

Issued: July 4, 2022

Program: Roofer (Roofer, Damp, and Waterproofer)

To: ITA Training Providers
Articulation Chair
System Liaison Person
Youth Train in Trades School Districts

Subject: **Roofer (Roofer, Damp, and Waterproofer) Program Update**

OPSN No.: **OPSN 2022 012**

Effective Date: September 1, 2022

Summary of Change: Please be advised that the Harmonized Program Outline and Program Profile have been posted to the Industry Training Authority (ITA) [website](#). Changes were made to the trade name, technical training (TT) hours, work-based training (WBT) hours, and program content.

Details: Changes to the Roofer (Roofer, Damp, and Waterproofer) program in BC are as follows:

Trade Name: Changed from **Roofer, Damp, and Waterproofer** to **Roofer**

Hours: See table below

	Current Hours	Harmonized Hours	Difference
Level 1	120	150	+30
Level 2	120	150	+30
Level 3	120	150	+30
Total Technical Training	360	450	+90
Work-based Training	3,600	4,950	+1,350
Total Training	3,960	5,400	+1,440
Hours Required to Challenge the Trade	5,400	7,425	+2,025

Program Content: There were some changes to the training content and the sequencing of technical training.

Rationale

In 2019, BC endorsed the Canadian Council of Directors of Apprenticeship (CCDA) recommendations for harmonization and the adoption of a revised Red Seal Occupational Standard (RSOS). Over the course of 2019-2022, BC conducted a review of the BC program with the engagement of our industry and training provider partners. The review aligned the provincial program to the RSOS and the harmonization recommendations.

For more**information contact:**

Program Standards
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Program Outline Review Details

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Summary - Competency Migration

The BC Occupational Analysis Chart (OAC) was aligned to the structure of the Red Seal Occupational Standard (RSOS). Therefore, **all the competencies have been renamed and restructured**. This chart shows the finalized competency distribution for the Harmonized Roofer program. It summarizes the major changes to the competencies. For details, see the charts below.

HARMONIZED LEVEL 1 (HL1)		HARMONIZED LEVEL 2 (HL2)		HARMONIZED LEVEL 3 (HL3)	
Line A	PERFORM SAFETY-RELATED FUNCTIONS	Line A	PERFORM SAFETY-RELATED FUNCTIONS	Line A	PERFORM SAFETY-RELATED FUNCTIONS
	A1 Maintain safe work environment		In context across all competencies		In context across all competencies
	A2 Use personal protective equipment (PPE) and safety equipment		In context across all competencies		In context across all competencies
Line B	USE TOOLS AND EQUIPMENT	Line B	USE TOOLS AND EQUIPMENT	Line B	USE TOOLS AND EQUIPMENT
	B1 Use hand tools	CL1→HL1/HL2/HL3	B1 Use hand tools	CL1→HL1/HL2/HL3	B1 Use hand tools
	B2 Use power tools, pneumatic tools, and hot-air welding, induction, and fuelled equipment	CL1→HL1/HL2/HL3	B2 Use power tools, pneumatic tools, and hot-air welding, induction, and fuelled equipment	CL1→HL1/HL2/HL3	B2 Use power tools, pneumatic tools, and hot-air welding, induction, and fuelled equipment
	B3 Use hoisting, lifting, and rigging equipment	CL1→HL1/HL2/HL3	B3 Use hoisting, lifting, and rigging equipment	CL1→HL1/HL2/HL3	B3 Use hoisting, lifting, and rigging equipment
	B4 Use access equipment	CL1→HL1/HL2/HL3	B4 Use access equipment	CL1→HL1/HL2/HL3	B4 Use access equipment
	B5 Use hot process equipment	CL1→HL1/HL2/HL3	B5 Use hot process equipment	CL1→HL1/HL2/HL3	B5 Use hot process equipment
	B6 Use motorized equipment	CL1→HL1/HL2/HL3	B6 Use motorized equipment	CL1→HL1/HL2/HL3	B6 Use motorized equipment
Line C	ORGANIZE WORK	Line C	ORGANIZE WORK	Line C	ORGANIZE WORK
	C1 Use documentation and reference materials		C1 Use documentation and reference materials		
HL1/HL2/HL3 ←CL2/CL3	C2 Interpret blueprints and drawings		C2 Interpret blueprints and drawings		C2 Interpret blueprints and drawings
				CL1/CL2/CL3→HL3	C3 Estimate material
New	C4 Assess worksite conditions	New	C4 Assess worksite conditions		
	C5 Position equipment and material on the ground and on the roof		C5 Position equipment and material on the ground and on the roof		
	C6 Prepare material disposal systems	CL1 →HL1/HL2	C6 Prepare material disposal systems		
					C7 Evaluate roof conditions near roof-top equipment installations
New	C8 Use roofing math	New	C8 Use roofing math		
Line D	USE COMMUNICATION AND MENTORING TECHNIQUES	Line D	USE COMMUNICATION AND MENTORING TECHNIQUES	Line D	USE COMMUNICATION AND MENTORING TECHNIQUES
	D1 Use communication techniques				

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HARMONIZED LEVEL 1 (HL1)		HARMONIZED LEVEL 2 (HL2)		HARMONIZED LEVEL 3 (HL3)	
				New	D2 Use communication and mentoring techniques
Line E	PREPARE ROOF FOR REPLACEMENT	Line E	PREPARE ROOF FOR REPLACEMENT	Line E	PREPARE ROOF FOR REPLACEMENT
	E1 Protect surrounding area				
	E2 Remove loose debris				
	E3 Remove roofing and flashings				
		CL1 → HL2	E4 Prepare roof substrate		
		CL1 → HL2	E5 Perform minor adjustments to penetrations, curbs, and parapets		
Line F	PREPARE DECK FOR ROOF INSTALLATION	Line F	PREPARE DECK FOR ROOF INSTALLATION	Line F	PREPARE DECK FOR ROOF INSTALLATION
		CL1 → HL2/HL3	F1 Inspect deck	CL1 → HL2/HL3	F1 Inspect deck
	F2 Clean surface of deck				
		CL1 → HL2/HL3	F3 Verify placement of roof penetrations, curbs, and parapets	CL1 → HL2/HL3	F3 Verify placement of roof penetrations, curbs, and parapets
	F4 Dries deck				
Line G	APPLY LOW SLOPE ROOFING COMPONENTS	Line G	APPLY LOW SLOPE ROOFING COMPONENTS	Line G	APPLY LOW SLOPE ROOFING COMPONENTS
	G1 Install support panels		G1 Install support panels		G1 Install support panels
	G2 Prime substrate		G2 Prime substrate		G2 Prime substrate
	G3 Apply vapour retarder, vapour barrier, and air barrier	CL1/CL3 → HL1/HL2/HL3	G3 Apply vapour retarder, vapour barrier, and air barrier		G3 Apply vapour retarder, vapour barrier, and air barrier
	G4 Install insulation		G4 Install insulation		G4 Install insulation
	G5 Install cover board		G5 Install cover board		G5 Install cover board
	G6 Install drains, vents, curbs, and penetrations	CL1/CL3 → HL1/HL2/HL3	G6 Install drains, vents, curbs, and penetrations		G6 Install drains, vents, curbs, and penetrations
	G7 Apply ballast, walkways, and protective surfaces	CL1/CL3 → HL1/HL2/HL3	G7 Apply ballast, walkways, and protective surfaces		G7 Apply ballast, walkways, and protective surfaces
	G8 Install metal flashings		G8 Install metal flashings		G8 Install metal flashings
Line H	APPLY LOW SLOPE ROOFING MEMBRANES	Line H	APPLY LOW SLOPE ROOFING MEMBRANES	Line H	APPLY LOW SLOPE ROOFING MEMBRANES
	H1 Relax membranes	CL1 → HL1/HL2/HL3	H1 Relax membranes	CL1→HL1/HL2/HL3	H1 Relax membranes
	H2 Set membranes	CL1 → HL1/HL2/HL3	H2 Set membranes	CL1→HL1/HL2/HL3	H2 Set membranes
	H3 Apply membranes using hot-liquid process	CL1 → HL1/HL2/HL3	H3 Apply membranes using hot-liquid process	CL1→HL1/HL2/HL3	H3 Apply membranes using hot-liquid process
		CL1/CL3 → HL2/HL3	H4 Apply membranes using torched-on method		



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HARMONIZED LEVEL 1 (HL1)		HARMONIZED LEVEL 2 (HL2)		HARMONIZED LEVEL 3 (HL3)	
			H5 Apply membranes using hot-air welding		H5 Apply membranes using hot-air welding
	H6 Apply membranes using cold-applied methods	CL1 → HL1/HL2/HL3	H6 Apply membranes using cold-applied methods	CL1→HL1/HL2/HL3	H6 Apply membranes using cold-applied methods
	H7 Apply membranes using mechanical fasteners	CL1 → HL1/HL2/HL3	H7 Apply membranes using mechanical fasteners	CL1→HL1/HL2/HL3	H7 Apply membranes using mechanical fasteners
				CL2/CL3 → HL3	H8 Apply loose-laid membranes
				CL1/CL3 → HL3	H9 Apply liquid-applied membranes
	H10 Install membrane flashings	CL1 → HL1/HL2/HL3	H10 Install membrane flashings	CL1→HL1/HL2/HL3	H10 Install membrane flashings
	H11 Install temporary seals and temporary drains	CL1 → HL1/HL2/HL3	H11 Install temporary seals and temporary drains	CL1→HL1/HL2/HL3	H11 Install temporary seals and temporary drains
Line I	PERFORM COMMON STEEP SLOPE PRACTICES	Line I	PERFORM COMMON STEEP SLOPE PRACTICES	Line I	PERFORM COMMON STEEP SLOPE PRACTICES
	I1 Install steep slope underlayment				
	I2 Install steep slope venting				
	I3 Install steep slope valley applications				
	I4 Install steep slope saddles/ crickets				
	I5 Install steep slope penetration flashings				
	I6 Install steep slope metal flashings and drainage				
Line J	APPLY SHINGLES	Line J	APPLY SHINGLES	Line J	APPLY SHINGLES
	J1 Determine type and layout of shingles	CL1 → HL1/HL2/HL3	J1 Determine type and layout of shingles	CL1→HL1/HL2/HL3	J1 Determine type and layout of shingles
	J2 Install starter strip and starter course	CL1 → HL1/HL2/HL3	J2 Install starter strip and starter course	CL1→HL1/HL2/HL3	J2 Install starter strip and starter course
	J3 Fasten shingles	CL1 → HL1/HL2/HL3	J3 Fasten shingles	CL1→HL1/HL2/HL3	J3 Fasten shingles
	J4 Cut shingles	CL1 → HL1/HL2/HL3	J4 Cut shingles	CL1→HL1/HL2/HL3	J4 Cut shingles
	J5 Tab shingles				
	J6 Install metal flashings for shingled roofs	CL1 → HL1/HL2/HL3	J6 Install metal flashings for shingled roofs	CL1→HL1/HL2/HL3	J6 Install metal flashings for shingled roofs
Line K	APPLY ROOF TILES	Line K	APPLY ROOF TILES	Line K	APPLY ROOF TILES
				CL2→ HL3	K1 Install battens/strapping for roof tiles
				CL2→ HL3	K2 Fasten roof tiles
				CL2→ HL3	K3 Cut roof tiles
				CL2→ HL3	K4 Install closures for roof tiles
				CL2→ HL3	K5 Install ridge and hip caps
				CL2→ HL3	K6 Install metal flashings for tiled roofs
Line L	APPLY PRE-FORMED METAL ROOFING	Line L	APPLY PRE-FORMED METAL ROOFING	Line L	APPLY PRE-FORMED METAL ROOFING



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HARMONIZED LEVEL 1 (HL1)		HARMONIZED LEVEL 2 (HL2)		HARMONIZED LEVEL 3 (HL3)	
				CL2/CL3 → HL3	L1 Install battens/strapping for pre-formed metal roofing
				CL2/CL3 → HL3	L2 Cut and form sheet metal
				CL2/CL3 → HL3	L3 Fasten pre-formed metal roofing
				CL2/CL3 → HL3	L4 Install closure strips for pre-formed metal roofing
				CL2/CL3 → HL3	L5 Install snow guards
				CL2/CL3 → HL3	L6 Install metal flashings for pre-formed metal roofs
Line M	WATERPROOF SURFACES	Line M	WATERPROOF SURFACES	Line M	WATERPROOF SURFACES
			M1: Prepare waterproofing substrates		
			M2: Apply waterproofing membrane		
				New	M3 Install green, sustainable, vegetative, and protected membrane components
Line N	DAMP-PROOF SURFACES	Line N	DAMP-PROOF SURFACES	Line N	DAMP-PROOF SURFACES
			N1: Apply damp-proofing materials		
			N2: Apply protective layer		
Line O	ASSESS ROOF CONDITION	Line O	ASSESS ROOF CONDITION	Line O	ASSESS ROOF CONDITION
					O1 Perform roof inspections
					O2 Perform cut test
					O3 Determine maintenance or repair required
Line P	MAINTAIN AND REPAIR LOW SLOPE ROOFING	Line P	MAINTAIN AND REPAIR LOW SLOPE ROOFING	Line P	MAINTAIN AND REPAIR LOW SLOPE ROOFING
		HL2/HL3 ← CL3	P1 Maintain low slope roofing		P1 Maintain low slope roofing
		HL2/HL3 ← CL3	P2 Repair low slop roofing		P2 Repair low slop roofing
Line Q	MAINTAIN AND REPAIR STEEP SLOPE ROOFING	Line Q	MAINTAIN AND REPAIR STEEP SLOPE ROOFING	Line Q	MAINTAIN AND REPAIR STEEP SLOPE ROOFING
		HL2/HL3 ← CL3	Q1 Maintain steep slope roofing		Q1 Maintain steep slope roofing
		HL2/HL3 ← CL3	Q2 Repair steep slop roofing		Q2 Repair steep slop roofing

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Details – Competency Migration

This chart shows where content from the current Roofer (Roofer, Damp and Waterproofer) program moved to in the harmonized Roofer program and includes details of content that was moved or split across levels.

CURRENT LEVEL 1 (CL1) TO HARMONIZED LEVEL 1 (HL1)

CURRENT LEVEL 1 (CL1)	HARMONIZED LEVEL 1 (HL1)	MIGRATION	DETAILS
Line A USE SAFE WORK PRACTICES	Line A PERFORM SAFETY-RELATED FUNCTIONS		
A1 Describe Workplace Hazards	A1 Maintain safe work environment	N/A	Taught in context L2/L3
A2 Interpret the Occupational Health and Safety Regulation and WCB Standards	A1 Maintain safe work environment	N/A	Taught in context L2/L3
A3 Use WHIMIS	A1 Maintain safe work environment	N/A	Taught in context L2/L3
A4 Use Personal Protective Equipment	A2 Use personal protective equipment (PPE) and safety equipment	N/A	Taught in context L2/L3
A5 Use Fire Safety Procedures	A2 Use personal protective equipment (PPE) and safety equipment	N/A	Taught in context L2/L3
Line B USE TOOLS AND EQUIPMENT	Line B USE TOOLS AND EQUIPMENT		
B1 Use Hand Tools	B1 Use hand tools	CL1→HL1/HL2/HL3	HL1 use all general roofing hand tools. HL2: wood and composite shingles, and modified bitumen roof system specific tools. HL3: metal shingles and preformed metal panels, and thermoplastics, thermosets, and liquid applied membrane system specific tools.
B2 Use Portable Power Tools	B2 Use power tools, pneumatic tools, and hot-air welding, induction, and fuelled equipment	CL1→HL1/HL2/HL3	HL1 use all general roofing electrical tools, pneumatic tools, and fuelled equipment. HL2: wood and composite shingles, and modified bitumen roof system specific tools. HL3: metal shingles and preformed metal panels, and thermoplastics, thermosets, and liquid applied membrane system specific tools.
B3 Use Propane Fuelled Equipment	B2 Use power tools, pneumatic tools, and hot-air welding, induction, and fuelled equipment	CL1→HL1/HL2/HL3	HL1 use all general roofing electrical tools, pneumatic tools, and fuelled equipment. HL2: wood and composite shingles, and modified bitumen roof system specific tools.

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CURRENT LEVEL 1 (CL1)	HARMONIZED LEVEL 1 (HL1)	MIGRATION	DETAILS
			HL3: metal shingles and preformed metal panels, and thermoplastics, thermosets, and liquid applied membrane system specific tools.
B4 Use Hot Process Equipment	B5 Use hot process equipment	CL1→HL1/HL2/HL3	HL1 general introduction to hot process equipment and kettle. HL2: wood and composite shingles, and modified bitumen roof system specific equipment. HL3: metal shingles and preformed metal panels, and thermoplastics, thermosets, and liquid applied membrane system specific equipment.
B5 Use Hoisting, Lifting and Rigging Equipment	B3 Use hoisting, lifting, and rigging equipment	CL1→HL1/HL2/HL3	HL1: Describe hoisting, lifting, and rigging equipment and its purposes Describe the use of hoisting, lifting, and rigging equipment Describe rooftop storage practices HL2 Use hoisting, lifting, and rigging equipment. HL3 Describe maintenance of hoisting, lifting, and rigging equipment.
B6 Use Motorized Equipment	B6 Use motorized equipment	CL1→HL1/HL2/HL3	HL1 Describe and describe use of motorized equipment HL2: wood and composite shingles, and modified bitumen roof system specific equipment. HL3: metal shingles and preformed metal panels, and thermoplastics, thermosets, and liquid applied membrane system specific equipment. Describe maintenance of motorized equipment
B7 Use Ladders and Platforms	B4 Use access equipment	CL1→HL1/HL2/HL3	HL1: Describe ladders and elevated platforms Select and use ladders and elevated platforms HL2 : Assemble scaffolding Disassemble scaffolding HL3: Use ladders and elevated platforms Use scaffolding
Line C USE DOCUMENTATION	Line C ORGANIZE WORK		
C2 Use Building Codes and RCABC Standards	C1 Use documentation and reference materials	HL1/HL2 ← CL1/CL2/CL3	HL1: Use documentation and reference material Use roofing system manufacturers' application procedures

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CURRENT LEVEL 1 (CL1)	HARMONIZED LEVEL 1 (HL1)	MIGRATION	DETAILS
C3 Read Manufacturers' Information	C1 Use documentation and reference materials	HL1/HL2 ← CL1/ CL2/CL3	HL1: Use documentation and reference material Use roofing system manufacturers' application procedures
Line D ORGANIZE WORK			
D1 Describe Roof Types	In context of multiple competencies	N/A	Any competency relating to roof components, shingle types, low-slope or steep slope roofing includes this content with a specific material, roof system, or structure as an example.
D2 Communicate With Others	D1 Use communication techniques	N/A	
D3 Prepare the Worksite	C5 Position equipment and material on the ground and on the roof	CL1 → HL1/HL2	HL1: Describe positioning on ground and roof HL2: Place equipment and material on ground and roof
	C6 Prepare material disposal site	CL1 → HL1/HL2	HL1: Describe assembly and disassembly of material disposal systems Use material disposal systems HL2: Assemble and disassemble material disposal systems
	E1 Protect surrounding area	N/A	
D4 Estimate Quantities of Materials	C3 Estimate material	CL1 → HL3	Objectives: Use math to estimate new material and disposal of old roofing material Convert to and from metric and imperial measurements Use geometry for estimations
Line E PREPARE ROOFS			
E1 Prepare Roofs for Replacement	E1 Protect surrounding area	N/A	
	E2 Remove loose debris	N/A	
	E3 Remove roofing and flashings	N/A	
	E4 Prepare roof substrate	CL1→HL2	Objectives: Describe principles of roof substrate preparation Describe preparation of roof substrate
	E5 Perform minor adjustments to penetrations, curbs, and parapets	CL1→HL2	Objectives: Use tools and equipment to perform minor adjustments to penetrations, curbs, and parapets Perform adjustments to heights of penetrations and parapets
	F2 Clean surface of deck	N/A	

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CURRENT LEVEL 1 (CL1)	HARMONIZED LEVEL 1 (HL1)	MIGRATION	DETAILS
E2 Prepare Roofs For New Installation	F3 Verify placement of roof penetrations, curbs, and parapets	CL1/CL3→HL2/HL3	HL1: Describe an overview of installing drains, vents, curbs, and penetrations Install drains, vents, curbs, and penetrations on built-up roofing (BUR) HL2: Install drains, vents, curbs, and penetrations on a modified bituminous membrane system HL3: Install drains Install curbs Install vents and pipe penetrations Install drains, vents, curbs, and penetrations for thermoplastic (PVC, TPO) and thermoset (EPDM) membranes, and liquid-applied membranes
	F4 Dry deck	N/A	
Line F INSTALL LOW SLOPE AND FLAT ROOFING	Line G APPLY LOW SLOPE ROOFING COMPONENTS		
F1 Install Gypsum Board and Insulation	G1 Install support panels	N/A	
	G2 Primes substrate	N/A	
	G4 Install insulation	N/A	
F2 Install Overlay Board	G5 Install cover board	N/A	
F3 Install Vapour Retarders and Air Barriers	G2 Primes substrate	N/A	
	G3 Apply vapour retarder, vapour barrier, and air barrier	N/A	
F4 Install Flashing Materials	G8 Install metal flashing	N/A	
F5 Install Built-Up Roofing Systems	G6 Installs drains, vents, curbs, and penetrations	HL1 ← CL1/CL3	CL1 and CL3 objectives are identical. Objectives are similar other than a review section in CL3.
	G7 Apply ballast, walkways, and protective surfaces	CL1/CL3 → HL1/HL2/HL3	HL1 Objectives Describe ballast, walkways, and protective surfaces Describe required tools and equipment Describe application of ballast, walkways, and protective surfaces HL2: Use tools and equipment required for the application of ballast, walkways, and protective surfaces Apply ballast, walkways, and protective surfaces for a modified bituminous membrane system

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CURRENT LEVEL 1 (CL1)	HARMONIZED LEVEL 1 (HL1)	MIGRATION	DETAILS
			HL3: Use tools and equipment required for application of ballast, walkways, and protective surfaces for thermoplastic (PVC, TPO) and thermoset (EPDM) membranes, and liquid-applied membranes Install ballast, walkways, and protective surfaces
	H1 Relax membranes	CL1→HL1/HL2/HL3	HL1 Objectives Use tools and equipment for relaxing membranes Relax membrane Describe preparation of membranes HL2: Use tools and equipment for modified bituminous membranes Prepare modified bituminous membranes Relax modified bituminous membranes HL3: Use tools and equipment to relax membranes Prepare of membranes Relax membrane
	H2 Set membranes	CL1→HL1/HL2/HL3	HL1 Objectives Use tools and equipment for setting membranes Set membrane HL2: Set a modified bituminous membrane HL3: Set thermoplastic (PVC, TPO) and thermoset (EPDM) membranes, and liquid-applied membranes
	H3 Apply membranes using hot-liquid process	CL1→HL1/HL2/HL3	HL1 Objectives Describe tools and equipment for applying membranes using hot-liquid process Describe built-up roofing (BUR) materials Describe installation of BUR materials HL2: Use tools and equipment to apply membranes using a hot-liquid process Describe hot-liquid materials for modified bituminous roofing and hot rubber systems Install hot rubber system

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CURRENT LEVEL 1 (CL1)	HARMONIZED LEVEL 1 (HL1)	MIGRATION	DETAILS
			<p>HL3: Use tools and equipment to apply membranes using a hot-liquid process</p> <p>Describe hot-liquid materials for thermoplastic (PVC, TPO) and thermoset (EPDM) membranes, and liquid-applied membrane roofing systems</p> <p>Describe installation of thermoplastic (PVC, TPO) and thermoset (EPDM) membranes with hot-liquid materials</p>
	H6 Apply membranes using cold-applied methods	CL1→HL1/HL2/HL3	<p>HL1 Objectives</p> <p>Use tools and equipment for applying membranes using cold-applied methods</p> <p>Use cold-applied BUR materials</p> <p>Install cold-process BUR materials</p> <p>HL2: Use tools and equipment for applying membranes using cold-applied methods</p> <p>Install cold-applied modified bitumen materials</p> <p>HL3: Use tools and equipment to apply membranes using cold-applied methods</p> <p>Install cold-applied thermoplastics, thermosets, and liquid-applied materials</p>
	H7 Apply membranes using mechanical fasteners	CL1→HL1/HL2/HL3	<p>HL1 Objectives</p> <p>Describe mechanical fasteners</p> <p>Describe application of mechanical fasteners</p> <p>HL2: Use tools and equipment to apply membranes using mechanical fasteners</p> <p>Use mechanical fasteners for modified bituminous membranes</p> <p>HL3: Use tools and equipment for thermoplastics, thermosets, and liquid-applied membranes</p> <p>Apply mechanical fasteners for thermoplastics, thermosets, and liquid-applied membranes</p>
	H10 Install membrane flashings	CL1→HL1/HL2/HL3	<p>HL1 Objectives</p> <p>Use tools and equipment to install membrane flashings</p> <p>Apply BUR membrane flashing materials</p>



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CURRENT LEVEL 1 (CL1)	HARMONIZED LEVEL 1 (HL1)	MIGRATION	DETAILS
			HL2: Apply modified bituminous membrane and hot rubberized membrane flashing materials HL3: Describe tools and equipment to install membrane flashings Apply thermoplastics, thermosets, and liquid-applied membrane flashing materials to walls, curbs, drains, and service penetrations
	H11 Install temporary seals and temporary drains	CL1→HL1/HL2/HL3	HL1 Objectives Describe purpose of water cut-offs, temporary seals, and temporary drains HL2: Use tools and equipment to install temporary seals and temporary drains Describe components and materials for temporary seals and temporary drains in a modified bituminous membrane system Describe installation of temporary seals and temporary drains for a modified bituminous membrane system HL3: Use tools and equipment to install temporary seals and temporary drains Install water cut-offs, temporary seals, and temporary drains in a thermoplastics, thermosets, and liquid-applied membrane system
Line G INSTALL STEEP ROOFING	Line J Apply shingles		
G1 Install Asphalt Shingles	J1 Determine type and layout of shingles	CL1 → HL1/HL2/HL3	HL1 Objectives Describe types of asphalt shingles Describe considerations and components for the layout of asphalt shingles Layout asphalt shingles HL2: wood and composite shingles type and layout HL3: metal shingles and preformed metal panels type and layout
	J2 Install starter strip and starter course	CL1 → HL1/HL2/HL3	HL1 Objectives Describe components and considerations for installing starter strip for asphalt shingles Install starter strip for asphalt shingles HL2: wood and composite shingles starter strip/course types and considerations



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CURRENT LEVEL 1 (CL1)	HARMONIZED LEVEL 1 (HL1)	MIGRATION	DETAILS
			HL3: metal shingles and preformed metal panels starter strip/course types and considerations
	J3 Fasten shingles	CL1 → HL1/HL2/HL3	HL1 Objectives Describe components and considerations for fastening asphalt shingles Install asphalt shingles HL2: wood and composite shingles components and considerations, and installation methods. HL3: metal shingles and preformed metal panels components and considerations, and installation methods.
	J4 Cut shingles	CL1 → HL1/HL2/HL3	HL1 Objectives Describe considerations for cutting asphalt shingles Cut asphalt shingles HL2: wood and composite shingles considerations and installation methods. HL3: metal shingles and preformed metal panels considerations and installation methods.
	J5 Tab shingles	N/A	
	J6 Install metal flashings for shingled roofs	CL1 → HL1/HL2/HL3	HL1 Objectives Install metal flashings for asphalt shingles HL2: wood and composite shingles specific metal flashing requirements, techniques and considerations. HL3: metal shingles and preformed metal panel specific metal flashing requirements, techniques and considerations.
	I1 Install steep slope underlayment	N/A	Harmonized level GAC I was previously taught as part of multiple competencies in the Current Level program. To align with the RSOS, this content now its own GAC.
	I2 Install steep slope venting	N/A	Harmonized level GAC I was previously taught as part of multiple competencies in the Current Level program. To align with the RSOS, this content now its own GAC.
	I3 Install steep slope valley applications	N/A	Harmonized level GAC I was previously taught as part of multiple competencies in the Current Level program. To align with the RSOS, this content now its own GAC.

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CURRENT LEVEL 1 (CL1)	HARMONIZED LEVEL 1 (HL1)	MIGRATION	DETAILS
	I4 Install steep slope saddles/crickets	N/A	Harmonized level GAC I was previously taught as part of multiple competencies in the Current Level program. To align with the RSOS, this content now its own GAC.
	I5 Install steep slope penetration flashings	N/A	Harmonized level GAC I was previously taught as part of multiple competencies in the Current Level program. To align with the RSOS, this content now its own GAC.
	I6 Install steep slope metal flashings and drainage	N/A	Harmonized level GAC I was previously taught as part of multiple competencies in the Current Level program. To align with the RSOS, this content now its own GAC.
	NEW COMPETENCIES ADDED TO LEVEL 1		
C1 Read Drawings and Specifications	C2 Interpret blueprints and drawings	HL1/HL2/HL3 ←CL2/CL3	HL1: Describe blueprints and drawings Convert measurements from scale HL2: Interpret and use blueprints and drawings HL3: Interpret and use blueprints and drawings Create a drawing for a blueprint
Covered in context in multiple competencies at this level	C4 Assess worksite conditions	New	New competency in harmonized level, however content was covered in multiple competencies in current program.
Covered in context in multiple competencies at this level	C8 Use roofing math	New	New competency in harmonized level, however content was covered in multiple competencies in current program, primarily CL1 D4 Estimate Quantities of Materials.

**This is the end of the CL1 to HL1 comparative.
 The CL2 to HL2 comparative begins on the next page.**



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CURRENT LEVEL 2 (CL2) TO HARMONIZED LEVEL 2 (HL2)

CURRENT LEVEL 2 (CL2)	HARMONIZED LEVEL 2 (HL2)	MIGRATION	DETAILS
Line A USE SAFE WORK PRACTICES	Line A PERFORM SAFETY-RELATED FUNCTIONS		
A1 Describe Workplace Hazards	A1 Maintain safe work environment	N/A	Taught in context L2/L3
A3 Use WHIMIS	A1 Maintain safe work environment	N/A	Taught in context L2/L3
A4 Use Personal Protective Equipment	A1 Maintain safe work environment	N/A	Taught in context L2/L3
A5 Use Fire Safety Procedures	A1 Maintain safe work environment	N/A	Taught in context L2/L3
Line C DOCUMENTATION	Line C ORGANIZE WORK		
C1 Read Drawings and Specifications	C2 Interpret blueprints and drawings	N/A	
C2 Use Building Codes and RCABC Standards	C1 Use documentation and reference materials	N/A	
C3 Read Manufacturers' Information	C1 Use documentation and reference materials	N/A	
Line D ORGANIZE WORK	Line C ORGANIZE WORK		
D4 Estimate Qualities Of Materials	C2 Interpret blueprints and drawings	N/A	HL2 C2 Interpret blueprints and drawings includes Learning task "estimate work take-offs" HL3 competency C3 Estimate material includes more complex material not previously covered in CL2.
LINE F INSTALL LOW SLOPE AND FLAT ROOFING	Line G APPLY LOW SLOPE ROOFING COMPONENTS		
F1 Install Gypsum Board and Insulation	G1 Install support panels	N/A	
	G2 Primes substrate	N/A	
	G4 Install insulation	N/A	
F2 Install Overlay Board	G5 Install cover board	N/A	
F4 Install Flashing Materials	G6 Install drains, vents, curbs, and penetrations	N/A	
	G8 Install metal flashings	N/A	
	H APPLY LOW SLOPE ROOFING MEMBRANES		
	H10 Install membrane flashings	N/A	

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CURRENT LEVEL 2 (CL2)	HARMONIZED LEVEL 2 (HL2)	MIGRATION	DETAILS
	H4 Apply membranes using torched-on method	N/A	
F6 Install Flexible Membrane Roof Systems	H5 Apply membranes using hot-air welding	N/A	
	H10 Install membrane flashings	N/A	
Line G INSTALL STEEP ROOFING	GAC J: APPLY SHINGLES		
G2 Install Wood Shingles and Shakes	J1 Determine type and layout of shingles	CL1 → HL1/HL2/HL3	HL1 Objectives Describe types of asphalt shingles Describe considerations and components for the layout of asphalt shingles Layout asphalt shingles HL2: wood and composite shingles type and layout HL3: metal shingles and preformed metal panels type and layout
	J2 Install starter strip and starter course	CL1 → HL1/HL2/HL3	HL1 Objectives Describe components and considerations for installing starter strip for asphalt shingles Install starter strip for asphalt shingles HL2: wood and composite shingles starter strip/course types and considerations HL3: metal shingles and preformed metal panels starter strip/course types and considerations
	J3 Fasten shingles	CL1 → HL1/HL2/HL3	HL1 Objectives Describe components and considerations for fastening asphalt shingles Install asphalt shingles HL2: wood and composite shingles components and considerations, and installation methods. HL3: metal shingles and preformed metal panels components and considerations, and installation methods.
	J4 Cut shingles	CL1 → HL1/HL2/HL3	HL1 Objectives Describe considerations for cutting asphalt shingles Cut asphalt shingles HL2: wood and composite shingles considerations and installation methods. HL3: metal shingles and preformed metal panels considerations and installation methods.
	J6 Install metal flashings for shingled roofs	CL1 → HL1/HL2/HL3	HL1 Objectives

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CURRENT LEVEL 2 (CL2)	HARMONIZED LEVEL 2 (HL2)	MIGRATION	DETAILS
			Install metal flashings for asphalt shingles HL2: wood and composite shingles specific metal flashing requirements, techniques and considerations. HL3: metal shingles and preformed metal panel specific metal flashing requirements, techniques and considerations.
G3 Install Concrete and Composite Materials	Line K: APPLY ROOF TILES		
	K1 Install battens/strapping for roof tiles	CL2 → HL3	All composite and tiled roof content is in GAC K Level 3
	K2 Fasten roof tiles	CL2 → HL3	All composite and tiled roof content is in GAC K Level 3
	K3 Cut roof tiles	CL2 → HL3	All composite and tiled roof content is in GAC K Level 3
	K4 Install closures for roof tiles	CL2 → HL3	All composite and tiled roof content is in GAC K Level 3
	K5 Install ridge and hip caps	CL2 → HL3	All composite and tiled roof content is in GAC K Level 3
	K6 Install metal flashings for tiled roofs	CL2 → HL3	All composite and tiled roof content is in GAC K Level 3
G4 Install Metallic Materials	J1 Determine type and layout of shingles	CL2/CL3 → HL3	All metal shingles/preformed metal roof tiles/panels content is in L3 GAC J / GAC L
	J2 Install starter strip and starter course	CL2/CL3 → HL3	All metal shingles/preformed metal roof tiles/panels content is in L3 GAC J / GAC L
	J3 Fasten shingles	CL2/CL3 → HL3	All metal shingles/preformed metal roof tiles/panels content is in L3 GAC J / GAC L
	J4 Cut shingles	CL2/CL3 → HL3	All metal shingles/preformed metal roof tiles/panels content is in L3 GAC J / GAC L
	J6 Install metal flashings for shingled roofs	CL2/CL3 → HL3	All metal shingles/preformed metal roof tiles/panels content is in L3 GAC J / GAC L
Line I APPLY WATERPROOFING AND DAMP-PROOFING	LINE M: WATERPROOF SURFACES		
I1 Waterproof Surfaces	M1: Prepare waterproofing substrates	N/A	
	M2: Apply waterproofing membrane	N/A	
	LINE N: DAMP-PROOF SURFACES		
I2 Damp-Proof Surfaces	N1: Apply damp-proofing materials	N/A	
	N2: Apply protective layer	N/A	
	NEW COMPETENCIES ADDED TO LEVEL 2		

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CURRENT LEVEL 2 (CL2)	HARMONIZED LEVEL 2 (HL2)	MIGRATION	DETAILS
B1 Use Hand Tools	B1 Use hand tools	CL1 → HL1/HL2/HL3	HL1 use all general roofing hand tools. HL2: wood and composite shingles, and modified bitumen roof system specific tools. HL3: metal shingles and preformed metal panels, and thermoplastics, thermosets, and liquid applied membrane system specific tools.
B2 Use Portable Power Tools	B2 Use power tools, pneumatic tools, and hot-air welding, induction, and fuelled equipment	CL1 → HL1/HL2/HL3	HL1 use all general roofing electrical tools, pneumatic tools, and fuelled equipment. HL2: wood and composite shingles, and modified bitumen roof system specific tools. HL3: metal shingles and preformed metal panels, and thermoplastics, thermosets, and liquid applied membrane system specific tools.
B3 Use Propane Fuelled Equipment			
B5 Use Hoisting, Lifting and Rigging Equipment	B3 Use hoisting, lifting, and rigging equipment	CL1 → HL1/HL2/HL3	HL1: Describe hoisting, lifting, and rigging equipment and its purposes Describe the use of hoisting, lifting, and rigging equipment Describe rooftop storage practices HL2: Use hoisting, lifting, and rigging equipment. HL3: Describe maintenance of hoisting, lifting, and rigging equipment.
B7 Use Ladders and Platforms	B4 Use access equipment	CL1 → HL1/HL2/HL3	HL1: Describe ladders and elevated platforms Select and use ladders and elevated platforms HL2: Assemble scaffolding Disassemble scaffolding HL3: Use ladders and elevated platforms Use scaffolding
B4 Use Hot Process Equipment	B5 Use hot process equipment	CL1 → HL1/HL2/HL3	HL1 general introduction to hot process equipment and kettle. HL2: Use hot process equipment required for a modified bitumen and hot rubberized asphalt roof HL3: Use hot process equipment for thermoplastic (PVC, TPO) and thermoset (EPDM) membranes
B6 Use Motorized Equipment	B6 Use motorized equipment	CL1 → HL1/HL2/HL3	HL1 Describe and describe use of motorized equipment HL2: wood and composite shingles, and modified bitumen roof system specific equipment. HL3: metal shingles and preformed metal panels, and thermoplastics, thermosets, and liquid applied membrane system specific equipment. Describe maintenance of motorized equipment

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CURRENT LEVEL 2 (CL2)	HARMONIZED LEVEL 2 (HL2)	MIGRATION	DETAILS
Covered in context in multiple competencies at this level	C4 Assess worksite conditions	New	New competency in harmonized level, however content was covered in multiple competencies in current program.
D3 Prepare the Worksite	C5 Position equipment and material on the ground and on the roof	CL1 → HL1/HL2	HL1: Describe positioning on ground and roof HL2: Place equipment and material on ground and roof
	C6 Prepare material disposal site	CL1 → HL1/HL2	HL1: Describe assembly and disassembly of material disposal systems Use material disposal systems HL2: Assemble and disassemble material disposal systems
Covered in context in multiple competencies at this level	C8 Use roofing math	New	New competency in harmonized level, however content was covered in multiple competencies in current program, primarily CL2 D4 Estimate Quantities of Materials.
E1 Prepare Roofs for Replacement	E4 Prepare roof substrate	CL1→ HL2	
E1 Prepare Roofs for Replacement	E5 Perform minor adjustments to penetrations, curbs, and parapets	CL1→ HL2	
E2 Prepare Roofs For New Installation	F1 Inspect deck	CL1 → HL2/HL3	CL1 E2 Learning task moved to HL2 Describe how to inspect the deck
E2 Prepare Roofs For New Installation	F3 Verify placement of roof penetrations, curbs, and parapets	CL1/CL3 → HL1/HL2/HL3	HL1: Describe an overview of installing drains, vents, curbs, and penetrations Install drains, vents, curbs, and penetrations on built-up roofing (BUR) HL2: Install drains, vents, curbs, and penetrations on a modified bituminous membrane system HL3: Install drains Install curbs Install vents and pipe penetrations Install drains, vents, curbs, and penetrations for thermoplastic (PVC, TPO) and thermoset (EPDM) membranes, and liquid-applied membranes
F3 Install Vapour Retarders and Air Barriers	G3 Apply vapour retarder, vapour barrier, and air barrier	CL1/CL3 → HL1/HL2/HL3	Modified bituminous system content moved to HL2 from CL1 and CL3. In current program, mod bit systems were taught across multiple competencies and multiple levels. Therefore, no significant gap or overlap.
F5 Install Built-Up Roofing Systems	G7 Apply ballast, walkways, and protective surfaces	CL1/CL3 → HL1/HL2/HL3	HL1 Objectives Describe ballast, walkways, and protective surfaces Describe required tools and equipment Describe application of ballast, walkways, and protective surfaces

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CURRENT LEVEL 2 (CL2)	HARMONIZED LEVEL 2 (HL2)	MIGRATION	DETAILS
			HL2: Use tools and equipment required for the application of ballast, walkways, and protective surfaces Apply ballast, walkways, and protective surfaces for a modified bituminous membrane system HL3: Use tools and equipment required for application of ballast, walkways, and protective surfaces for thermoplastic (PVC, TPO) and thermoset (EPDM) membranes, and liquid-applied membranes Install ballast, walkways, and protective surfaces
	H1 Relax membranes	CL1/CL3→ HL1/HL2/HL3	CL1 F5 Objectives moved to HL2: Describe hot built-up roofing (BUR) materials Install hot built-up roofing systems
	H2 Set membranes	CL1/CL3→ HL1/HL2/HL3	CL1 F5 Objectives moved to HL2: Describe hot built-up roofing (BUR) materials Install hot built-up roofing systems
	H3 Apply membranes using hot-liquid process	CL1/CL3→ HL1/HL2/HL3	CL1 F5 Objectives moved to HL2: Describe hot built-up roofing (BUR) materials Install hot built-up roofing systems
	H6 Apply membranes using cold-applied methods	CL1/CL3→ HL1/HL2/HL3	CL1 F5 Objectives moved to HL2: Describe hot built-up roofing (BUR) materials Install hot built-up roofing systems
	H7 Apply membranes using mechanical fasteners	CL1/CL3→ HL1/HL2/HL3	CL1 F5 Objectives moved to HL2: Describe hot built-up roofing (BUR) materials Install hot built-up roofing systems
	H11 Install temporary seals and temporary drains	CL1/CL3→ HL1/HL2/HL3	CL1 F5 Objectives moved to HL2: Describe hot built-up roofing (BUR) materials Install hot built-up roofing systems
H2 Maintain and Repair Roofs, Damp and Waterproofing	P1 Maintain low slope roofing	HL2/HL3 ← CL3	HL2 P1 Objectives Use tools and equipment for general maintenance of low slope roofing Describe overview of maintenance for low slope roofs Describe maintenance of modified bituminous membrane systems HL3 P1 Objectives Select tools and equipment of low slope roofing

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CURRENT LEVEL 2 (CL2)	HARMONIZED LEVEL 2 (HL2)	MIGRATION	DETAILS
			Describe maintenance of low slope roofs Describe maintenance of BUR, thermoplastic (PVC, TPO) and thermoset (EPDM) membranes, and liquid-applied membrane systems
	P2 Repair low slop roofing	HL2/HL3 ← CL3	HL2 P2 Objectives Describe use of tools and equipment to repair low slope roofing Describe an overview of the repair of low slope roofs HL3 P1 Objectives Select tools and equipment for low slope roofing repairs Describe repair of BUR, thermoplastic (PVC, TPO) and thermoset (EPDM) membrane, and liquid-applied membrane systems
	Q1 Maintain steep slope roofing	HL3 ← CL2/CL3	CL2 Q1 Objectives Describe selection of tools and equipment for general maintenance of steep slope roofing Describe overview of maintenance for steep slope roofs CL3 Q1 Objectives Use tools and equipment for steep slope roofing Maintain steep slope roofs
	Q2 Repair steep slop roofing	HL3 ← CL2/CL3	CL2 Q2 Objectives Describe use of tools and equipment used in steep slope roofing repair Describe overview of steep slope roofing repair CL3 Q2 Objectives Use tools and equipment for steep slope roofing Maintain steep slope roofs

**This is the end of the CL2 to HL2 comparative.
 The CL3 to HL3 comparative begins on the next page.**

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CURRENT LEVEL 3 (CL3) TO HARMONIZED LEVEL 3 (HL3)

CURRENT LEVEL 3 (CL3)	HARMONIZED LEVEL 3 (HL3)	MIGRATION	DETAILS
Line A USE SAFE WORK PRACTICES	Line A PERFORM SAFETY-RELATED FUNCTIONS		
A1 Describe Workplace Hazards	A1 Maintain safe work environment	N/A	Taught in context L2/L3
A3 Use WHIMIS	A1 Maintain safe work environment	N/A	Taught in context L2/L3
A4 Use Personal Protective Equipment	A1 Maintain safe work environment	N/A	Taught in context L2/L3
Line C USE DOCUMENTATION	Line C ORGANIZE WORK		
C1 Read Drawings and Specifications	C2 Interpret blueprints and drawings	N/A	
C2 Use Building Codes and RCABC Standards	C1 Use documentation and reference materials	HL1/HL2 ← CL1/CL2/CL3	CL3 C2 Objective: <i>Interpret manufacturers' instructions and specifications.</i> Covered adequately in CL1 and CL2, and covered in multiple competencies in HL3
C3 Read Manufacturers' Information	C1 Use documentation and reference materials	HL1/HL2 ← CL1/CL2/CL3	CL3 C2 Objective: <i>Interpret manufacturers' instructions and specifications.</i> Covered adequately in CL1 and CL2, and covered in multiple competencies in HL3
Line D ORGANIZE WORK	Line C: ORGANZE WORK		
D4 Estimate Quantities of Materials	C3 Estimate material	N/A	
Line F INSTALL LOW SLOPE AND FLAT ROOFING	Line G APPLY LOW SLOPE ROOFING COMPONENTS		
F1 Install Gypsum Board and Insulation	G1 Install support panels	N/A	
	G2 Primes substrate	N/A	
	G4 Install insulation	N/A	
F2 Install Overlay Board	G5 Install cover board	N/A	
F3 Install Vapour Retarders and Air Barriers	G2 Primes substrate	N/A	
	G3 Apply vapour retarder, vapour barrier, and air barrier	CL2/CL3 → HL1/HL2/HL3	Thermoset and thermoplastic content moved from CL2 and CL3 to HL3. CL2 F6 Learning tasks moved to HL3 Describe flexible membrane roof system
	G6 Install drains, vents, curbs, and penetrations	N/A	
F4 Install Flashing Materials	G8 Install metal flashing	N/A	
F5 Install Built-Up Roofing Systems	G6 Installs drains, vents, curbs and penetrations	N/A	



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CURRENT LEVEL 3 (CL3)	HARMONIZED LEVEL 3 (HL3)	MIGRATION	DETAILS
	H1 Relax membranes	N/A	
	H2 Set membranes	N/A	
	H3 Apply membranes using hot-liquid process	N/A	
	H6 Apply membranes using cold-applied methods	N/A	
	H7 Apply membranes using mechanical fasteners	N/A	
	H10 Install membrane flashings	N/A	
	H11 Install temporary seals and temporary drains	N/A	
F6 Install Flexible Membrane Roof Systems	H5 Apply membranes using hot-air welding	N/A	
	H8 Apply loose-laid membranes	CL2/CL3 → HL3	
	H9 Apply liquid-applied membranes	CL2/CL3 → HL3	
	H10 Install membrane flashings	N/A	
Line G INSTALL STEEP ROOFING	Line J: APPLY SHINGLES		
G4 Install Metallic Materials	J1 Determine type and layout of shingles	CL2/CL3 → HL3	HL3 J Line is where metallic roof tiles are covered.
	J2 Install starter strip and starter course	CL2/CL3 → HL3	HL3 J Line is where metallic roof tiles are covered.
	J3 Fasten shingles	CL2/CL3 → HL3	HL3 J Line is where metallic roof tiles are covered.
	J4 Cut shingles	CL2/CL3 → HL3	HL3 J Line is where metallic roof tiles are covered.
	J6 Install metal flashings for shingled roofs	CL2/CL3 → HL3	HL3 J Line is where metallic roof tiles are covered.
	Line L : APPLY PRE-FORMED METAL ROOFING		
	L1 Install battens/strapping for pre-formed metal roofing	CL2/CL3 → HL3	Content expanded in HL3
	L2 Cut and form sheet metal	CL2/CL3 → HL3	Content expanded in HL3
	L3 Fasten pre-formed metal roofing	CL2/CL3 → HL3	Content expanded in HL3
	L4 Install closure strips for pre-formed metal roofing	CL2/CL3 → HL3	Content expanded in HL3
	L5 Install snow guards	CL2/CL3 → HL3	Content expanded in HL3
	L6 Install metal flashings for pre-formed metal roofs	CL2/CL3 → HL3	Content expanded in HL3
Line H ASSESS AND MAINTAIN ROOFS, DAMP AND WATERPROOFING	Line C ORGANIZE WORK		
H1 Assess Roof Condition	C7 Evaluate roof conditions near roof-top equipment installations	N/A	

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CURRENT LEVEL 3 (CL3)	HARMONIZED LEVEL 3 (HL3)	MIGRATION	DETAILS
	Line O: ASSESS ROOF CONDITION		
	O1 Perform roof inspections	N/A	
	O2 Perform cut test	N/A	
	O3 Determine maintenance or repair required	N/A	
	Line P: MAINTAIN AND REPAIR LOW SLOPE ROOFING		
H2 Maintain and Repair Roofs, Damp and Waterproofing	P1 Maintain low slope roofing	HL2/HL3 ← CL3	HL2 P1 Objectives Use tools and equipment for general maintenance of low slope roofing Describe overview of maintenance for low slope roofs Describe maintenance of modified bituminous membrane systems HL3 P1 Objectives Select tools and equipment of low slope roofing Describe maintenance of low slope roofs Describe maintenance of BUR, thermoplastic (PVC, TPO) and thermoset (EPDM) membranes, and liquid-applied membrane systems
	P2 Repair low slop roofing	HL2/HL3 ← CL3	HL2 P2 Objectives Describe use of tools and equipment to repair low slope roofing Describe an overview of the repair of low slope roofs HL3 P1 Objectives Select tools and equipment for low slope roofing repairs Describe repair of BUR, thermoplastic (PVC, TPO) and thermoset (EPDM) membrane, and liquid-applied membrane systems
	Line Q: MAINTAIN AND REPAIR STEEP SLOPE ROOFING		
	Q1 Maintain steep slope roofing	HL3 ← CL2/CL3	CL2 Q1 Objectives Describe selection of tools and equipment for general maintenance of steep slope roofing Describe overview of maintenance for steep slope roofs CL3 Q1 Objectives Use tools and equipment for steep slope roofing Maintain steep slope roofs
	Q2 Repair steep slop roofing	HL3 ← CL2/CL3	CL2 Q2 Objectives Describe use of tools and equipment used in steep slope roofing repair

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CURRENT LEVEL 3 (CL3)	HARMONIZED LEVEL 3 (HL3)	MIGRATION	DETAILS
			Describe overview of steep slope roofing repair CL3 Q2 Objectives Use tools and equipment for steep slope roofing Maintain steep slope roofs
NEW COMPETENCIES ADDED TO LEVEL 3			
B1 Use Hand Tools	B1 Use hand tools	CL1 → HL1/HL2/HL3	HL1 use all general roofing hand tools. HL2: wood and composite shingles, and modified bitumen roof system specific tools. HL3: metal shingles and preformed metal panels, and thermoplastics, thermosets, and liquid applied membrane system specific tools.
B2 Use Portable Power Tools B3 Use Propane Fueled Equipment	B2 Use power tools, pneumatic tools, and hot-air welding, induction, and fueled equipment	CL1 → HL1/HL2/HL3	HL1 use all general roofing electrical tools, pneumatic tools, and fuelled equipment. HL2: wood and composite shingles, and modified bitumen roof system specific tools. HL3: metal shingles and preformed metal panels, and thermoplastics, thermosets, and liquid applied membrane system specific tools.
B5 Use Hoisting, Lifting and Rigging Equipment	B3 Use hoisting, lifting, and rigging equipment	CL1 → HL1/HL2/HL3	HL1: Describe hoisting, lifting, and rigging equipment and its purposes Describe the use of hoisting, lifting, and rigging equipment Describe rooftop storage practices HL2 Use hoisting, lifting, and rigging equipment. HL3 Describe maintenance of hoisting, lifting, and rigging equipment.
B7 Use Ladders and Platforms	B4 Use access equipment	CL1 → HL1/HL2/HL3	HL1: Describe ladders and elevated platforms Select and use ladders and elevated platforms HL2: Assemble scaffolding Disassemble scaffolding HL3: Use ladders and elevated platforms Use scaffolding
B4 Use Hot Process Equipment	B5 Use hot process equipment	CL1 → HL1/HL2/HL3	HL1 general introduction to hot process equipment and kettle. HL2: Use hot process equipment required for a modified bitumen and hot rubberized asphalt roof HL3: Use hot process equipment for thermoplastic (PVC, TPO) and thermoset (EPDM) membranes
B6 Use Motorized Equipment	B6 Use motorized equipment	CL1→HL1/HL2/HL3	HL1 Describe and describe use of motorized equipment HL2: wood and composite shingles, and modified bitumen roof system specific equipment.

Program Outline Review Details

Key

Black Text: No change to level
 CL: Current Level
 HL: Harmonized level

Blue Text: Content moved to lower level: HL←CL. Creates a gap.
 Purple Text: Content moved to higher level: CL→HL. Creates an overlap.
 Green Text: New content added
 Red Text: Removed

CURRENT LEVEL 3 (CL3)	HARMONIZED LEVEL 3 (HL3)	MIGRATION	DETAILS
			HL3: metal shingles and preformed metal panels, and thermoplastics, thermosets, and liquid applied membrane system specific equipment. Describe maintenance of motorized equipment
N/A	D2 Use communication and mentoring techniques	New	
E2 Prepare Roofs For New Installation	F1 Inspect deck	CL1 → HL2/HL3	New Objective added to competency: Perform deck inspection CL1 E2 Objective moved to HL3 Verify placement of penetrations, curbs, and parapets
	F3 Verify placement of roof penetrations, curbs, and parapets	CL1/CL3 → HL1/HL2/HL3	HL1: Describe an overview of installing drains, vents, curbs, and penetrations Install drains, vents, curbs, and penetrations on built-up roofing (BUR) HL2: Install drains, vents, curbs, and penetrations on a modified bituminous membrane system HL3: Install drains Install curbs Install vents and pipe penetrations Install drains, vents, curbs, and penetrations for thermoplastic (PVC, TPO) and thermoset (EPDM) membranes, and liquid-applied membranes
F6 Install Flexible Membrane Roof Systems	G7 Apply ballast, walkways, and protective surfaces	CL2/CL3 → HL1/HL2/HL3	Content relating to thermoset and thermoplastic specific tools, application methods and materials moved to HL3: Learning Task - Install flexible membrane roof systems
G3 Install Concrete and Composite Materials	K1 Install battens/strapping for roof tiles	CL2→ HL3	CL2 G3 Objective moved to HL3 Install tiles
	K2 Fasten roof tiles	CL2→ HL3	CL2 G3 Objective moved to HL3 Install tiles
	K3 Cut roof tiles	CL2→ HL3	CL2 G3 Objective moved to HL3 Install tiles
	K4 Install closures for roof tiles	CL2→ HL3	CL2 G3 Objective moved to HL3 Install tiles
	K5 Install ridge and hip caps	CL2→ HL3	CL2 G3 Objective moved to HL3 Install tiles
	K6 Install metal flashings for tiled roofs	CL2→ HL3	CL2 G3 Objective moved to HL3 Install tiles
N/A	M3 Install green, sustainable, vegetative, and protected	New	

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CURRENT LEVEL 3 (CL3)	HARMONIZED LEVEL 3 (HL3)	MIGRATION	DETAILS
	membrane components		

This is the end of the CL3 to HL3 comparative.