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Physical Demands Analysis

Sheet Metal Worker – Shop Fabrication

Prepared for:
Alberta Construction Association

Job Title:	Sheet Metal Worker – Shop Fabrication	**Assessment Location:**	Edmonton, AB	**Data Collection Date:**	February 4, 2021

Completed By:	Joanna Ellingson, BKin	**Submitted on:**	July 29, 2021

Disclaimer:	The Physical Demands noted in this report may vary depending on company and location. Please contact the company directly to confirm this physical demands analysis is an accurate representation of the specific job title for the specific location.

Work Schedule:	**Shift Duration:** 5 days/week, 8 hours/day **Break Schedule:** Total of 1 hour break per day / 2-30 minute breaks at 9:00 am and 12:00 pm **Shift Rotation:** Not applicable **On call is required:** No **Overtime required:** Longer shifts may be available depending on work volume and project deadlines

Education / Experience:	**Education required:** 4 year apprenticeship program; 10 weeks of technical training per year **Hours required for position:** 1,500 hours per year for 4 years **Tickets that may be required (not limited to):** WHMIS and Construction Safety Training Systems (CSTS).

Labour Provider:	N/A

Job Overview: As a Shop Fabrication worker, the worker is required to retrieve, prepare and customize sheet metal to the specifications provided by the Sheet Metal Installers or the Shop Team Lead.

% of shift	Job Task	Task Description
1%	Toolbox meeting	• Discuss ongoing and upcoming projects, plans for the day including shop fabrication and sheet metal installation. • Discuss safety topics or any safety concerns from the Team Lead.
3%	Transporting materials in shop	• Using the forklift to transfer material from the storage in the shop to the sheering area. • Placing sheet metal in the respective spots in the shop.
7%	Sheering	• Using the manual (foot) or mechanical sheer in order to cut the sheet metal to the customized measurements required for the project site.

			• A mechanical sheer requires the worker to guide the sheet metal through the machine. • A manual (foot) sheer requires the worker to place the sheet metal on the machine and use the foot lever and their body weight to press the blade down on the sheet metal.
	0.5 %	Speciality Measurements	• Completed for sites that require specific measurements, cap flashing, etc.
	3%	Reviewing blue prints and measuring	• Reviewing blue prints and measurements provided by the Shop Team Lead or Sheet Metal Installers.
	15%	Marking and dabbing sheet metal	• Reviewing measurements provided by the Shop Team Lead or Sheet Metal Installers. • Marking the sheet metal according to the project site measurements indicated. • Using a screw driver and hammer to dab the sheet metal (2-3 sheets at a time).
	17%	Hand snipping	• Using snips to cut the sheet metal for interlocking.
	10%	Using the S-Lock Former machine	• Placing sheet metal in the S-Lock Former machine to create folds in order to interlock. • The placement of these folds will be provided by the project site measurements.
	40%	Using Hand Brake machine	• Placing sheet metal into the Hand Brake machine to create folds for roof installation specific to the project site.
	0.5 %	Crimping/ Soldering	• Required on speciality pieces for project sites. • Soldering involves the following steps: opening bay doors to tighten connection onto tank, closing bay door partially (allow ventilation), starting flame with a lighter, placing iron rod in front of flame, cleaning sheet metal with acid, retrieving iron rod to solder metal pieces, shutting off flame and cleaning soldered metal. • Crimping involves the following steps: retrieving desired sheet metal, preparing crimp machine to the measurements required for the piece, placing metal in machine and turning lever to imprint crimp markings on metal (as desired). • This activity may not be completed each shift, depending on the site requirements.
	3%	Removing materials from shop/cleaning	• Cleaning and removing excess metal or materials from the shop by using sheet metal magnet or lifting/carrying metal or materials.
	N/A	Assisting with sheet metal delivery	• Driving sheet metal to site as required if installers are already on site. • This activity is not completed each shift, only required on a rare basis.

Equipment/ Tools:	• Snips (up to 1 lbs.) • Folding pliers (1 lbs.) • Drill (2 lbs.) • Compass • Hammer (2 lbs.) • Aviation snips • Tape measure • Clamps (up to 2 lbs.) • Ruler • Soldering torch

Materials:	• Sheet metal (~9 lbs. per sheet/27 lbs. per bundle) • Cap flashing (up to 38 lbs.)

Exposures / Environment:	• Outdoor elements (snow, rain, wind) • Metal scraps

Basic Personal Protective Equipment Required:	• Steel toed boots • Long pants
Specialized Personal Protective Equipment Required:	• Cut resistant gloves • Face shield during drilling/soldering tasks

NOC STRENGTH LEVEL KEY	
Strength Level	**Definition**
Limited (Lim)	Up to 5 kg (11 pounds)
Light (L)	5 kg to 10 kg (11 – 22 pounds)
Medium (M)	10 kg to 20 kg (22 – 44 pounds)
Heavy (H)	Greater than 20 kg (44 pounds plus)

Strength Level Key based on the National Occupational Classification

FREQUENCY KEY		
Frequency	**% of Workday**	**Hours – Based on 8 hour Workday**
Not Required (N/R)	0%	0
Rarely (R)	1 – 5%	<25 min/day
Occasionally (O)	6 – 33%	25 min to 2 hours 40 min/day
Frequently (F)	34 – 66%	2 hours 41 min to 5 hours 17 min/day
Constantly (C)	67 – 100%	5 hours 18 min to 8 hours/day

Frequency Key based on WCB Alberta Recommendations

Job Demand	Frequency / NOC Strength Level					Details/ Measurements
	N/R	R	O	F	C	
Material Handling:						
Floor to Waist Level Lifting		H	M			Lifting sheet metal (up to 24 lbs.) from lower levels including cabinetry at work station, removing sheet metal from floor during cleaning.
Knee to Waist Level Lifting	X					Not required.
Waist to Waist Level Lifting			M	Lim		Transferring sheet metal (up to 27 lbs.) from sheering to measuring/marking/dabbing, hand snipping, S-Lock Former machine, table and Hand Brake machine.
Waist to Chest Level Lifting	X					Not required.
Waist to Shoulder Level Lifting		M				Lifting sheet metal (up to 27 lbs.) onto shoulder to transfer across the shop.
Waist to Overhead Level Lifting		M				Lifting metal/materials to bins located outside during cleaning.
Front Carry			H			Carrying sheet metal/cap flashing (up to 38 lbs.) in the shop.
Right / Left-handed Carry (Dominant Hand)			H			Carrying sheet metal/cap flashing (up to 38 lbs.) in the shop.
Shoulder Carry		M				Carrying sheet metal (up to 27 lbs.) on shoulder to transfer across the shop.
Static Pushing/Pulling (Force)			H			Marking and dabbing sheet metal (up to 91.5 lbs. of force required for dabbing).
Dynamic Pushing/Pulling (Force)			H	M		Hand snipping, guiding sheet metal through sheers, placing sheet metal in S-Lock Former machine and Hand Brake machine, operating S-Lock Former machine levers (77.5 lbs. of force), operating Hand Brake machine (35.0 lbs. of force) removing wrap from sheet metal, pulling handle on sheet metal magnet (6 lbs. of force empty, 66 lbs. of force with metal), pushing table across shop (24.5 lbs. of force empty, 51.5 lbs. of force with materials), etc.

Job Demand	Frequency					Details/Measurements
	N/R	R	O	F	C	
Upper Extremity Work:						
Hand Gripping					X	Using aviation snips to remove sheet metal from packaging, during sheering, measuring and marking, hand snipping, operating S-Lock Former machine and Hand Brake machine, operating forklift, holding hammer while dabbing, unloading materials, adjusting specs on the sheer mechanic machine, during shop cleaning, etc.
Pinch Gripping				X		Handling sheet metal, special measurements, using screw driver while dabbing, adjusting sheet metal in S-Lock Former machine and Hand Brake machine, handling blueprints/paperwork, during crimping and soldering tasks.
Upper Extremity Coordination					X	Using aviation snips to remove sheet metal from packaging, during sheering, measuring, marking and dabbing, hand snipping, operating S-Lock Former machine and Hand Brake machine, operating forklift, unloading materials, during shop cleaning, handling sheet metal, adjusting sheet metal in S-Lock Former machine and Hand Brake machine, during crimping and soldering tasks.
Reaching Forward				X		During sheering, measuring, marking, hand snipping tasks, operating S-Lock Former machine and Hand Brake machine, during crimping and soldering tasks, operating forklift, unloading materials, etc.
Overhead Shoulder Level Reaching		X				During shop cleaning: while removing metals/materials from the shop to the bins.
Below Shoulder Level Reaching					X	Using aviation snips to remove sheet metal from packaging, during sheering, measuring, marking and dabbing, hand snipping, operating S-Lock Former machine and Hand Brake machine, operating forklift, unloading materials, during shop cleaning, handling sheet metal, adjusting sheet metal in S-Lock Former machine and Hand Brake machine, during crimping and soldering tasks.
Throwing		X				Removing metals/materials from the shop to the bins.

Job Demand	Frequency					Details/Measurements
	N/R	R	O	F	C	
Positional Work:						
Trunk Flexion (Bending)			X			Operating Hand Brake machine, measuring and writing, adjusting specs on the mechanic sheer machine, operating the manual (foot) sheer machine.
Trunk Rotation (Twisting)			X			Operating forklift and Hand Brake machine.
Kneeling		X				Retrieving sheet metal from lower levels including cabinetry at the work station (worker preference).
Crawling	X					Not required.
Crouching		X				Retrieving sheet metal from lower levels including cabinetry at the work station (worker preference).
Squatting			X			Retrieving sheet metal from lower levels including cabinetry at the work station (worker preference).
Neck Flexion				X		Operating forklift, during sheering, reviewing blue prints, measuring, marking, dabbing, hand snipping, operating S-Lock Former machine, Hand Brake machine, checking surroundings in shop, during shop cleaning, during special measurements, crimping and soldering tasks.
Neck Extension			X			Operating forklifts, removing metal/materials from the shop, checking surroundings in the shop.
Neck Rotation				X		Operating Hand Brake machine with coworker, during sheering, measuring, marking, dabbing and hand snipping tasks, reviewing blue prints and measurements, during shop cleaning, checking surroundings in the shop.

Job Demand	Frequency					Details/Measurements
	N/R	R	O	F	C	
Static Work:						
Sitting			X			Operating forklift, during breaks, transporting sheet metal to project sites (not daily).

Static Standing				X		During sheering, reviewing blue prints, measuring, marking, dabbing, hand snipping, crimping, soldering, operating S-Locker Former machine and Hand Brake machine, completing special measurements, during toolbox meeting.
Balancing		X				Removing metal/materials to bins outside the shop, retrieving miscellaneous products from higher level shelving units in the shop using a ladder.

Job Demand	Frequency					Details/Measurements
	N/R	R	O	F	C	
Ambulation:						
Walking: Level Surfaces				X		Walking throughout shop, from various stations (sheering, dabbing, hand snipping, etc.).
Walking: Uneven Surfaces		X				Removing metal/materials to bins outside the shop.
Walking: Slopes	X					Not required.
Jumping	X					Not required.
Running	X					Not required.

Job Demand	Frequency					Details/Measurements
	N/R	R	O	F	C	
Climbing:						
Stairs		X				Gain access to the second level of the building (not daily).
Ladder		X				Retrieving miscellaneous products from higher level shelving units in the shop (not daily).
Other		X				Entering/exiting forklift.

PHOTOS OF TASKS AND WORK ENVIRONMENT

Figure 1: Operating the forklift to provide stored sheet metal to sheering station.

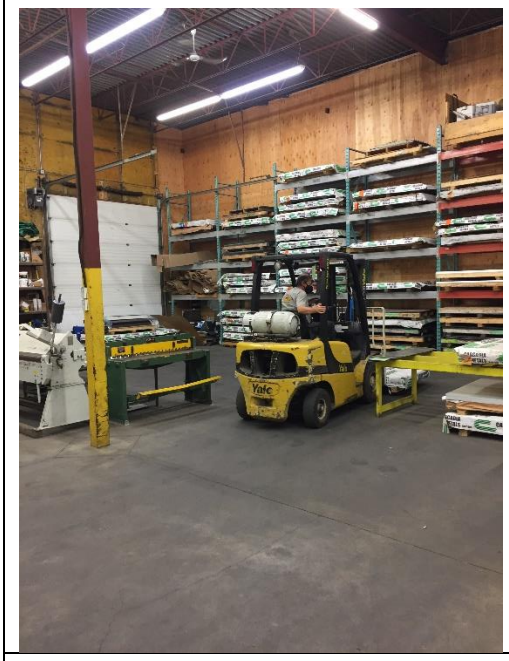


Figure 2: Adjusting the specs on the sheer (mechanical) machine for the site required specific measurements.

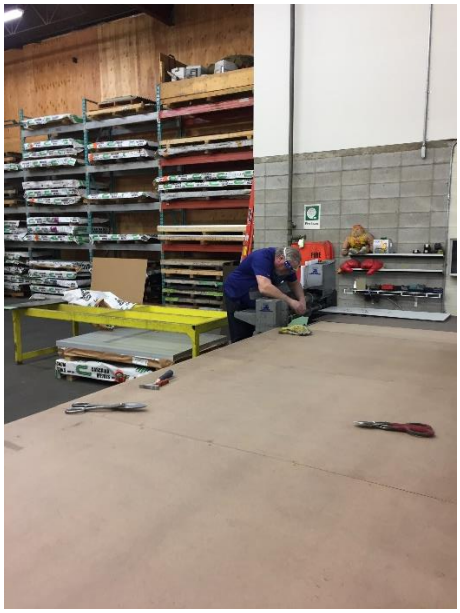


Figure 3: Dabbing the sheet metal using a hammer and screw driver according to the measurements provided.

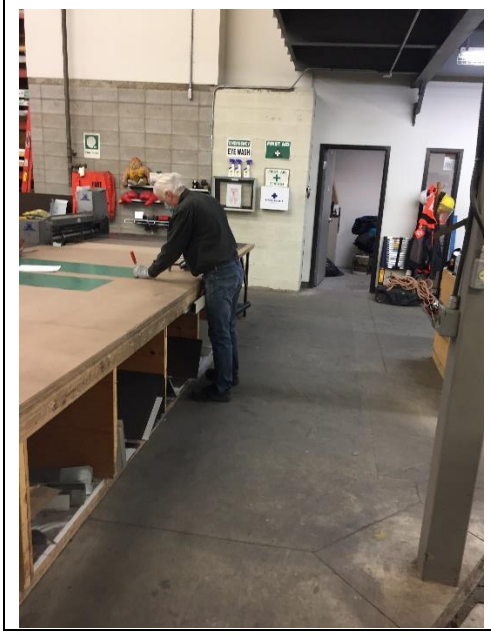


Figure 4: Hand snipping the sheet metal according to the measurements indicated on the metal.

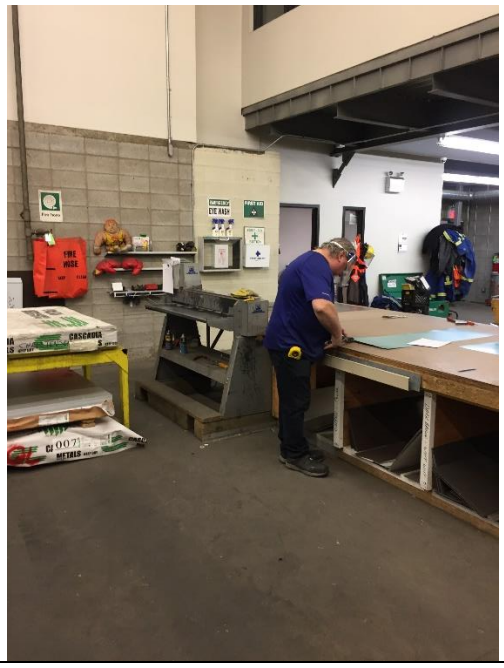


Figure 5: Operating the S-Lock Former machine in order to create interlocking folds.

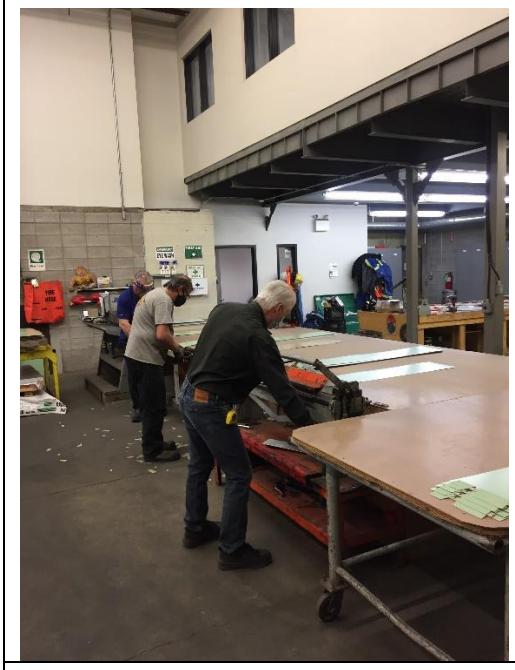


Figure 6: Operating the Hand Brake machine in order to create folds for sheet metal installation.

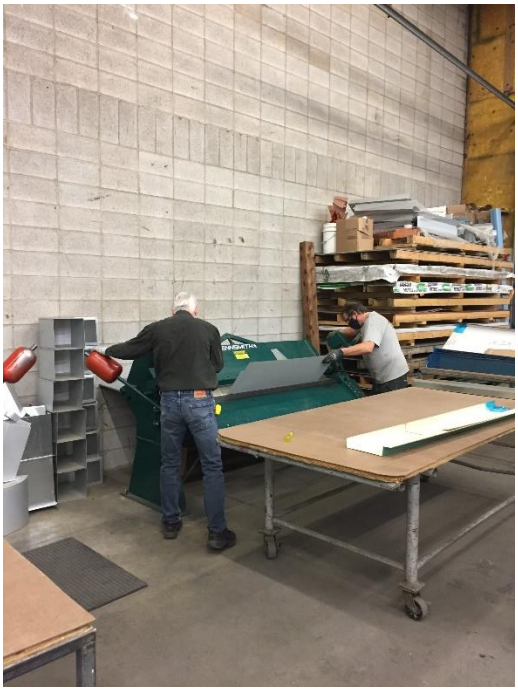
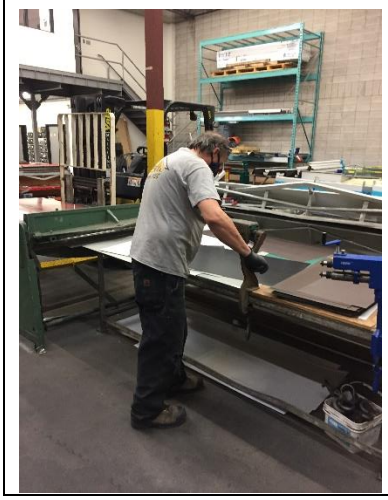


Figure 7: Using the crimper to create crimp edging on speciality pieces.



If you have any questions, and/or would like to discuss this assessment and report further, I can be reached at (780) 429-4761.

Sincerely,

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Joanna Ellingson, BKin
Kinesiologist

SITE SPECIFIC JOB DEMAND ADDITIONS:

Job Demand	Frequency					Details/Measurements
	N/R	R	O	F	C	
Site Specific Job Demand:						
Writing			X			Reviewing blue prints, during measurements and marking.
Soldering		X				
Crimping		X				

Validation Agreement

Job Title:	Sheet Metal Worker - Shop Fabrication
Data Collection Date:	February 4, 2021

We the undersigned have reviewed the Physical Demands Analysis for this position and agree that the physical demands documented in this report are representative of the true demands of the tasks associated with the job title as assessed on the date listed above.

Completed by:	Joanna Ellingson, BKin	Lifemark Clinician Name and Credentials
Approved by:		Management Representative
Approved by:		Worker Representative
Approved by:		Labour Provider Representative