar Bed
 - Steel
 - Gypsum Board
 - Coated Glassmat Backer Board

- S1133.3.8 Identify types and spacing of fasteners.
- Nails
 - Screws
 - Staples
 - Adhesive
- S1133.3.9 Determine the need for removal of existing materials and identify the types and applications of patching compounds.
- S1133.3.10 Prepare concrete floors.
- First, test moisture, bond
 - Second: scarify/grind/shotblast floor when floor leveling is required
 - Third: apply self-leveling filling patch compounds
- S1133.3.11 Prepare wood floors by installing underlayment with appropriate staples, screws and nails, and filling and sanding seams and holes.
- S1133.3.12 Remove existing flooring, perform cleanup of sub-floor.

S1133.4 APPLIED TRADE CALCULATIONS

Duration:	Total Hours	16
	Theory:	16
	Practical:	0

Cross-Reference to Training Standard Performance Objectives:

U0852.03, U0854.02, U0858.04, U0859.03, U0861.03,
U0862.02

General Learning Outcome:

On successful completion, the apprentice is able to:

Perform basic calculations in Metric and Imperial Units in accordance with the Terrazzo, Tile and Natural Stone Industry requirements.

Learning Outcomes and Content:

On successful completion, the apprentice is able to:

Perform addition, subtraction, multiplication, and division of whole numbers.

- S1133.4.1 Perform addition, subtraction, multiplication, and division of fractions, and identify proper and improper fractions, mixed numbers, and lowest common denominator as used in the Imperial system.
- S1133.4.2 Add, subtract, multiply, and divide decimals in System International (S.I.) applications, using the concepts of rounding of decimals, and decimal: fraction conversions.
- S1133.4.3 Convert imperial measures to S.I. measures and vice versa.
- S1133.4.4 Calculate the areas and perimeters of squares and rectangles and their combinations.
- S1133.4.5 Calculate the areas and perimeters of triangles, trapezoids, and circles.
- S1133.4.6 Describe the construction and application of scaling rulers for blueprint reading.

S1133.5 MATERIAL SPECIFICATIONS

Duration:	Total Hours	12
	Theory:	12
	Practical:	0

Cross-Reference to Training Standard Performance Objectives:

U0855.02, U0855.03

General Learning Outcome:

On successful completion, the apprentice is able to:

Describe material specifications in accordance with manufacturers and approved industry standards.

Learning Outcomes and Content:

On successful completion, the apprentice is able to:

S1133.5.1 Identify the construction materials and applications for:

- Terrazzo
 - Standard Portland Cement
 - Rustic
 - Epoxy Bonded
 - Conductive
 - Floating
 - Bonded
 - Thin-gauge epoxy matrix
 - Polyacrylate
 - Venetian
 - Palladian
 - Precast Terrazzo

- Natural Stone
 - Granite
 - Marble (Groups A, B, C & D)
 - Slate
 - Limestone

- Sandstone
- Travertine
- Quartz Based Stone
- Serpentine
- Engineered Stone
- Agglomerated

- Tile

- Ceramic (glazed and unglazed)
- Quarry
- Marble
- Granite
- Agglomerate
- Slate
- Porcelain
- Pavers
- Vitreous
- Mosaic
- Mexican
- Terracotta
- Pre-cast terrazzo

- Agglomerate

- Granite based
- Marble based
- Quartz based

S1133.5.2 Describe the construction features, characteristics and production process for finishes used on terrazzo, natural stone and tile.

- Honed
- Polished
- Sand-blasted
- Textured
- Flame
- Fine rubbed
- Bush-hammered
- Natural cleft
- Water Jet Finish
- Brushed
- Tumbled

S1133.5.3 Define the meaning and characteristics of the following terms.

- Bond strength
- Hardness
- Absorption
- Compressive and Shear strength
- Abrasiveness
- Porosity
- Contraction and expansion factors
- Density
- Flexural Strength

S1133.5.4 Explain the material ordering process through the supervisor.

- Quantity
- Size and colour
- Checking deliveries for quality, quantity and accuracy

S1133.5.5 Describe the properties and application of bonding materials.

- Dry-Set Mortars (epoxy-based, latex-based)
- Organic Adhesives (water-based, solvent-based)
- Emulsion Mortars, Furan Resin
- Mortars (sand, cement, latex)

S1133.5.6 Describe the various mechanical systems and their applications.

- Fasteners (angles, bolts and pins)
- Anchoring systems
- Strut systems
- Spring nuts
- Shims and spacers
- Clips
- Accessories

S1133.5.7 Explain the types and applications of admixtures.

- Colouring agents for:
 - portland cement terrazzo
 - epoxy terrazzo
 - grout
- Curing agents and sealers
 - water – based
 - solvent – based

- Retardants for setting-up process
- Accelerators for fast - setting

S1133.5.8 Describe the storage process for chemicals as prescribed by the Workplace Hazardous Materials Information System (WHMIS) under the Occupational Health and Safety Act.

- Location
- Containers
- Ventilation

S1133.6 TOOLS AND EQUIPMENT

Duration:	Total Hours:	15
	Theory:	9
	Practical:	6

Cross-Reference to Training Standard Performance Objectives:

U0852.01 to U0852.03

General Learning Outcome:

On successful completion, the apprentice is able to:

Use and maintain trade specific tools and equipment in accordance with government safety regulations, manufacturer's recommendations and specifications and approved industry standards.

Learning Outcomes and Content:

On successful completion, the apprentice is able to:

S1133.6.1 Identify and select the hand and power tools of the Terrazzo, Natural Stone and Tile Trade as per specific job.

- Layout
 - Plumb bob
 - Hand level
 - Scribe
 - Steel square
 - Transit level
 - Chalk Line
 - Pocket Tapes
- Leveling
 - Transit level
 - Laser level
 - Water level
 - Wood float
 - Spirit level
 - Flat trowels
 - Straightedge

- Measuring
 - Pocket tapes
 - Digital tapes

- Cutting
 - Cold chisels
 - Nippers
 - Hacksaw
 - Diamond blades
 - Boring bits
 - Tub saws
 - Trim saws
 - Skill saws
 - Hammers
 - Drills
 - knife
 - Chipping hammers
 - Tin snips

- Grinding
 - Grinding wheels
 - Grinders
 - Diamond plugs
 - Drills

- Mixing
 - Drills
 - Mortar hoe
 - Rake
 - Shovel
 - Mortar mixers
 - Mixing Box

- Pounding
 - Beating block
 - Hammers
 - Rubber mallet

- Holding
 - Clamps
 - Mortar board
 - Shovels
 - Pliers
 - Wheel barrows

- Mixing box
- Hawks
- Buckets
- Hydraulic jacks

- Application
 - Notched trowels
 - Putty knife
 - Pointing trowels
 - Flat trowels
 - Rubber float
 - Cove base trowels
 - Terrazzo trowels
- Fastening
 - Screwdrivers
 - Wrenches
 - Pliers
 - Drills
- Compacting
 - Heavy rollers
 - Tampers

S1133.6.2 Use and operate the tools of the trade as per manufacturers' specifications.

S1133.6.3 Identify the types and use of material handling equipment.

- Dollies
- Hoisting Devices

S1133.6.4 Perform maintenance procedures for Terrazzo, Tile and Natural Stone tools and equipment to ensure good working condition.

S1133.7 APPLIED COMMUNICATION

Duration:	Total Hours	7
	Theory:	7
	Practical:	0

Cross-Reference to Training Standard Performance Objectives:

U0853.01 to U0853.04, U0853.06 to U0853.09

General Learning Outcome:

On successful completion, the apprentice is able to:

Describe how to communicate effectively in the workplace in accordance with sound business communication techniques.

Learning Outcomes and Content:

On successful completion, the apprentice is able to:

S1133.7.1 Perform a role play of the communication between worker and customer, assuming either role.

- Listening Skills
- Control of Emotions
- Verbal Skills
- Written Skills

S1133.7.2 Apply appropriate methods to prevent damage to the surfaces of the client's property.

- Clean Footwear
- Floor Covering, furniture and appliance protection
- Positioning of tools and Equipment

S1133.7.3 Determine deficiencies by joint inspections and act on customer's requests for repair.

- S1133.7.4 Use computers and audio devices to communicate instructions and procedures accurately and efficiently.
- S1133.7.5 Describe the role of a Mentor and Coach in support of an apprentice trainee in accordance with the typical workplace challenges.
- Coaching techniques
 - Become knowledgeable of flooring products and company policies
 - Provide instruction to other co-workers or trainees
 - Build and maintain a relationship with co-workers or trainees
 - Observe the trainee and resolve problems as they arise
 - Set high standards and be a good example
 - Show respect to the trainee and be patient as they learn
 - Build a team atmosphere
 - Mentoring techniques
 - Become a trusted guide to a co-worker or trainee
 - Create a supportive environment for trainee to learn
 - Become a trusted advisor or counselor
 - Assist trainees to resolve workplace and personal problems
 - Provide ongoing assessment and feedback of trainee's progress
 - Try to be accessible and approachable
 - Encourage trainees and co-workers
 - Motivate trainees and co-workers to look for solutions to problems

S1133.8 RESTORING EXISTING SURFACES

Duration:	Total Hours	5
	Theory:	5
	Practical:	0

Cross-Reference to Training Standard Performance Objectives:

U0856.13, U0859.02, U0861.11, U0862.09

General Learning Outcome:

On successful completion, the apprentice is able to:

Describe the procedures to restore existing surfaces in accordance with government regulations, manufacturer's recommendations and specifications and approved industry standards.

Learning Outcomes and Content:

On successful completion, the apprentice is able to:

S1133.8.1 Identify and describe the methods of restoring damaged or unsuitable materials on existing surfaces.

- Removing materials
- Replacing materials
- Specified tools

S1133.8.2 List the steps required to perform a successful job cleanup and repair of existing surfaces.

S1133.8.3 Describe the potential hazards associated with the restoration of existing surfaces.

S1134. BLUEPRINT READING AND CONSTRUCTION GEOMETRY I

Duration:	Total Hours	33
	Theory:	25
	Practical:	8

Prerequisites:

Content:

- S1134.1 Alphabet of lines for blueprints.
- S1134.2 Construction geometry
- S1134.3 Drafting equipment
- S1134.4 Material layout and Job Organization
- S1134.5 Drawing to Scale

- Evaluation & Testing:
- Assignments related to theory and appropriate application skills
 - Minimum of one mid-term test during the term
 - Final exam at end of term
 - Periodic quizzes

Mark Distribution:

Theory Testing	Practical Application Testing	Projects	Notebook & Organizational Skills	Final Assessment
10%	60%	10%	5%	15%

Instructional and Delivery Strategies:

- Lecture and assignment work.

S1134.1 ALPHABET OF LINES FOR BLUEPRINTS

Duration:	Total Hours	4
	Theory:	4
	Practical:	0

Cross-Reference to Training Standard Performance Objectives:

U0854.02, U0855.01

General Learning Outcome:

On successful completion, the apprentice is able to:

Identify the alphabet of lines used on blueprints in accordance with manufacturers' specifications.

Learning Outcomes and Content:

On successful completion, the apprentice is able to:

S1134.1.1 Identify the alphabet of lines used on blueprints.

- Symbols
- Abbreviations
- Object lines
- Hidden lines
- Extension lines
- Centre lines
- Cutting plane lines
- Break lines

S1134.2 CONSTRUCTION GEOMETRY

Duration:	Total Hours	10
	Theory:	6
	Practical:	4

Cross-Reference to Training Standard Performance Objectives:

U0854.02, U0855.01

General Learning Outcome:

On successful completion, the apprentice is able to:

Perform operations in construction geometry in accordance with manufacturers' specifications.

Learning Outcomes and Content:

On successful completion, the apprentice is able to:

- S1134.2.1 Define the term construction geometry.
- S1134.2.2 Draw parallel lines.
- S1134.2.3 Bisect lines and angles.
- S1134.2.4 Determine the radius of:
 - An arc
 - Centre of a circle
 - Laying out a regular polygon

S1134.3 DRAFTING EQUIPMENT

Duration:	Total Hours	6
	Theory:	6
	Practical:	0

Cross-Reference to Training Standard Performance Objectives:

U0854.02, U0855.01

General Learning Outcome:

On successful completion, the apprentice is able to:

Use related drafting equipment in accordance with manufacturers' specifications.

Learning Outcomes and Content:

On successful completion, the apprentice is able to:

S1134.3.1 Describe the construction features of drafting equipment.

- Architectural scales
- Drafting boards
- Other equipment

S1134.3.2 Practice the use of drafting equipment.

- Architectural scales
- Drafting boards
- Other equipment

S1134.3.3 Identify types and application of drawings.

- Floor plans
- Elevations
- Details
- Room schedules

S1134.3.4 Reproduce working drawings that include:

- Dimension lines
- Arrowheads
- Hidden lines
- Area identification
- Abbreviations
- Symbols

S1134.3.5 Perform measurements and scaling dimensions using Imperial and S.I. Units.

- Use of scaling tools
- Calculator

S1134.4 MATERIAL LAYOUT AND JOB ORGANIZATION

Duration:	Total Hours	6
	Theory:	4
	Practical:	2

Cross-Reference to Training Standard Performance Objectives:

U0856.10, U0858.05, U0859.03, U0861.03

General Learning Outcome:

On successful completion, the apprentice is able to:

Perform basic layout procedures in accordance with manufacturers' specifications.

Learning Outcomes and Content:

On successful completion, the apprentice is able to:

- S1134.4.1 Identify conditions and obstacles that affect the layout of materials and accessories.
 - Furniture
 - Appliances
 - Temperature
 - Access

- S1134.4.2 Determine layout schemes for specified materials and establish material and labour components for a job.
 - Job Site Access
 - Material Delivery
 - Material Storage
 - Material Layout Schemes

- S1134.4.3 Perform measuring, scaling, and sketching procedures for a layout.
 - Determine starting point.
 - Using bench marks
 - Using layout tools.

- S1134.4.4 Perform free-hand sketch to assist communication and clarify details

S1134.5 DRAWING TO SCALE

Duration:	Total Hours	5
	Theory:	5
	Practical:	0

Cross-Reference to Training Standard Performance Objectives:

U0854.02, U0855.01

General Learning Outcome:

On successful completion, the apprentice is able to:

Produce working drawings to scale in accordance with blueprint specifications for related flooring installation tasks.

Learning Outcomes and Content:

On successful completion, the apprentice is able to:

S1134.5.1 Identify types and application of drawings.

- Floor plans
- Elevations
- Details
- Room schedules

S1134.5.2 Reproduce working drawings that include:

- Dimension lines
- Arrowheads
- Hidden lines
- Area identification
- Abbreviations
- Symbols

S1134.5.3 Perform measurements and scaling dimensions using Imperial and S.I. Units.

- Use of scaling tools
- Calculator

S1135. CONSTRUCTION TECHNIQUES AND PROCEDURES I

Duration: Total Hours: 72

Theory: 10

Practical: 62

Prerequisites:

Content:

S1135.1 General Building Construction

S1135.2 General Installation Techniques

Evaluation & Testing: - Assignments related to theory and appropriate application skills
- Minimum of one mid-term test during the term
- Final exam at end of term
- Periodic quizzes

Mark Distribution:

Theory Testing	Practical Application Testing	Projects	Notebook & Organizational Skills	Final Assessment
10%	60%	10%	5%	15%

Instructional and Delivery Strategies:

- Lecture and assignment work.

Reference Materials:

Product information as supplied by the manufacturer:

- General installation procedures
- Tool adjustments
- Warranty requirements
- Required installation material
- Conditions for installation

S1135.1 GENERAL BUILDING CONSTRUCTION

Duration:	Total Hours:	26
	Theory:	6
	Practical:	20

Cross-Reference to Training Standard Performance Objectives:

U0851.02, U0851.03, U0851.07, U0854.01, U0854.04, U0854.05

General Learning Outcome:

On successful completion, the apprentice is able to:

Perform general building construction techniques in accordance with government regulations, manufacturer's recommendations and specifications and approved industry standards

Learning Outcomes and Content:

On successful completion, the apprentice is able to:

S1135.1.1 Describe worksite organization practices.

- Safe storage of materials, tools and equipment.
- Balanced weight distribution of materials
- Theft prevention.
- Protection from other adverse conditions.

S1135.1.2 Perform worksite organization practices.

- Safe storage of materials, tools and equipment.
- Weight distribution of materials
- Theft prevention.
- Protection from other adverse conditions.

S1135.1.3 Perform lay out patterns and designs for horizontal and vertical surfaces.

- Material units
- Room shape
- Joint width
- Determining starting point and layout pattern and cut sizes.

S1135.1.4 Perform lay out patterns to produce a uniform appearance in Natural Stone, Ceramic, Agglomerate and Porcelain finishing materials.

- Sequentially select units from various boxes.
- Produce various layouts until the desired appearance is obtained.

S1135.2 GENERAL INSTALLATION TECHNIQUES

Duration:	Total Hours:	46
	Theory:	4
	Practical:	42

Cross-Reference to Training Standard Performance Objectives:

U0856.11, U0858.11 to U0858.13, U0860.02, U0860.04, U0862.08

General Learning Outcome:

On successful completion, the apprentice is able to:

Perform the general installation procedures for Terrazzo, Natural Stone and Tile products in accordance with government regulations, manufacturer's recommendations and specifications and approved industry standards

Learning Outcomes and Content:

On successful completion, the apprentice is able to:

- S1135.2.1 Produce cuts for specific layout patterns.
 - 45 degree cuts
 - Circular cuts
 - Mitre cuts
 - Straight cuts
 - Kerf cuts

- S1135.2.1 Perform back buttering of finishing products with a bonding material.
 - Fresh mortar
 - Epoxy
 - Adhesive
 - Interior applications require 80% mortar coverage
 - Exterior applications require 95% mortar coverage

- S1135.2.2 Perform installation and fastening techniques of finishing products.
 - Bonding materials
 - Anchors
 - Screws
 - Dowels
 - Nails

- Shims
- Wire
- Angles
- Hooks
- Bolts
- pins

S1135.2.3 Perform caulking and grouting of finishing products.

- Describe the types and characteristics of caulking materials for external installations
- Describe the types and characteristics of caulking materials for internal installations.
- Describe the methods of applying caulking and grouting materials.

S1135.2.4 Perform finished area cleaning procedures.

- Use of required tools and cleaning agents.
- WHMIS directions.

S1135.2.5 Provide protection for the installation area.

S1136. TERRAZZO INSTALLATION I

Duration: Total Hours: 60

Theory: 10
Practical: 50

Prerequisites:

Content:

- S1136.1 Introduction to terrazzo materials
- S1136.2 Introduction to terrazzo installation

Evaluation & Testing:

- Assignments related to theory and appropriate application skills
- Minimum of one mid-term test during the term
- Final exam at end of term
- Periodic quizzes

Mark Distribution:

Theory Testing	Practical Application Testing	Projects	Notebook & Organizational Skills	Final Assessment
10%	60%	10%	5%	15%

Instructional and Delivery Strategies:

- Lecture and assignment work.

Reference Materials:

Product information as supplied by the manufacturer:

- General installation procedures
- Tool adjustments
- Warranty requirements
- Required installation material
- Conditions for installation

S1136.1 INTRODUCTION TO TERRAZZO MATERIALS

Duration:	Total Hours:	12
	Theory:	6
	Practical:	6

Cross-Reference to Training Standard Performance Objectives:

U0855.03

General Learning Outcome:

On successful completion, the apprentice is able to:

Perform preparation procedures of terrazzo material and substrate in accordance with government regulations, manufacturer's recommendations and specifications and approved industry standards

Learning Outcomes and Content:

On successful completion, the apprentice is able to:

- S1136.1.1 Identify and describe types of and composition of terrazzo
- Conventional Portland Cement Terrazzo
 - Epoxy Bonded Terrazzo
 - Venetian Terrazzo
 - Palladiana Terrazzo
 - Rustic Terrazzo
 - Conductive Terrazzo
 - Epoxy Resin Thin Set Terrazzo
 - Polyacrylate Modified Cement Terrazzo
 - Precast Terrazzo
 - Portland cement
 - Epoxy resin
 - Stairs
 - Bases
 - Window sills
 - Aggregate Chips
 - Grading sizes
 - Recommended standard sizes
 - Chip size for granite, plastic and glass variations from manufacturers and suppliers.
 - Metal chips of non-corrosive and non-rusting material.

- European chips
- Standard Chip sizes/ Passing Screen/ Retained on bottom Screen
 - No. 0 3.0 mm 2.0 mm to 3.0 mm
 - No. 1 6.0 mm 3.0 mm to 6.0 mm
 - No. 2 10.0 mm 6.0 mm to 10.0 mm
 - No. 3 12.0 mm 10.0 mm to 12.0 mm
 - No. 4 16.0 mm 12.0 mm to 16.0 mm
 - No. 5 19.0 mm 16.0 mm to 19.0 mm
 - No. 6 22.0 mm 19.0 mm to 22.0 mm
 - No. 7 25.0 mm 22.0 mm to 25.0 mm
 - No. 8 29.0 mm 25.0 mm to 29.0 mm
- Standard terrazzo aggregate (domestic marble chips 0, 1, 2)
- Specification writer schedule of various sizes, proportions, types and colours of aggregate and gauges, thickness and types of divider strips for various locations.

S1136.1.2 Perform preparation procedures for substrate.

- Sweep and clean until dust free
- Fill cracks and holes
- Apply leveling material as required
- Check for structural integrity

S1136.2 INTRODUCTION TO TERRAZZO INSTALLATION

Duration:	Total Hours:	48
	Theory:	4
	Practical:	44

Cross-Reference to Training Standard Performance Objectives:

U0857.01 to U0857.06

General Learning Outcome:

On successful completion, the apprentice is able to:

Perform the basic installation procedures for terrazzo material in accordance with government regulations, manufacturer's recommendations and specifications and approved industry standards

Learning Outcomes and Content:

On successful completion, the apprentice is able to:

S1136.2.1 Describe the installation steps for terrazzo products on floors and walls.

- Install Base strips
- Install Screed mortar bed
- Install Floor strips
- Install Cove divider
- Install Cove base
- Prepare terrazzo by combining marble or granite chips
- Install terrazzo material
- Perform first grind and apply grout
- Perform second grind
- Apply sealer

S1136.2.2 Determine the steps necessary to take in order to adequately test and prepare the sub-floor or wall.

S1136.2.3 Describe the installation of divider strips for terrazzo pattern.

- Fresh mortar under bed for floor installations
- Mortar for walls
- Epoxy-based methods for wall or finished slabs.
- Curing process and time requirements

- S1136.2.4 Describe the process to prepare the terrazzo for installation.
- Combining marble or granite chips of specified size and colour with epoxy or cement.
 - Addition of pigment to cement as required
 - Use of electric or manual tools and water as specified.
- S1136.2.5 Identify the types of terrazzo installation systems.
- Portland cement floating/minimum thickness 75mm/ weight 180 Kg/m²
 - Portland cement bonded/minimum thickness 50mm/ weight 118 Kg/m²
 - Portland cement Venetian/minimum thickness 75mm/ weight 180 Kg/m²
 - Thin-set epoxy bonded/minimum thickness 13mm/weight 31 Kg/m²
 - Polyacrylate modified cement/minimum thickness 10mm/weight 24 Kg/m²
 - Epoxy resin thin set/ minimum thickness 6mm/weight 15 Kg/m²
 - Resin thin set/ minimum thickness 10mm/weight 24 Kg/m²
 - Palladiana minimum thickness 13mm/weight variable
- S1136.2.6 List the steps required to perform a successful cleanup of a terrazzo installation.
- Remove all cutting debris
 - Remove glue residue
 - Remove any installation debris
 - Soak floor and apply slurry coat as required
 - Remove contaminants/ oils sealers and curing compounds
 - Prime the floor as specified for epoxy terrazzo installations
- S1136.2.7 Perform standard terrazzo floor and base installation.
- Install base strip
 - Apply scratch coat
 - Screed underbed
 - Install floor strips
 - Apply bonding agent
 - Install cove base
 - Install floor
 - Spread terrazzo mixture level to top of strips
 - Spread terrazzo mixture with trowel
 - Level to top of strips
 - Sprinkle topping with dry aggregate chips
 - Roll topping with heavy rollers and remove excess cement and water
 - Hand trowel topping until surface is smooth with no voids or pin holes
 - Allow recommended curing time.

S1136.2.8 Identify the types and construction features of stairs.

- Boxed or closed stringer
- Open stringer, one side.
- Open stringer, two sides.
- Winders or pie-shaped.
- Circular or elliptical.

S1136.2.9 Describe the procedures to install terrazzo on stairs.

S1136.2.10 Finish terrazzo floors using floor and base grinding machines.

- First grind to expose full-size chips
- Grouting with matching coloured cement
- Grout and perform second grind

S1137. TILE INSTALLATIONS I

Duration:	Total Hours	60
	Theory:	17
	Practical:	43

Prerequisites:

Content:

S1137.1	Introduction to tile materials
S1137.2	Introduction to tile installation

Evaluation & Testing: - Assignments related to theory and appropriate application skills
 - Minimum of one mid-term test during the term
 - Final exam at end of term
 - Periodic quizzes

Mark Distribution:

Theory Testing	Practical Application Testing	Projects	Notebook & Organizational Skills	Final Assessment
10%	60%	10%	5%	15%

Instructional and Delivery Strategies:

- Lecture and assignment work.

Reference Materials:

Product information as supplied by the manufacturer:

- General installation procedures
- Tool adjustments
- Warranty requirements
- Required installation material
- Conditions for installation

S1137.1 INTRODUCTION TO TILE MATERIALS

Duration:	Total Hours	15
	Theory:	12
	Practical:	3

Cross-Reference to Training Standard Performance Objectives:

U0855.01, U0855.02, U0855.03

General Learning Outcome:

On successful completion, the apprentice is able:

Describe the types, composition and application of tile materials in accordance with government regulations, manufacturer's recommendations and specifications and approved industry standards.

Learning Outcomes and Content:

On successful completion, the apprentice is able to:

S1137.1.1 Describe the types, composition and application of tile.

Types

- Porcelain
- Clay
- Glass
- Terrazzo
- Marble
- Granite
- Limestone
- Sandstone
- Slate
- Agglomerate
- Quarry
- Pavers
- Glazed Ceramic Tile

- Applications
 - Floors
 - Walls
 - Columns
 - Ceilings
 - Arches
 - Pools
 - Whirl Pools
 - Back Splashes
 - Shower stalls
 - Bath Tub walls
 - Swimming pools

S1137.1.2 Describe floor and wall preparation for tile installations.

- Inspect floors and walls
- Clean and sweep until all contaminants are removed
- Level floor as required
- Plumb all walls

S1137.1.3 Describe installation methods for tile.

- Straight Running Bond
- Brick joint
- Herringbone
- Diamond pattern
- Basket Weaves
- Stack Bond

S1137.1.4 Identify and describe installation materials required for tile.

- Dry- set mortar
- Latex modified mortar
- Fast setting mortar
- Furan resin mortars
- Epoxy Mortar
- Epoxy grout
- Organic Adhesives
- Grout
 - Sanded
 - Un-sanded

S1137.1.5 Describe layout patterns of tile floor and wall according to various methods of installation.

S1137.2 INTRODUCTION TO TILE INSTALLATION

Duration:	Total Hours:	45
	Theory:	5
	Practical:	40

Cross-Reference to Training Standard Performance Objectives:

U0856.01 to U0856.09, U0858.01 to U0858.08 to U0858.10, U0858.13 to U0858.16

General Learning Outcome:

On successful completion, the apprentice is able to:

Perform the basic installation procedures for tile in accordance with government regulations, manufacturer's recommendations and specifications and approved industry standards

Learning Outcomes and Content:

On successful completion, the apprentice is able to:

- S1137.2.1 Describe the installation steps for tile on floors and walls.
 - Install mortar bed plumb and square
 - Screed underbed to required plane
 - Screed mortar bed
 - Apply bond coat
 - Install tile
 - Install coved and straight tile base
 - Install accessories

- S1137.2.2 Determine the steps necessary to take in order to adequately test and prepare the sub-floor or wall.

- S1137.2.3 Describe the dry layout installation for tile pattern.
 - Fresh mortar underbed for floor installations
 - Adhesive for walls
 - Curing process and time requirements

- S1137.2.4 Describe the process to prepare the tile for installation.
 - Use of electric or manual tools and water as specified.

- S1137.2.5 List the steps required to perform a successful cleanup of a tile installation.
- Remove all cutting debris
 - Remove grout residue
 - Seal the floor as specified for tile installations
- S1137.2.6 Perform cutting and fitting procedures for tile floor and wall installation:
- Pattern match
 - Dye lot match
 - Use of pattern scribe
 - Free hand
 - Direct scribe
 - Strip measure
- S1137.2.7 Perform the application procedures for thin set and adhesives.
- S1137.2.8 Perform standard tile floor and wall installation.
- Perform dry layout of tile to determine pattern fit and cutting requirements.
 - Spread bond coat or adhesive with trowel
 - Install tile
 - Apply grout
 - Allow recommended curing time.
- S1137.2.9 Install tile flooring to boxed stairs, and install accessories and sealers.
- Use of a recess scribe
 - Double cut technique
 - Cut and butt technique

 - Identify the types and construction features of stairs.
 - Boxed or closed stringer
 - Open stringer, one side.
 - Open stringer, two sides.
 - Winders or pie-shaped.
 - Circular or elliptical.

TERRAZZO, TILE AND MARBLE SETTER – LEVEL 1

S1137.2.11 Describe the procedures to install tile on stairs.

S1137.2.12 Remove, repair and maintain damaged tile flooring and perform recommended waste disposal.

S1138. NATURAL STONE INSTALLATIONS I

Duration:	Total Hours	60
	Theory:	15
	Practical:	45

Prerequisites:

Content:

- S1138.1 Introduction to natural stone materials.
- S1138.2 Introduction to natural stone installation on floors, walls and columns.
- S1138.3 Introduction to natural stone installation of counter tops.

- Evaluation & Testing:
- Assignments related to theory and appropriate application skills
 - Minimum of one mid-term test during the term
 - Final exam at end of term
 - Periodic quizzes

Mark Distribution:

Theory Testing	Practical Application Testing	Projects	Notebook & Organizational Skills	Final Assessment
10%	60%	10%	5%	15%

Instructional and Delivery Strategies:

- Lecture and assignment work.

Reference Materials:

Product information as supplied by the manufacturer:

- General installation procedures
- Tool adjustments
- Warranty requirements
- Required installation material
- Conditions for installation

S1138.1 INTRODUCTION TO NATURAL STONE MATERIALS

Duration:	Total Hours:	6
	Theory:	4
	Practical:	2

Cross-Reference to Training Standard Performance Objectives:

U0855.02, U0855.03

General Learning Outcome:

On successful completion, the apprentice is able to:

Describe the types, composition and application of natural stone materials in accordance with government regulations, manufacturer's recommendations and specifications and approved industry standards.

Learning Outcomes and Content:

On successful completion, the apprentice is able to:

S1138.1.1 Describe the types, composition and application of natural stone.

- Types
 - Granite
 - Marble
 - Limestone
 - Slate
 - Quartz based stone
 - Engineered stone
 - Agglomerate stone
 - Sandstone
 - Travertine
 - Serpentine

- Applications
 - Floors
 - Walls
 - Columns
 - Ceilings
 - Arches
 - Pools
 - Interior conventional (Plaster and Wire)
 - Exterior (Mechanical)
 - Soffit
 - Planter box
 - Fountain
 - Sign
 - Interior lobby
 - Shower jambs
 - Tub-surround
 - Counter top
 - Vanities

- Types of finish
 - Polish
 - Hone
 - Flame
 - Sand Blast
 - Acid Wash
 - Bush-Hammered
 - Natural Cleft
 - Water Jet
 - Fine Rubbed

S1138.1.2 Identify and describe installation materials required for natural stone.

- Mortar bed
- Mechanical (hardware)
- Conventional (plaster & wire)
- Latex-Portland Cement Mortar
- Epoxy Mortar
- Adhesives
- Grout
- Caulking

S1138.2 INTRODUCTION TO NATURAL STONE INSTALLATION OF FLOORS, WALLS AND COLUMNS

Duration:	Total Hours:	27
	Theory:	3
	Practical:	24

Cross-Reference to Training Standard Performance Objectives:

U0860.01 to U0860.06, U0861.01 to U0861.09

General Learning Outcome:

On successful completion, the apprentice is able to:

Perform the introductory installation procedures for natural stone on floors, walls and columns in accordance with government regulations, manufacturer's recommendations and specifications and approved industry standards

Learning Outcomes and Content:

On successful completion, the apprentice is able to:

- S1138.2.1 Describe the preparation requirements for installing natural stone on floors, walls and columns.
- Set up of work platforms
 - Inspection of slabs
 - Confirming layouts by referencing blueprints and drawings
 - Re-checking materials
 - Clean and sweep until all contaminants are removed
 - Level floor as required
 - Plumb all walls or columns
 - Inspect floors, walls and columns for structural integrity
- S1138.2.2 Determine the steps necessary to take in order to adequately test and prepare the sub-floor, wall or column.
- S1138.2.3 Describe the installation for natural stone.
- Fresh mortar under bed for floor installations
 - Cured mortar under bed for floor installations
 - Conventional and mechanical for walls
 - Curing process and time requirements

- S1138.2.4 Describe the process to prepare the natural stone for installation.
- Use of electric or manual tools and water as specified.
- S1138.2.5 Describe the installation systems for natural stone on floors, walls and columns.
- Interior installations
 - Conventional method
 - Stacking method
 - Exterior installation
 - Mechanical method
 - Floors
 - Thin-set
 - Medium bed
 - Mortar bed
 - Walls and columns
 - Mechanical – Dowel/Kerf/ Butterfly/Post/Two Plate System
 - Plaster wire
 - Thin-set for tile form
- S1138.2.6 Perform cutting and fitting procedures for natural stone floor, wall and column installation:
- Diamond Drilling
 - Diamond blade grinding and cutting
- S1138.2.7 Describe the application procedure for setting materials.
- S1138.2.8 Perform standard natural stone floor, wall and column installation.
- Interior installations
 - Conventional method
 - Stacking method
 - Exterior installation
 - Mechanical method

- Floors
 - Mix and apply latex mortar thin-set
 - Mix and apply Medium bed
 - Mix and apply epoxy mortar
- Walls and Columns
 - Install mechanical supports and fasteners– Dowel/Kerf/ Butterfly/Post/Two Plate System
 - Install plaster wire
 - Mix and apply latex mortar thin-set
- Perform dry layout of natural stone
- Spread latex bond coat mortar with trowel
- Install stone
- Apply grout
- Allow recommended curing time.

S1138.2.9 Describe the procedures to install natural stone on stairs or steps.

- Indoor installations
- Outdoor installations

S1138.2.10 List the steps required to perform a successful cleanup and maintenance of a natural stone installation.

- Remove all cutting debris
- Remove grout residue
- Seal the floor as specified
- Remove substrate residue
- Remove adhesive residue
- Waste disposal and removal of any installation debris
- Application of protective coatings (if required)

S1138.2.11 Describe the removal and maintenance requirements for natural stone and perform recommended waste disposal.

S1138.3 INTRODUCTION TO NATURAL STONE INSTALLATION OF COUNTER TOPS

Duration:	Total Hours:	27
	Theory:	8
	Practical:	19

Cross-Reference to Training Standard Performance Objectives:

U0862.01 to U0862.08

General Learning Outcome:

On successful completion, the apprentice is able to:

Perform the basic installation procedures for natural stone on counter tops in accordance with government regulations, manufacturer's recommendations and specifications and approved industry standards

Learning Outcomes and Content:

On successful completion, the apprentice is able to:

S1138.3.1 Interpret blueprints and specifications for natural stone counter top installations.

- Required materials
- Bonding types
- Digitizer diagrams and notes
- Other specified details

S1138.3.2 Describe the characteristics of various types of substrate and setting materials for natural stone counter top installations.

- Types of substrate
- Types of setting materials

S1138.3.3 Explain the various lifting, carrying and transporting techniques for natural stone counter top installations.

- Identify various slab thickness and relate to lifting and handling
- Determine the number of persons required to safely lift and install counter top slabs
- Use of hand straps
- Use of lifting clamps
- Use of suction support bars to help prevent breakage
- Use of motorized lifting devices
- Securing slabs during delivery transportation

S1138.3.4 Describe the installation steps for natural stone on counter tops.

- Preparation of substrate
- Check measurements
- Verify if mounting surface is square
- Check if millwork is level
- Review tolerances of joint widths
- Assess millwork and wall for irregularities
- Verify the integrity of slab support
- Install aprons
- Cut out accessory openings
- Install slabs
- Grout joints
- Clean and seal the slab as specified

S1138.3.5 Determine the steps necessary to take in order to adequately test and prepare the cabinet base.

S1138.3.6 Describe the dry layout installation for counter tops.

- Required clearances
- Level and shimming tests

S1138.3.7 Describe the process to prepare the natural stone for installation.

- Cutouts for sink and fixtures
- Diamond bit grinding requirements

S1138.3.8 List the steps required to perform a successful cleanup of a natural stone counter top installation.

- Remove all grinding debris
- Remove caulking residue
- Clean back splash and walls as required

- S1138.3.9 Perform standard natural stone counter top installation.
- Install necessary supports and position undermount sinks
 - Perform dry layout of counter top to verify fit and leveling requirements
 - Install counter top
 - Mix matching colour to seam adhesive and secure seams if required
 - Apply sealant caulking
 - Allow recommended curing time.

Summary of Equipment Required for Level I

Unit I: Recommended Minimum Tools and Equipment:

General Tools

- Crescent shaped knife
- Concave cutting gouge
- Divider scriber
- Universal scriber
- Hand roller
- Trowels
 - pointing
 - flat
 - cove
- Pliers
- Metal snips
- Hammer
- Chisels
- Sponges
- Broom
- Rake
- Tape
- Water level
- Laser level
- Square
- Straight edges
- Box and open end wrench set
- 3/8" Socket set

Safety equipment per student

1 - Knee pad set

1 - Hard hat

4 - Respirators per class

1 - Safety glasses

1 - Hearing protection

Job site equipment

- 2 ft. level
- 4 ft. level
- Dollies or hand trucks
- Hammer drill
- Anchorite tools
- Circular saw
- Plumb bobs

Unit 2: Recommended Minimum Tools and Equipment:

- Scaling Tools
- Calculators

Unit 3, 4, & 5: Recommended Minimum Tools and Equipment:

Hand Tools

- Tile cutter
- Crescent shaped knife
- Concave cutting gouge
- Divider scribe
- Universal scribe
- Hand roller
- Trowels
 - pointing
 - flat
 - cove
- Pliers
- Metal snips
- Hammer
- Chisels
- Sponges
- Broom
- Rake
- Tape
- Water level
- Laser level
- Square
- Straight edges

Power Tools and Equipment

- Hammer drill
- Skill saw
- Cement mixer
- Base floor machine
- Wet saw

Unit 6: Recommended Minimum Tools and Equipment:

Power Tools

- Circular saws
- Grinders
- Mixing drums
- Tub saws
- Hammer drills
- Variable speed drill, ceramic and masonry drill bits
- Wet saw

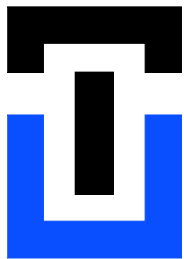
Hand Tools

- Trowels
 - Notched
 - flat
- Claw hammer
- Rubber mallet
- Socket set
- Box and open end wrenches
- Pliers
- Snips
- Pinch bar
- Pry bar

APPENDIX II

SUGGESTED PROJECTS LEVEL I:

1. Terrazzo – Floor Installation
2. Terrazzo – Base and Wall Installation
3. Tile - Floor and Wall Layout Installation
4. Natural Stone - Floor Layout Installation
5. Natural Stone - Counter Top Layout Installation



ONTARIO COLLEGE OF TRADES

ORDRE DES MÉTIERS DE L'ONTARIO

www.collegeoftrades.ca