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## Physical Demands Analysis

### Sheet Metal Worker – Field Installation

Prepared for:  
Alberta Construction Association

<b>Job Title:</b>	Sheet Metal Worker – Field Installation	<b>Assessment Location:</b>	70 Westbrook Drive NW Edmonton, AB	<b>Data Collection Date:</b>	March 4, 2021
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<b>Completed By:</b>	Joanna Ellingson, BKin	<b>Submitted on:</b>	July 29, 2021
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<b>Disclaimer:</b>	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.
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<b>Work Schedule:</b>	<b>Shift Duration:</b> 5 days/week, 8 hours/day <b>Break Schedule:</b> Total of 1 hour break per day / 2-30 minute breaks at 9:00 am and 12:00 pm <b>Shift Rotation:</b> Not applicable <b>On call is required:</b> No <b>Overtime required:</b> Longer shifts may be available depending on work volume and project deadlines
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<b>Education / Experience:</b>	<b>Education required:</b> 4 year apprenticeship program; 10 weeks of technical training per year <b>Hours required for position:</b> 1,500 hours per year for 4 years. <b>Tickets that may be required (not limited to):</b> Fall protection, Construction Safety Training Systems (CSTS) and WHMIS.
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<b>Labour Provider:</b>	N/A
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<b>Job Overview :</b>	As a Field Installer, the worker is required to retrieve the required flashing and supplies from the shop, drive to the project site, prepare the site with ladders, fall arrest equipment and supplies, to then install the designated flashing and clipping (if required). Cleaning site can be completed as the crew progresses through the project or at the end of the shift.		
	% of shift	Job Task	Task Description
	1%	Toolbox meeting	<ul style="list-style-type: none"><li>Discuss ongoing and upcoming projects, plans for the day including shop fabrication and sheet metal installation.</li><li>Discuss safety topics or any safety concerns from the Team Lead.</li></ul>
	1%	Loading materials/equipment into work truck	<ul style="list-style-type: none"><li>Retrieving all materials and equipment from the shop and loading the work truck.</li><li>Materials will be dependent on project and site specifications.</li></ul>

	0.5%	Driving to project site	<ul style="list-style-type: none"> <li>Site location can vary depending on project timelines and site progress.</li> <li>In Edmonton and surrounding area.</li> </ul>
	1.0%	Unloading materials/equipment from truck to project site	<ul style="list-style-type: none"> <li>Retrieving all materials and equipment from the work truck and relocating within the site parameters.</li> <li>Includes lifting and carrying flashing, tool bags, garbage bin, clipping (if required), ladders, fall arrest equipment.</li> </ul>
	1.0%	Setting up ladders and anchoring fall arrest equipment	<ul style="list-style-type: none"> <li>Securing ladders onto building in order for workers to access the roof.</li> <li>Once ladders are secured, setting fall arrest equipment by anchoring clips and rope onto the roof, ensuring the fall arrest is installed within safety parameters.</li> <li>Inspecting and putting on fall arrest harness for all workers working on the roof.</li> </ul>
	1.0%	Loading materials/equipment onto roof	<ul style="list-style-type: none"> <li>Using a manual or mechanical method to transfer materials and equipment onto the roof.</li> <li>Manual method would include the worker using a rope to secure the load at the ground level and the worker on the roof pulling the rope to move the load onto the roof.</li> <li>Mechanical method would include using a scissor lift, EWP, etc.</li> </ul>
	2%	Preparing clipping/flashing for installation	<ul style="list-style-type: none"> <li>Reviewing and ensuring the site specific clipping/flashing are measured accurately to the site.</li> <li>If adjustments are required, the worker will use hand folders, hand snips and knives to ensure clipping and flashing will fit to the parapet.</li> </ul>
	5-10%	Installing clipping on roof (not every project)	<ul style="list-style-type: none"> <li>Laying down site specific clipping onto parapet and securing the clipping using screws.</li> <li>This may not be required on all sites.</li> </ul>
	75-80%	Installing flashing on roof	<ul style="list-style-type: none"> <li>Attaching flashing to the clipping, pulling flashing towards the worker and pushing the flashing to be flush with the pal pat.</li> <li>Secure flashing with neighbouring flashing piece using screw driver and pitting knife under neighbouring piece. The worker will then push/pull the flashing to fit underneath the previous flashing piece.</li> </ul>
	3%	Site cleaning	<ul style="list-style-type: none"> <li>Cleaning site of excess clipping, flashing and various garbage/materials from site.</li> <li>The crew can use a garbage bin on the roof or use the site garbage bin to dispose of materials and garbage.</li> </ul>
	1%	Unloading materials/equipment from roof onto site ground	<ul style="list-style-type: none"> <li>Using a manual or mechanical method to transfer materials and equipment from the roof to the site ground.</li> <li>Manual method would include the worker using a rope to secure the load at the roof level and the worker on the roof lowering the load down to the site ground.</li> </ul>

			<ul style="list-style-type: none"> <li>Mechanical method would include using a scissor lift, zoom boom, etc.</li> </ul>
	1%	Removing ladders and disassembling fall arrest equipment	<ul style="list-style-type: none"> <li>Disassembling fall arrest equipment by removing clip anchors and rope from the roof.</li> <li>Removing secured ladders from building at the end of the shift.</li> <li>Inspecting fall arrest equipment to ensure no safety issues.</li> </ul>
	1%	Loading materials/equipment from project site to truck	<ul style="list-style-type: none"> <li>Retrieving all materials and equipment from the project site and loading the work truck at the end of the shift.</li> <li>Includes lifting and carrying flashing, tool bags, garbage bin, clipping (if required), ladders, fall arrest equipment.</li> </ul>
	0.5%	Drive to shop	<ul style="list-style-type: none"> <li>Drive from the project site to the shop to unload materials and equipment.</li> </ul>
	1%	Unloading excess materials and equipment from truck to the shop	<ul style="list-style-type: none"> <li>Retrieving all materials and equipment from the work truck and placing back into the shop.</li> <li>Materials will be dependent on project and site specifications.</li> </ul>

<b>Equipment/Tools:</b>	<ul style="list-style-type: none"> <li>Snips (up to 1 lbs.)</li> <li>Folding pliers (1 lbs.)</li> <li>Drill (2 lbs.)</li> <li>Compass</li> <li>Hammer (2 lbs.)</li> <li>Aviation snips</li> <li>Tape measure</li> <li>Clamps (up to 2 lbs.)</li> <li>Ruler</li> <li>Hand folders (up to 6")</li> <li>Pitting knife</li> <li>Pry bar</li> <li>Hammer drill (4 lbs.)</li> <li>Grinder (3 lbs.)</li> <li>Pylons (12 lbs.)</li> <li>Fall arrest equipment (23 lbs.)</li> <li>Tool bag (26 lbs.)</li> <li>Ladders (up to 36 ft. – 70 lbs.)</li> <li>Fire extinguisher (32 lbs.)</li> <li>EWP/Scissor lifts.</li> </ul>
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<b>Materials:</b>	<ul style="list-style-type: none"> <li>Flashing (3x5ft. pieces – 18 lbs.)</li> <li>Clipping</li> <li>Roxul insulation (30-40 lbs.)</li> </ul>
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<b>Exposures / Environment:</b>	<ul style="list-style-type: none"> <li>• Outdoor elements (wind, cold, heat, rain, snow, ice)</li> <li>• Dust (hammer drilling/grinding)</li> </ul>
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<b>Basic Personal Protective Equipment Required:</b>	<ul style="list-style-type: none"> <li>• Hard hat</li> <li>• Steel toed boots</li> <li>• Gloves</li> <li>• Safety vest or high visibility stripes</li> <li>• Long sleeves and pants</li> <li>• Fall arrest equipment</li> </ul>
<b>Specialized Personal Protective Equipment Required:</b>	<ul style="list-style-type: none"> <li>• Face shield/CSA approved safety glasses for grinding and industrial hammer drilling tasks</li> </ul>

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	
<b>Material Handling:</b>						
<b>Floor to Waist Level Lifting</b>			M			Lifting materials and equipment including: flashing (18 lbs.), insulation (up to 40 lbs), tool bag (26 lbs.), fall arrest equipment (23 lbs.), pylons (12 lbs.), etc. when loading/unloading truck, project site and while on the roof.
<b>Knee to Waist Level Lifting</b>			L			Lifting materials including flashing (18 lbs.) and clippings after reviewing measurements and adjusting to specifics of site.
<b>Waist to Waist Level Lifting</b>		H	L			Transporting upright flashing (18 lbs.) and ladders (70 lbs.) on site and roof as required.

<b>Waist to Chest Level Lifting</b>		M				Transporting materials including flashing (18 lbs.), clipping and insulation (40 lbs.) on higher level parapets/roofs.
<b>Waist to Shoulder Level Lifting</b>		M				Transporting materials including flashing (18 lbs.), clipping and insulation (40 lbs.) on higher level parapets/roofs.
<b>Waist to Overhead Level Lifting</b>		M				Transporting materials including flashing (18 lbs.), clipping and insulation (40 lbs.) on higher level parapets/roofs, loading materials onto roof manually including pylons (12 lbs.), tool bags (26 lbs.), fall arrest equipment (23 lbs.), etc.
<b>Front Carry</b>		M				Carrying garbage bin on site, tool bag (26 lbs.), materials including flashing (18 lbs.), insulation (40 lbs.), clippings, etc. throughout site and on roof.
<b>Right / Left-handed Carry (Dominant Hand)</b>			M			Carrying flashing (18 lbs.), tool bag (26 lbs.), ladders (70 lbs. – 2 person carry), insulation (40 lbs.) throughout site and on roof.
<b>Shoulder Carry</b>		M				Carrying flashing (18 lbs.) and insulation (40 lbs.) for longer distances.
<b>Static Pushing/Pulling (Force)</b>				H		Pushing flashing onto parapet (76.5 lbs. force), pulling flashing to remove/adjust from clipping (54 lbs. of force), securing flashing to neighbouring flashing (pushing: 85 lbs., pulling: 171.75 lbs. of force), pushing drill into flashing to secure on parapet (54 lbs. of force).
<b>Dynamic Pushing/Pulling (Force)</b>				H		Pulling flashing off truck (18 lbs. of force), pushing flashing down to secure on parapet (176.5 lbs. of force), closing tailgate (39.5 lbs. of force), pushing ladder onto truck (36 lbs. of force), pulling ladder off work truck (52 lbs. of force)

Job Demand	Frequency					Details/Measurements
	N/R	R	O	F	C	
Upper Extremity Work:						
Hand Gripping					X	Handling materials and equipment while loading/unloading truck, at the shop and on site, moving materials onto/from rope using manual (rope) method, gripping steering wheel while driving, preparing and installing clipping, flashing, installing fall arrest equipment, using hand tools, etc.

<b>Pinch Gripping</b>				X		Using screws to install clipping and flashing, gripping flashing, pinching lips of the flashing together.
<b>Upper Extremity Coordination</b>					X	Handling materials and equipment while loading/unloading truck, at the shop and on site, moving materials onto/from rope using manual (rope) method, manipulating steering wheel while driving, preparing and installing clipping, flashing and insulation, installing fall arrest equipment, using hand tools, manipulating flashing during installation, using screws, etc.
<b>Reaching Forward</b>					X	Loading/unloading materials and equipment from work truck, drilling clipping to install onto parapet, reaching across the parapet to connect clipping to flashing during installation, securing or adjusting flashing to neighbouring piece.
<b>Overhead Shoulder Level Reaching</b>			X			Assisting/controlling materials and equipment while using manual (rope) method for transfer onto/off the roof, installing clipping/flashing/insulation overhead, setting up/securing ladder, pushing ladder onto work truck rack.
<b>Below Shoulder Level Reaching</b>					X	Loading/unloading materials onto/from work truck, site, roof, during clipping, flashing and insulation preparation/installation, installing fall arrest, site clean up, driving to/from site.
<b>Throwing</b>		X				Dropping excess materials into site garbage bin (if no access to crew garbage bin).

Job Demand	Frequency					Details/Measurements
	N/R	R	O	F	C	
Positional Work:						
Trunk Flexion (Bending)					X	During installation of fall arrest equipment, preparation and installation of clipping/flashing/insulation.
Trunk Rotation (Twisting)			X			Checking progress of clipping/flashing while kneeling, while loading/unloading materials and equipment from work truck.
Kneeling					X	During installation of fall arrest equipment, preparation and installation of clipping/flashing/insulation.

<b>Crawling</b>			X			When moving during installation of clipping/flashing/insulation on the roof.
<b>Crouching</b>		X				Working on a roof overhang (tight space).
<b>Squatting</b>			X			Picking up materials, position while using manual (rope) method to load/unload materials and equipment on roof.
<b>Neck Flexion</b>					X	Loading/unloading materials and equipment, during fall arrest equipment, clipping, flashing and insulator install, checking surroundings.
<b>Neck Extension</b>			X			Using manual (rope) method to load/unload materials and equipment on roof (ground position), reviewing site from ground level, checking surroundings.
<b>Neck Rotation</b>			X			During fall arrest, clipping, flashing and insulation install, checking surroundings.

Job Demand	Frequency					Details/Measurements
	N/R	R	O	F	C	
Static Work:						
Sitting			X			Driving to and from site, during breaks.
Static Standing			X			During tool box meeting, reviewing site, hazard and fall arrest protection plan.
Balancing				X		While on roof (especially slipper conditions), ladder climbing

Job Demand	Frequency					Details/Measurements
	N/R	R	O	F	C	
Ambulation:						
Walking: Level Surfaces				X		Depending on composition of site (ground and roof).
Walking: Uneven Surfaces				X		Depending on composition of site (ground and roof).
Walking: Slopes		X				Depending on site (ground and roof).
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 various levels (depending on site).
Ladder			X			To access various levels of the roof/site building.

<b>Other</b>		X				Climbing onto equipment (EWP, scissor lift), scaffolding equipment.
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**PHOTOS OF TASKS AND WORK ENVIRONMENT**

**Figure 1:** The worker passing a flashing bundle to his co-worker. The worker positioned on the roof is using fall arrest equipment.



**Figure 2:** The worker positioned on the roof using the manual (rope) method to transport a tool bag onto the roof.



**Figure 3:** The worker transporting a pylon on the roof using the manual (rope) method.

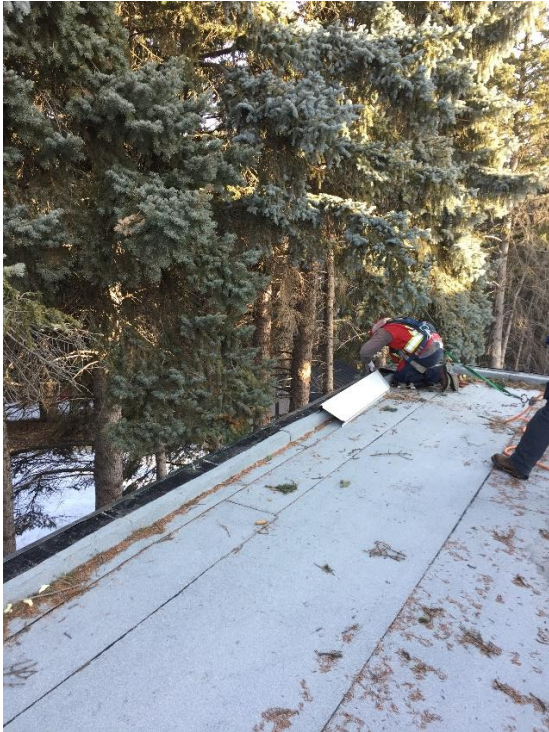


**Figure 4:** A Field Installer measuring flashing to ensure it will fit accurately on the corner of the parapet.





**Figure 5:** Adjusting the clipping installed in order to create a secure fit with the flashing.



**Figure 6:** The worker is laying down in order to secure the flashing to the side of the building in a safe manner.



**Figure 7:** The worker loading a 36' ladder onto the work truck.



Physical Demands Analysis  
Job Title: Sheet Metal Worker – Field Installation  
Date Prepared: March 12, 2021  
Prepared for: Alberta Construction Association



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,

A handwritten signature in grey ink, appearing to read "J. Ellingson".

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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:						
Roping materials/equipment			X			To load/unload materials onto the roof at site.
Laying down			X			Installing and securing clipping, flashing and insulation onto the side of the building.
Slapping				X		To remove/adjust flashing from clipping on parapet.
Hammering				X		Securing flashing to neighbouring pieces by hammering the far edge of the flashing.

### Validation Agreement

<b>Job Title:</b>	Sheet Metal Worker – Field Installation
<b>Data Collection Date:</b>	March 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.

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