

Sheet Metal Worker

Transition Plan

Updated January 2023

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Abbreviations

| | |
|-------------|---|
| CCDA | Canadian Council of Directors of Apprenticeship |
| CL | Current level (2013) |
| ER | Employer sponsor |
| FDN | Foundation program |
| HL | Harmonized level (2019) |
| NOA | Red Seal National Occupational Analysis |
| RSOS | Red Seal Occupational Standard; replaces NOA |
| SLE | Standardized Level Exam |
| TP | Training provider |
| TT | Technical training |
| TW | Trade worker |
| WBT | Work-based training |

Harmonization Overview

The Canadian Council of Directors of Apprenticeship (CCDA) is responsible for the Red Seal Program, which develops common interprovincial standards and examinations. The CCDA is undertaking the Harmonization Initiative in 30 Red Seal trades by 2020. British Columbia is an active participant in this initiative.

The goal is to substantively align apprenticeship systems across Canada by making apprenticeship training requirements more consistent in the Red Seal trades.

Harmonization Priorities

1. Use of Red Seal **trade name**
2. Consistent **total training hours** (in-school and on-the-job)
3. Same number of **training levels**
4. Consistent **sequencing** of training content, including use of most recent Red Seal Occupational Standard (RSOS).

Sheet Metal Worker

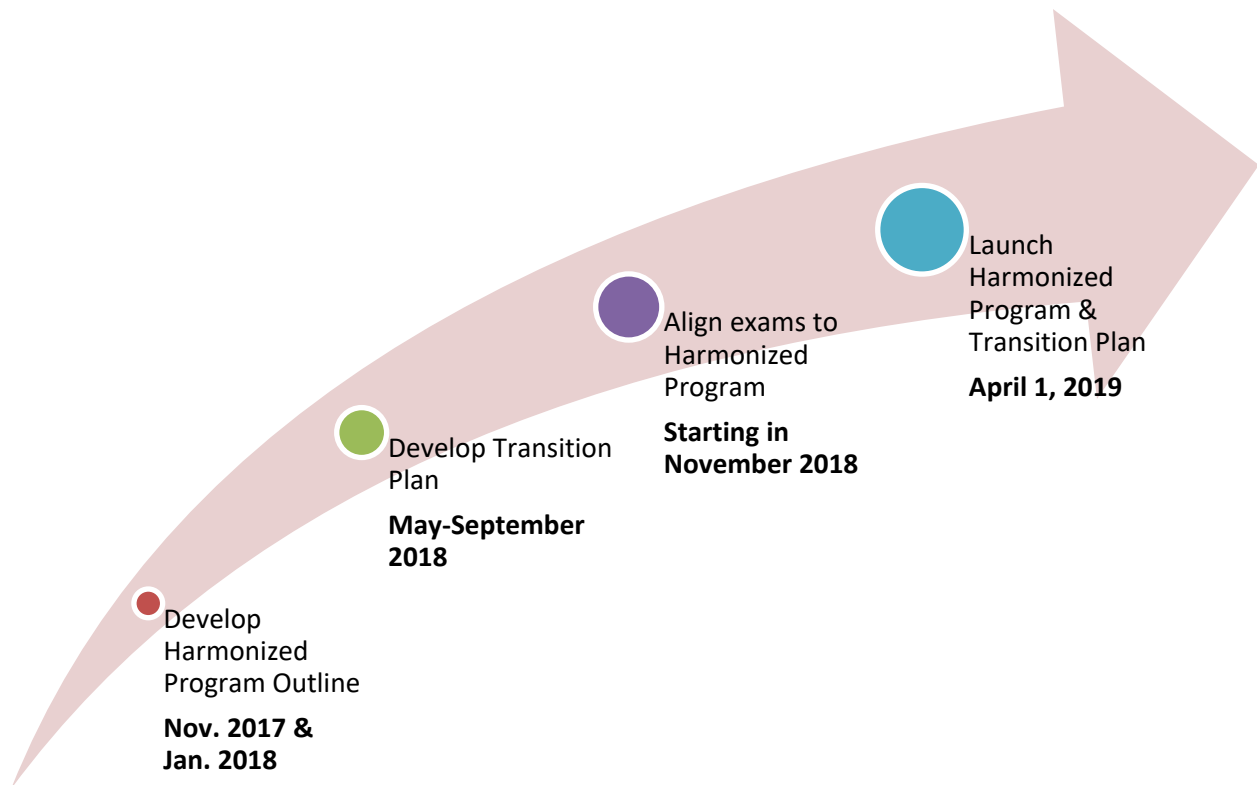
| | Changing in BC? | What will it be? |
|--|-----------------|--|
| TRADE NAME | NO | Sheet Metal Worker |
| NUMBER OF TRAINING LEVELS | NO | 4 |
| TOTAL HOURS Technical (TT) + work-based training (WBT) | YES | 7200 hours TT increased by 240 WBT increased by 560 |
| TRAINING SEQUENCE order of subjects taught | YES | Changes to sequence |

Transition Planning Process

The re-sequencing of the Sheet Metal Worker program through the Harmonization Initiative resulted in significant changes to the sequencing of technical training.

We consulted with the post-secondary training providers that deliver the Sheet Metal Worker program, and also considered the input of our internal partners. We evaluated a number of scenarios, and the transition plan outlined in this document was identified as the best option. We also ensured that there were options for all current apprentices to complete their apprenticeship.

Program Development and Transition Planning 2017-2018



Public Training Providers (3)

Camosun College
Okanagan College
BCIT

Private Training Providers (1)

Sheet Metal Workers Training Centre Society

Apprentice Numbers in Current Program

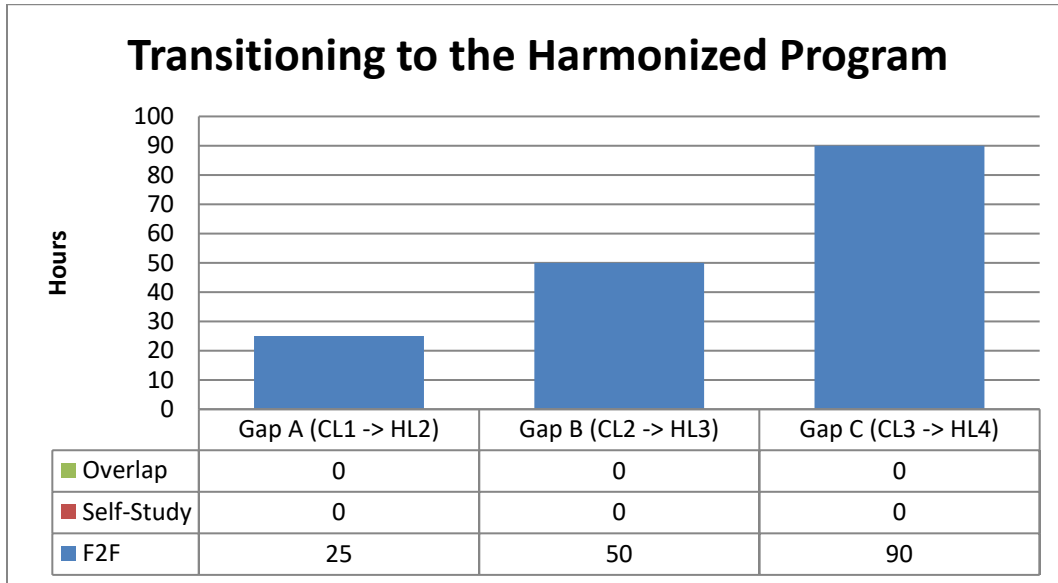
| Highest Level Achieved | 2TT | 3TT | Total |
|------------------------|-----------|-----------|-----------|
| Active | 10 | 11 | 21 |
| Inactive | 35 | 29 | 64 |
| Total | 45 | 40 | 85 |

Notes on the numbers:

1. Numbers are as of **January 11, 2023**.
2. **Current Level 4TT** - TWs who have completed CL4 TT are not considered in transition planning and so do not appear here.
3. **Active** – apprentices for whom activity has been logged in Direct Access (DA) within the last 18 months.
4. **Inactive** – apprentices for whom **no** activity has been logged in DA within the last 18 months.

Current Level 2 and Level 3 Apprentices: Apprentices who have completed **CL2** and **CL3** but not yet taken harmonized Level 3 or Level 4 should contact their [Apprenticeship Advisor](#) to discuss options for addressing gaps in their training **before** taking their next level of technical training.

The Gaps



Gap A (CL1→HL2) applies to a student who has completed Current Level 1 or Current Foundation and is moving into Harmonized Level 2.

Gap B (CL2→HL3) applies to a student who has completed Current Levels 1 & 2 and is moving into Harmonized Level 3.

Gap C (CL3→HL4) applies to a student who has completed Current Level 1, 2 & 3 and is moving into Harmonized Level 4.

Overlap refers to the hours of content that a student who transitions to the harmonized program will be repeating.

Gap is an estimate of the hours of self-study and training a student would need in order to complete the missing competencies if they transition to the harmonized program.

See [Appendix C: Details of Gaps](#) for a list of the missing competencies

Final Scenario

| Implementation Timelines | |
|--------------------------|---------------|
| Level 1 | April 1, 2019 |
| Level 2 | April 1, 2020 |
| Level 3 | April 1, 2021 |
| Level 4 | April 1, 2022 |

| | | | | |
|-----------------|-----|-----|-----|-----|
| Year 1 19/20 | HL1 | CL2 | CL3 | CL4 |
| Year 2 20/21 | HL1 | HL2 | CL3 | CL4 |
| Year 3 21/22 | HL1 | HL2 | CL3 | CL4 |
| Year 4 22/23 | HL1 | HL2 | HL3 | HL4 |

Current Level 2 and Level 3 Apprentices: Apprentices who have completed **CL2** and **CL3** but not yet taken harmonized Level 3 or Level 4 should contact their [Apprenticeship Advisor](#) to discuss options for addressing gaps in their training **before** taking their next level of technical training.

Work-Based Training Hours (WBT)

The following changes to training time for Sheet Metal Worker will come into effect **April 1, 2019**:

- An increase of **800 hours** to the total training time, which includes
 - An increase of 560 work-based training (WBT) hours
 - An increase of 240 technical training hours

These changes have been made to align with the harmonized standard of 7,200 hours of total training.

Apprenticeship Pathway

| Current Program | Hours |
|-------------------------------------|--------------|
| Technical Training | 720 |
| Work-based Training Hours | 5,680 |
| Current Total Training Hours | 6,400 |

| Harmonized Program | Hours |
|--|--------------|
| Technical Training | 960 |
| Work-based Training Hours | 6,240 |
| Harmonized Total Training Hours | 7,200 |

Challenge Pathway and Sign-off Authority

| Current Program | Hours |
|---|--------------|
| Work-based Training Hours for Apprenticeship | 5,680 |
| ITA formula for calculating challenge trade related work experience | X 1.5 |
| Current Challenge WBT Hours | 8,520 |

| Harmonized Program | Hours |
|---|--------------|
| Harmonized Work-based Training Hours for Apprenticeship | 6,240 |
| ITA formula for calculating challenge trade related work experience | X 1.5 |
| Harmonized Challenge WBT Hours | 9,360 |

NOTE: If TWs complete in current program, the 5,680 WBT hours for that program will apply. If they transition, they will have to complete the 6,240 WBT hours for the harmonized program.

Exams

Exams for the Harmonized Program

All Standardized Level Exams (SLEs) for the Harmonized program have been implemented.

Please see the Sheet Metal Worker trade page (<https://www.skilledtradesbc.ca/program/sheet-metal-worker>) for exam information.

Appendix A: Details of Gaps

GAP A: CL1→HL2

Gap (Missing Content)

This table lists the content that a student will be **missing** if they have completed Current Level 1 (CL1) and then take Harmonized Level 2 (HL2).

| Competency | Objectives/ Learning Tasks | Achievement Criteria | Changes | Hours | Priority |
|---|---|--------------------------------|--------------------|-----------|----------|
| F6 Fabricate hanger systems, supports and bases systems | Describe the fabrication of knee bracket hanger systems. Describe hanging considerations. Describe equipment bases and supports. Describe the fabrication of equipment bases and supports. | no | HL1←CL3/CL4 | 7 | high |
| K1 Install air handling equipment | Describe air handlers. Describe the installation of air handlers. | no | HL1←CL4 | 3 | Low-med |
| K3 Install sheet metal ducts, fittings and dampers | Describe installation procedure for duct work. Install damper in duct work. | Yes - Install a damper in duct | New | 6 | Low-med |
| K5 Install registers, grilles, diffusers and louvers | Describe inlet and outlet covers. Describe the installation of inlet and outlet covers. | no | New | 3 | Low-med |
| K8 Install residential systems | Describe residential heating, ventilation and air conditioning. Describe residential duct systems. Describe the installation of residential furnaces. Describe residential slab duct. | no | HL1←CL3 | 6 | high |
| | | | TOTAL hours | 25 | |

GAP B: CL2→HL3

Gap (Missing Content)

This table lists the content that a student will be **missing** if they have completed Current Level 2 (CL2) and then take Harmonized Level 3 (HL3).

| Competency | Objectives/ Learning Tasks | Achievement Criteria | Changes | F2F Hours | Priority |
|---|---|--|-------------|-----------|----------|
| E1 Develop patterns using simple and straight line method | Develop patterns for advanced sheet metal components and duct fittings. | Yes - Develop patterns for change cheek ogee offset, drop cheek elbows, transitional ogee offset, two way transition, drop cheek transitional elbow. | HL2←CL4 | 2 | med |
| E3 Develop patterns using radial line development | Describe drafting techniques for oblique cones using radial line development. | Yes | HL2←CL4 | 4 | med |
| F6: Fabricate hanger systems, supports and bases systems | Describe the fabrication of knee bracket hanger systems. Describe hanging considerations. Describe equipment bases and supports. Describe the fabrication of equipment bases and supports. | no | HL1←CL3/CL4 | 7 | med |
| I1 Perform on-site measurements | Select and use measuring tools and equipment. Use construction drawings, specifications and codes to measure and position components. | no | New | 2 | low |
| J1 Install chimneys | Describe venting and its purpose. Describe the installation of bracing, hangers and supports. | no | HL2←CL3 | 5 | high |

| | | | | | |
|--|--|----|-------------|---|------|
| | Describe the installation of flashing. | | | | |
| J2 Connect appliances or mechanical equipment to chimney and breeching | Describe breeching. Describe the installation of bracing, hangers and supports Describe the connection of venting and breeching to appliances. | no | HL2←CL4 | 5 | high |
| J3 Install high efficiency appliances and mechanical equipment | Describe high efficiency appliances and mechanical equipment. Describe the installation of high efficiency appliances and mechanical equipment. Describe venting requirements for high efficiency appliances and mechanical equipment. | no | New | 4 | high |
| K1 Install air handling equipment | Describe air handlers. Describe the installation of air handlers. | no | HL1←CL4 | 6 | med |
| K2 Install hangers, cables, braces and brackets | Describe the installation of hangers. Describe the installation of cables. Calculate the hanger requirements | no | HL2←CL3/CL4 | 6 | med |
| K7 Install system component accessories | Describe the installation of system component accessories. | no | HL2←CL4 | 3 | med |
| K8 Install residential systems | Describe residential heating, ventilation and air conditioning. Describe residential duct systems. | no | HL1←CL3 | 6 | high |

| | | | | | |
|--|--|--|--|--------------------|-----------|
| | Describe the installation of residential furnaces. | | | | |
| | Describe residential slab duct. | | | | |
| | | | | TOTAL Hours | 50 |

GAP C: CL3→HL4

Gap (Missing Content)

This table lists the content that a student will be **missing** if they have completed Current Level 3 (CL3) and then take Harmonized Level 4 (HL4).

| Competency | Objectives/ Learning Tasks | Achievement Criteria | Changes | F2F Hours | Priority |
|---|--|--|-------------------------|-----------|----------|
| B3 Use gas metal arc welding (GMAW) equipment | Describe gas metal arc welding (GMAW) in all positions | Yes - Weld 16 gauge coupons in all positions | New | 12 | med |
| E2: Develop patterns using parallel line method | Develop advanced patterns using parallel line development | Use parallel line development to develop patterns for: tee on a taper, clean out on round elbow throat, Flat back elbow, tee on an offset, finial. | New | 9 | Med-high |
| E3 Develop patterns using radial line development | Objective: Develop patterns for oblique cones using radial line development. Describe drafting techniques for advanced industrial fittings using radial line development. | Yes | HL2←CL4 Some new | 14 | Med-high |
| F4 Fabricate material handling system components. | Describe gravity material handling systems. Fabricate gravity material handling system components. | Yes - Fabricate a material handling system component | New | 2 | low |
| F6 Fabricate hanger systems, supports and bases systems | Describe the fabrication of knee bracket hanger systems. Describe equipment bases and supports. Describe the fabrication of equipment bases and supports. | no | HL1←CL4 Some new | 8 | |
| H2 Fabricate specialty products | Describe specialty applications and products. | Yes | New | 2 | low |

| | | | | | |
|--|--|----|--------------------|---|------|
| | Describe shop equipment used for specialty products. Use power tools for specialty products. | | | | |
| J2 Connect appliances or mechanical equipment to chimney and breeching | Describe breeching. Describe the installation of bracing, hangers and supports Describe the connection of venting and breeching to appliances. | no | HL2←CL4 | 4 | med |
| K1 Install air handling equipment | Objectives: Describe air handlers. Describe the installation of air handlers Describe air handlers. Describe the installation of air handlers. | no | HL1←CL4 | 6 | med |
| K1 Install air handling equipment | Describe heat and energy recovery ventilators. Describe the installation of heat and energy recovery ventilators | no | HL3←CL4 | 3 | med |
| K2 Install hangers, cables, braces and brackets | Describe the installation of cables. Calculate the hanger requirements | no | HL2←CL4 New | 6 | med |
| K6 Install terminal boxes and coils | Describe terminal boxes. Describe the installation of terminal boxes. Describe coils. Describe the installation of coils. | no | HL3←CL4 New | 6 | high |
| K7 Install system component accessories | Describe the installation of system component accessories. | no | HL2/HL3←CL4 | 6 | med |
| K9 Install industrial, commercial and institutional systems | Describe commercial, industrial and institutional plenums. | no | New | 3 | med |

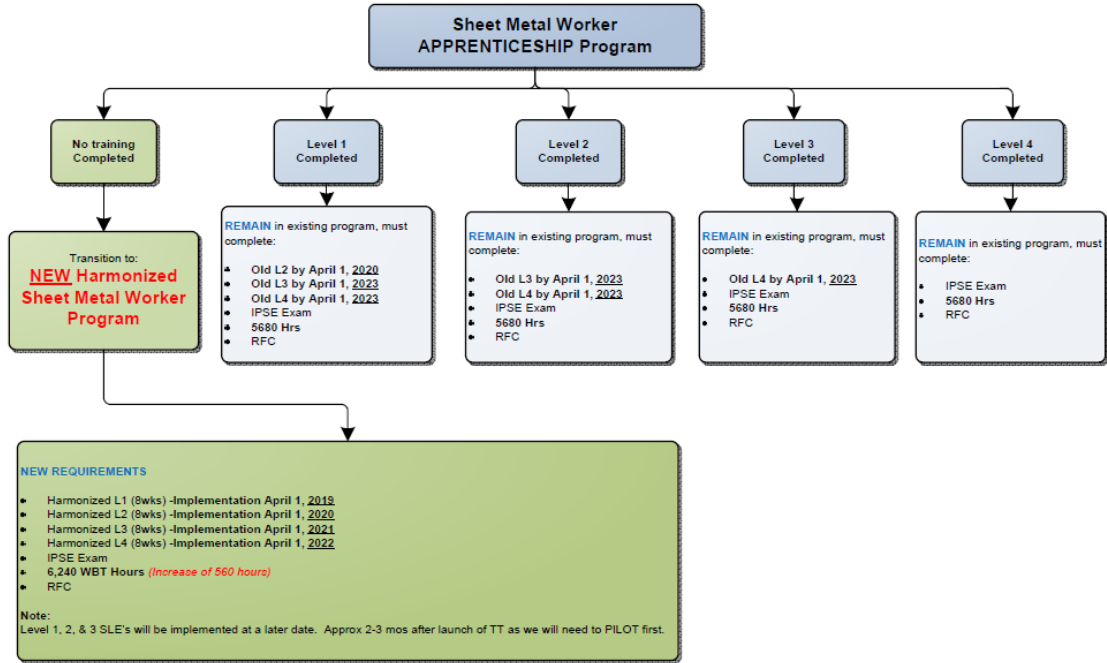
| | | | | | |
|--|---|----|--------------------|-----------|-----|
| | Describe commercial, industrial and institutional plenum components. Install commercial, industrial and institutional plenums. | | | | |
| N3 Participate in the commissioning of air and material handling equipment | Describe knowledge of commissioning and its purpose. Describe knowledge of the procedures used to commission air and material handling systems and components. | no | New | 3 | med |
| R1 Diagnose system faults | Describe normal operation of a system. Identify signs of abnormality. | No | HL3←CL4 | 3 | med |
| R2 Repair worn or faulty components | Describe the servicing and repair of components | no | HL3←CL4 | 3 | med |
| | | | TOTAL hours | 90 | |

Appendix B: Overall Communication Plan

| Audience | Purpose | Mode |
|---------------------------|--|---|
| Training Providers | To announce the changes to training standards and the publication of a new Program Outline and Program Profile on the trade webpage on the ITA website | Official Program Standards Notification (OPSN) via email and posting on trade webpage |
| Training Providers | To plan for transitioning to the new program | Webinar(s), phone calls and/or face to face meetings |
| Training Providers | To announce the final transition plan | Program Update and Transition Plan via email and posting on trade webpage |
| Training Providers | To announce the launch of the harmonized level exams | OPSN via email and posting on trade webpage |
| Employers | To gather input on transition scenarios | Webinar(s), phone calls and/or face to face meetings |
| Employers | To inform on the upcoming changes to the program and the pathways to completion for their apprentices | Letters sent through ITA Direct Access (DA) |
| Employers | To inform on the upcoming changes to the program and the pathways to completion for their apprentices | Presentations at Program Advisory Committees (PAC) and other industry events |
| Apprentices | To inform on the upcoming changes to the program and their pathways to completion | Letters sent through ITA Direct Access (DA) |
| Apprentices | To inform on the upcoming changes to the program and their pathways to completion | Targeted outreach via phone and email |
| Apprentices | To inform on the upcoming changes to the program and their pathways to completion | Classroom visits by Apprenticeship Advisors |

Appendix C: Transition Map

Sheet Metal Worker Transition Map EFFECTIVE April 1, 2019



CHALLENGE PATHWAY
Sheet Metal Worker Hours Requirement: 9,380 hours (was 8,520 hours)

Last Updated: September 10, 2018