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OFFICIAL PROGRAM STANDARDS NOTIFICATION (OPSN)

Issued: November 1, 2016

Program: Metal Fabricator (Fitter)

To: ITA Training Providers Articulation Chair System Liaison Person School Districts

Subject: Metal Fabricator Program Outline Update

OPSN No.: OPSN 2016 016

Effective March 31, 2017

Date:

Summary of
Change:Please be advised that changes have occurred to the Metal Fabricator program as a
result of the Pan-Canadian Harmonization Initiative and will be implemented effective
March 31, 2017.

These changes are as follows:

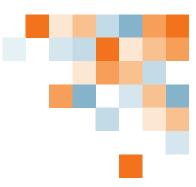
- Metal Fabricator Program Outline Update
- Reduction of training levels from a 4-level to a 3-level program
- Reduction of Work-based Training Hours 4,800 hours (from 6,400 hours)
- **Rationale:** At the request of industry, the Canadian Council of Directors of Apprenticeship's (CCDA) Harmonization Initiative was launched in Fall 2013, and endorsed by the Forum of Labour Market Ministers (FLMM) in 2014. The goal of Harmonization is to *substantively align* apprenticeship systems across Canada by making apprenticeship training requirements more consistent in Red Seal trades.

In consultation with stakeholders, the CCDA identified four Harmonization priorities: trade name, total training hours (in-school plus on-the-job), number of training levels, and the sequencing of the training content.

Ten trades were identified for Phase One of Harmonization, which included Metal Fabricator. After a series of consultations and pan-Canadian webinars, the finalized priorities for the Harmonized Metal Fabricator program were as follows:

- 1. Use of the Red Seal trade name Metal Fabricator (Fitter)
 - BC no change.
- 2. Consistent total training hours (in-school plus on-the-job) 5,400 hours total
 - BC Reduction of 1,600 hours. Technical training remains the same at 20 weeks (600 hours), but Work-based Training is reduced from 6,400 hours to 4,800 hours.

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- 3. Same number of training levels 3-level program
 - BC Reduction from 4-level to a 3-level program. The national consensus was for a 3-level Harmonized Metal Fabricator program. The 20 weeks of technical training in the Harmonized Metal Fabricator program are distributed as follows:
 - Level 1 7 weeks
 - \circ Level 2 7 weeks
 - \circ Level 3 6 weeks
- 4. Consistent sequencing of training content
 - BC Significant changes required to align to the Harmonized sequencing.

Details: Program Outline Update

A Metal Fabricator program review was conducted August through October 2016 to align BC's Metal Fabricator program to the Harmonized sequencing. The review resulted in significant changes to the current sequence of technical training.

ITA will work with the BCATTA Harmonization Implementation group to identify transition strategies for training providers. ITA is also working on a communication plan to inform apprentices and employer sponsors of the changes to the program.

Attachments: Metal Fabricator Program Outline Review Details

This attachment provides details of the revisions made to the Metal Fabricator Program Outline during the review process.

- For more Jennifer Booth
- information Program Development Officer
- contact: email: jbooth@itabc.ca

cc: All Staff

Summary - Competency Migration

	Harmonized Level 1		Current Level 1	Description of Changes
Line A	PERFORM SAFETY-RELATED FUNCTIONS			
A1	Maintain safe work environment	B1	Describe safe shop practices	n/a
		B2	Identify legislation which regulates safe working environments	n/a
		B3	Describe protective clothing and equipment	n/a
		B4	Use basic lifting techniques (body mechanics)	n/a
		B5	Describe fire safety	n/a
Line B	USE TOOLS AND EQUIPMENT			
B1	Use hand, power, layout and measuring tools and equipment	D1	Use basic measuring, layout and hand tools	n/a
		D2	Use bench and hand grinders	n/a
		D3	Use and maintain portable power tools	n/a
		D4	Use specialized measuring tools	Moved from level 4 – 'Describe' in B1/level 1 and 'Determined' in D4/level 2
B2	Use stationary machinery	E1	Use the power plate shears	n/a
		E2	Use the hydraulic brake press	n/a
		E3	Use the power plate rolls	n/a
		E4	Use the ironworker	n/a
		E5	Use shop saws	n/a
		E6	Use drill presses	n/a
		E7	Use thread cutting machine	Moved from level 2 - 'Describe' in level 1 and 'Use' in G5/level 2
B3	Use thermal cutting and welding equipment	F1	Describe safe burning practices	n/a



	Harmonized Level 1		Current Level 1	Description of Changes
		F2	Use a portable oxy-fuel unit	n/a
		F3	Describe safe arc welding practices	n/a
		F4	Identify various arc welding practices	n/a
		F5	Identify electrode characteristics and classifications	n/a
		F6	Weld plate using manual arc welding equipment	n/a
		F7	Use arc-air gouging/cutting methods	Moved from level 2 - 'Describe' only in Harmonized Outline
		N2	Use standard non-destructive testing inspection techniques	Moved from level 4 – 'Describe' in D1/level 1, and will 'Produce a profile burned coupon' in B3/level 1
B4	Use access equipment	H3	Use ladders and scaffolding	Moved from level 2
Line C	INTERPRET PLANS, DRAWINGS AND SPECIFICATIONS			
C1	Interpret blueprints	G1	Sketch objects using isometric projection	n/a
		G2	Sketch objects using orthographic projection	n/a
		G3	Draw secondary views of simple objects	n/a
		G4	Identify standard symbols and abbreviations	n/a
		G5	Interpret standard weld symbols	In C1 and I1
		G6	Interpret simple multi-view shop drawings	n/a
C2	Interpret structural steel drawings	G7	Interpret simple structural drawings	n/a
		11	Identify standard structural shapes	n/a
		12	Layout simple templates from a given structural shop drawing	n/a
Line D	PERFORM QUALITY CONTROL			
D1	Perform inspection	N1	Describe relevant provincial, national and international fabrication codes	Moved from level 4 to D1 & I1 in level 1



	Harmonized Level 1		Current Level 1	Description of Changes
		N2	Use standard non-destructive testing inspection techniques	Moved from level 4 – 'Describe' in D1/level 1, and will 'Produce a profile burned coupon' in B3/level 1
D4	Apply principles of metallurgy	M1	Describe the types, grades and properties of steels	Moved from level 4
		M2	Describe the effects of heat and stress on metals	Moved from level 4
		M3	Describe stress relieving techniques on metals	Moved from level 4 to D4/levels 1 & 2
		M4	Identify and use common metal testing methods	Moved from level 4 to D4/levels 1 & 2
D5	Control distortion	L1	Describe common fitting considerations and procedures	Split between D5 & H1 in level 1
Line E	HANDLE MATERIALS			
E2	Calculate mass for structural steel	C4	Calculate area and weights/mass for various plate shapes	n/a
E3	Apply rigging practices	H1	Use safe rigging practices	n/a
		H4	Use synthetic and natural fibre lines	n/a
		H5	Describe safe work practices related to mobile equipment	n/a
E4	Operate material handling equipment	H2	Use material handling equipment and storage practices	Originally in level 1 only – now in E4/level 1 and E1/level 3
		02	Establish laydown area	Moved from level 4
		03	Determine required equipment	Moved from level 4 to E4/level 1 & H5/level 3
Line F	PERFORM TRADE MATH AND LAYOUT			
F1	Perform line development	J1	Define basic layout terms	n/a
		J2	Develop various patterns using parallel line development	Split between F1 & G5 in level 1
		J3	Develop shop layout and processing for plate	n/a
F2	Calculate bending allowances and stretch outs	C1	Solve problems involving fractions	n/a
		C2	Use a scientific calculator	n/a
		C3	Calculate a flat pattern layout for cylinders and forming	n/a



	Harmonized Level 1		Current Level 1	Description of Changes
F3	Calculate diagonals, volume, mass and capacity	C5	Solve problems using ratio and proportion	n/a
		C6	Solve simple problems using geometric construction	n/a
		C7	Solve problems using Pythagorean theory	n/a
		C10	Solve problems involving weight, mass and the capacity of vessels	Moved from level 2
Line G	FORM MATERIALS			
G5	Fabricate plate	J2	Develop various patterns using parallel line development	Split between F1 & G5 in level 1
		J3	Develop shop layout and processing for plate	Split between F1 & G5 in level 1
Line H	FABRICATE COMPONENTS			
H1	Construct templates and jigs	L1	Describe common fitting considerations and procedures	Split between D5 & H1 in level 1
H6	Fabricate structural components	L3	Layout and fit a structural beam	Originally in levels 1 & 2, now in level 1 only
Line I	PERFORM WELDING ACTIVITIES			
11	Apply weld symbols	G5	Interpret standard weld symbols	In C1 and I1
		N1	Describe relevant provincial, national and international fabrication codes	Moved from level 4 to D1 & I1 in level 1
12	Use welding processes	F9	Use semi-automatic welding machines	Originally in level 2 only – now split over I2/levels 1 & 2
		K1	Describe common methods of metal preparation	n/a
			Competency content moved out of Level 1	
		A1	Describe the Metal Fabrication trade	Content removed – not an NOA requirement
		B6	Describe safe work practices for confined work spaces	Moved to A1/level 2
		H1	Use safe rigging practices	Originally level 1 only – now split over E3/level 1 and A1/level 3



Harmonized Level 1		Current Level 1	Description of Changes
	H2	Use material handling equipment and storage practices	Originally in level 1 only – now in E4/level 1 and E1/level 3
	H5	Describe safe work practices related to mobile equipment	Originally level 1 only – now split over E3/level 1 and A1/level 3
	К2	Describe the types of paints used in industry	Moved to J1/level 3
	КЗ	Identify the common methods of paint application	Moved to J2/level 3

	Harmonized Level 2		Current Level 2	Description of Changes
Line A	PERFORM SAFETY RELATED FUNCTIONS			
A1	Maintain safe work environment	B6	Describe safe work practices for confined work spaces	Moved from level 1
Line B	USE TOOLS AND EQUIPMENT			
B3	Use thermal cutting and welding equipment	F8	Use the plasma arc cutter	n/a
B5	Use computer numerical controlled (CNC) equipment	E9	Use the CNC shape cutting machine	Originally in level 3 only – now split over B5/levels 2 & 3
		E12	Develop and use programs for CNC shape cutting equipment	Moved from level 4 to B5/levels 2 & 3
Line C	INTERPRET PLANS, DRAWINGS AND SPECIFICATIONS			
C1	Interpret blueprints	G5	Interpret standard weld symbols	In C1 and I1
		G8	Draw secondary views of complex objects	n/a
		G9	Interpret complex multi-view shop drawings	n/a
		G14	Interpret computer generated shop drawings	Moved from level 4 to C1/levels 2 & 3
C2	Interpret structural steel drawings	C11	Calculate costs of materials to complete assemblies	n/a
		G10	Interpret complex structural drawings	n/a
		G13	Describe electronic detailing	Moved from level 3
		G15	Interpret specialized structural, erection and detail drawings	Moved from level 4 to C2/levels 2 & 3
		13	Layout complex templates from a shop drawing	n/a
		15	Identify component parts	n/a
Line D	PERFORM QUALITY CONTROL			
D2	Verify structural measurements, welds and layout	14	Describe standard allowances, required accuracy and shop tolerances	Originally level 2 only – now split over D2/levels 2 & 3
D3	Track structural materials, consumables and parts for	16	Describe the process operation	n/a

	Harmonized Level 2		Current Level 2	Description of Changes
	traceability	04	Determine required consumables	Moved from level 4 to D3 & H3 in levels 2 & 3
D4	Apply principles of metallurgy	D4	Use specialized measuring tools	Moved from level 4 to 'Describe' in B1/level 1 and 'Determined' in D4/level 2
		M3	Describe stress relieving techniques on metals	Moved from level 4 to D4/levels 1 & 2
		M4	Identify and use common metal testing methods	Moved from level 4 to D4/levels 1 & 2
D5	Control distortion	L4	Describe modern alignment methods	Originally level 2 only – now split over D2/levels 2 & 3
Line F	PERFORM TRADE MATH AND LAYOUT			
F1	Perform line development	J4	Integrate radial and parallel line development	n/a
		J5	Develop shop layout and processing for plate and structural sections	Split between F1 & F2 in level 2
		J6	Develop various patterns using radial line development	n/a
F2	Calculate bending allowances and stretch outs	J5	Develop shop layout and processing for plate and structural sections	n/a
F3	Calculate diagonals, volume, mass and capacity	C8	Solve complex problems using geometric construction	n/a
		C9	Solve complex problems using Pythagorean theory	n/a
Line G	FORM MATERIALS			
G1	Form material using plate rolls	E3	Use the power plate rolls	n/a
G2	Form material using shape rolls	E8	Use the power shape rollers (power angle rolls)	Originally in level 2 only – now split over G2/levels 2 & 3
G3	Form material using a brake press	E2	Use the hydraulic brake press	Originally in level 2 only – now split over G3/levels 2 & 3
G4	Form material using computer numerical controlled (CNC) brake press	E10	Use a CNC brake press	Moved from level 4 to G4/levels 2 & 3
G5	Fabricate plate	E7	Use the thread cutting machine	Originally level 2 only – now 'Describe' in B2/level 1 and 'Use' in G5/level 2
		G5	Interpret standard weld symbols	n/a
		L5	Fabricate a simple hopper	n/a



	Harmonized Level 2		Current Level 2	Description of Changes
		L6	Fabricate a concentric cone	n/a
		L7	Develop and fit branches on a cone	n/a
		L11	Fabricate a reduced tank with fittings	Moved from level 3
		L14	Plan, cost and fabricate an eccentric hopper	Moved from level 3
Line H	FABRICATE COMPONENTS			
H1	Construct templates and jigs	L10	Layout complex templates from a machine detail drawing	Originally in level 2 only – now split over H1 & H2 in levels 2 & 3
		L15	Apply work simplification methods	Moved from level 4
H2	Construct sub-components	L10	Layout complex templates from a machine detail drawing	Originally in level 2 only – now split over H1 & H2 in levels 2 & 3
H3	Determine proper sequence for assembly and welding	01	Establish area for installation	Moved from level 4
		04	Determine required consumables	Moved from level 4 to D3 & H3 in levels 2 & 3
H4	Assemble sub-components and components	L16	Differentiate types of structural steel fasteners	Moved from level 4
		06	Describe installation of components	Moved from level 4 to H4 & 5 in levels 2 & 3
H5	Set fabricated component in place	05	Confirm field dimensions	Moved from level 4
		06	Describe installation of components	Moved from level 4 to H4 & 5 in levels 2 & 3
H6	Fabricate structural components	17	Layout a set of stair stringers	n/a
		L8	Fabricate a reduced set of straight stairs	n/a
		L9	Fabricate a reduced section of handrail	n/a
Line I	PERFORM WELDING ACTIVITIES			
11	Apply weld symbols	G5	Interpret standard weld symbols	In C1 and I1
12	Use welding processes	F9	Use semi-automatic welding machines	Originally in level 2 only – now split over I2/levels 1 & 2



	Harmonized Level 2		Current Level 2	Description of Changes		
	Competency content moved out of Level 2					
		C10	Solve problems involving weight, mass and the capacity of vessels	Moved to F3/level 1		
		E2	Use the hydraulic brake press	Originally in level 2 only – now split over G3/levels 2 & 3		
-		E8	Use the power shape rollers (power angle rolls)	Originally in level 2 only – now split over G2/levels 2 & 3		
		F7	Use air-arc gouging/cutting methods	Moved to B3/level 1		
		F9	Use semi-automatic welding machines	Originally in level 2 only – now split over I2/levels 1 & 2		
		H3	Use ladders and scaffolding	Moved to B4/level 1		
		14	Describe standard allowances, required accuracy and shop tolerances	Originally level 2 only – now split over D2/levels 2 & 3		
		J5	Develop shop layout and processing for plate and structural sections	Originally in level 2 only – now in F1/level 2 and split over F2/levels 2 & 3		
		L3	Layout and fit a structural beam	Originally in levels 1 & 2, now in level 1 only		
		L4	Describe modern alignment methods	Originally level 2 only – now split over D2/levels 2 & 3		
		L10	Layout complex templates from a machine detail drawing	Originally in level 2 only – now split over H1 & H2 in levels 2 & 3		

	Harmonized Level 3		Current Level 3	Description of Changes
Line A	PERFORM SAFETY RELATED FUNCTIONS			
A1	Maintain safe work environment	H1	Use safe rigging practices	Originally level 1 only – now split over E3/level 1 and A1/level 3
		H5	Describe safe work practices related to mobile equipment	Originally level 1 only – now split over E3/level 1 and A1/level 3
Line B	USE TOOLS AND EQUIPMENT			
B5	Use computer numerical controlled (CNC) equipment	E9	Use the CNC shape cutting machine	Originally level 3 only – now split over B5/levels 2 & 3
		E11	Describe CNC punching equipment	Moved from level 4
		E12	Develop and use programs for CNC shape cutting equipment	Moved from level 4 to B5/levels 2 & 3
Line C	INTERPRET PLANS, DRAWINGS AND SPECIFICATIONS			
C1	Interpret blueprints	G5	Interpret standard weld symbols	In C1 and I1
		G11	Interpret specialized multi-view shop drawings	n/a
		G14	Interpret computer generated shop drawings	Moved from level 4 to C1/levels 2 & 3
C2	Interpret structural steel drawings	G12	Interpret complex structural, erection and detail drawings	n/a
		G15	Interpret specialized structural, erection and detail drawings	Moved from level 4 to C2/levels 2 & 3
Line D	PERFORM QUALITY CONTROL			
D2	Verify structural measurements, welds and layout	14	Describe standard allowances, required accuracy and shop tolerances	Originally level 2 only – now split over D2/levels 2 & 3
D3	Track structural materials, consumables and parts for	19	Describe the process operation for various structural	n/a
	traceability	04	projects Determine required consumables	Moved from level 4 to D3 & H3 in levels 2 & 3
D5	Control distortion	L4	Describe modern alignment methods	Originally level 2 only – now split over D2/levels 2 & 3
Line E	HANDLE MATERIALS			



	Harmonized Level 3		Current Level 3	Description of Changes
E1	Organize specialty materials and products	H2	Use material handling equipment and storage practices	Originally in level 1 only – now in E4/level 1 and E1/level 3
Line F	PERFORM TRADE MATH AND LAYOUT			
F1	Perform line development	18	Layout complex templates from a complex structural shop drawing	n/a
		J7	Develop various patterns using the triangulation method	n/a
		J8	Develop specialized patterns using the triangulation method	Moved from level 4
F2	Calculate bending allowances and stretch outs	J5	Develop shop layout and processing for plate and structural sections	Originally in level 2 only – now in F1/level 2 and split over F2/levels 2 & 3
F3	Calculate diagonals, volume, mass and capacity	C12	Solve simple problems using trigonometry	n/a
		C13	Solve complex problems using trigonometry	Moved from level 4
		C14	Solve problems using segmental functions	Moved from level 4
Line G	FORM MATERIALS			
G2	Form material using shape rolls	E8	Use the power shape rollers (power angle rolls)	Moved from level 2 to G2/levels 2 & 3
G3	Form material using a brake press	E2	Use the hydraulic brake press	Originally in level 2 only – now split over G3/levels 2 & 3
G4	Form material using computer numerical controlled (CNC) brake press	E10	Use a CNC brake press	Moved from level 4 to G4/levels 2 & 3
G5	Fabricate plate	L12	Fabricate a square to round transition	n/a
		L17	Fabricate a reduced spiral staircase	Moved from level 4
Line H	FABRICATE COMPONENTS			
H1	Construct templates and jigs	L10	Layout complex templates from a machine detail drawing	Originally in level 2 only – now in H2/level 2 and split over H1/levels 2 & 3
H2	Construct sub-components	L10	Layout complex templates from a machine detail drawing	Originally in level 2 only – now split over H1 & H2 in levels 2 & 3
H3	Determine proper sequence of assembly and welding	04	Determine required consumables	Moved from level 4 to D3 & H3 in levels 2 & 3



	Harmonized Level 3		Current Level 3	Description of Changes
H4	Assemble sub-components and components	06	Describe installation of components	Moved from level 4 to H4 & 5 in levels 2 & 3
H5	Set fabricated component in place	03	Determine required equipment	Moved from level 4 to E4/level 1 & H5/level 3
		O 6	Describe installation of components	Moved from level 4 to H4 & 5 in levels 2 & 3
H6	Fabricate structural components	L13	Plan, cost and fabricate a structural frame	n/a
Line I	PERFORM WELDING ACTIVITIES			
11	Apply weld symbols	G5	Interpret standard weld symbols	In C1 and I1
Line J	COMPLETE PROJECT			
J1	Determine finishing process	K2	Describe the types of paints used in industry	Moved from level 1
J2	Prepare materials for finishing	К3	Identify the common methods of paint application	Moved from level 1
			Competency content moved out of Level 3	
		L11	Fabricate a reduced tank with fittings	Moved to G5/level 2
		L14	Plan, cost and fabricate an eccentric hopper	Moved to G5/level 2
		G13	Describe electronic detailing	Moved to C2/level 2

	Current Level 4	Description of Changes
C13	Solve complex problems using trigonometry	Moved to F3/level 3
C14	Solve problems using segmental functions	Moved to F3/level 3
D4	Use specialized measuring tools	Moved to 'Describe' in B1/level 1 and 'Determined' in D4/level 2
E10	Use a CNC brake press	Moved to G4/levels 2 & 3
E11	Describe CNC punching equipment	Moved to B5/level 3
E12	Develop and use programs for CNC shape cutting equipment	Moved to B5/levels 2 & 3
G14	Interpret computer generated shop drawings	Moved to C1/levels 2 & 3
G15	Interpret specialized structural, erection and detail drawings	Moved to C2/levels 2 & 3
J 8	Develop specialized patterns using the triangulation method	Moved to F1/level 3
L15	Apply work simplification methods	Moved to H1/level 2
L16	Differentiate types of structural steel fasteners	Moved to H4/level 2
L17	Fabricate a reduced spiral staircase	Moved to G5/level 3
M1	Describe the types, grades and properties of steels	Moved to D4/level 1
M2	Describe the effects of heat and stress on metals	Moved to D4/level 1
M3	Describe stress relieving techniques on metals	Moved to D4/level 1 & 2
M4	Identify and use common metal testing methods	Moved to D4/level 1 & 2
N1	Describe relevant provincial, national and international fabrication codes	Moved to D1 & I1 in level 1
N2	Use standard non-destructive testing inspection techniques	Moved to level 1 – 'Describe' in D1/level 1, and will 'Produce a profile burned coupon' in B3/level 1
01	Establish area for installation	Moved to H2/level 2
02	Establish laydown area	Moved to E4/level 1

	Current Level 4	Description of Changes
03	Determine required equipment	Moved to E4/level 1 & H5/level 3
04	Determine required consumables	Moved to D3 & H3 in levels 2 & 3
05	Confirm field dimensions	Moved to H5/level 2
06	Describe installation of components	Moved H4 & 5 in levels 2 & 3