



154 Meadowlark Health Centre
156 Street & 87 Avenue
Edmonton, Alberta T5R 5W9
Tel (780) 429-4761
Fax (780) 425-4274
Toll Free 1-800-493-5446

Physical Demands Analysis

Welder

Prepared for:
Alberta Construction Association

Job Title:	Welder	Assessment Location:	Edmonton, AB	Data Collection Date:	August 18, 2020
-------------------	--------	-----------------------------	--------------	------------------------------	-----------------

Completed By:	Erika Job BSc.OT	Submitted on:	November 11, 2020
----------------------	------------------	----------------------	-------------------

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; may vary depending on volume Break Schedule: Total of 1 hour break per day / 2-15 minute coffee breaks, 1-30 minute lunch break Shift Rotation: Not applicable On call is required: No Overtime required: No; but available (longer days/Saturday)
-----------------------	---

Education / Experience:	Education required: A Journeyman Welder participates in a 3 year program including 8 weeks of in school training and 1500 hours of on the job training per year. Hours required for position: A minimum of 4500 hours of on the job training is required to be a Journeyman Welder. Tickets that may be required (not limited to): Basic Safety Orientation provided on site. Other onsite training including WHIMIS, machinery use.
--------------------------------	---

Labour Provider:	N/A
-------------------------	-----

Job Overview:	The Journeyman Welder is responsible for performing welding which includes repairs on various The heavy equipment such as loaders, excavators, crushers, trailers, dump trucks, dump roll of bins etc. They are also responsible for fabricating and welding components such as supports and structures throughout the shop and for various equipment. The welder performs the majority of their work at the shop but may be required to perform some repairs onsite and various job sites.		
	% of shift	Job Task	Task Description
	Up to 10%	Paperwork/Ordering supplies	<ul style="list-style-type: none">Communicate with crew to determine tasks that need to be completed.Filling out work reports and time sheets.Ordering welding supplies via telephone.
	Up to 80%	Welding/cutting, grinding, and various repair tasks	<ul style="list-style-type: none">Stick and mig welding to perform various repairs on equipment or for fabricating components.Grinding to prepare pieces for weld.

	Up to 50%	Various labour tasks/driving to sites	<ul style="list-style-type: none"> When there is not a lot of welding work, the worker may perform various labour tasks such as putting up and taking down temporary fences at sites, or miscellaneous tasks around shop such as clean up in yard etc.
	5-20%	Set up/gathering tools and equipment	<ul style="list-style-type: none"> Moving portable welding machine to area of work. If offsite, truck is loaded with a machine. Gathering various hand tools required for task Selecting and lifting/carrying material to area of repair. An overhead lift is available for heavier items.
	Up to 5%	Clean up	<ul style="list-style-type: none"> Returning all tools to the tool area. Cleaning up materials and debris.

Equipment/ Tools:	<ul style="list-style-type: none"> Welding machines on rolling carts (up to 40 lbs. pull force and 29 lbs. push force) Welding torch Mig welder wire spool (44 lbs.) Grinders (6" or 7") - (up to 7 lbs.) Pedestal grinder Sledge hammer-8 lbs. Hand tools (impact gun, electric drill, ratchets, hammers, wrenches, pliers) (Up to 15 lbs.) Forklift Band Saw Chop Saw Mag drill Drill press Various pieces of steel tubing ranging in size and weight (can use overhead crane or assistance from other staff for >50 lbs.) Pen, pencil and clipboard
------------------------------	--

Exposures / Environment:	<ul style="list-style-type: none"> Fumes Gases Heat/Cold weather extremes Dust Wind Icy/slippy surfaces Noise and vibration exposure UV light Welders flash Sparks Hot material Trip hazard Pinch points
-------------------------------------	---

	<ul style="list-style-type: none"> Working at heights
--	--

Personal Protective Equipment Required:	<ul style="list-style-type: none"> Steel toed boots Hard hat Gloves Safety glasses Safety vest or high visibility stripes Long pants
Personal Protective Equipment as Required:	<ul style="list-style-type: none"> Welding Helmet (with mask/shield) Hearing protection Respirator depending on welding process Knee pads

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	L			-Handling various steel materials and while performing various labour tasks such as moving debris, materials etc. (up to 50 lbs. can use overhead crane or other worker assistance for items weighing more). - While working on lower level pieces of equipment picking up tools off the ground such as hand tools (up to 15 lbs.), grinders (up to 7 lbs.), welding rod (5 lbs.) etc.

Knee to Waist Level Lifting		H	L			<ul style="list-style-type: none"> -Handling various steel materials and while performing various labour tasks such as moving debris, materials etc. (up to 50 lbs. can use overhead crane or other worker assistance for items weighing more) - While working on lower level pieces of equipment picking up tools such as hand tools (up to 15 lbs.), grinders (up to 7 lbs.), welding rod (5 lbs.) etc.
Waist to Waist Level Lifting		H		L		<ul style="list-style-type: none"> Handling various steel materials for example taking steel pieces off of storage rack (up to 50 lbs. can use overhead crane or other worker assistance for items weighing more). - While working at waist height on pieces of equipment or on work table with tools such as hand tools (up to 15 lbs.), grinders (up to 7 lbs.), welding rod (5 lbs.) etc.
Waist to Chest Level Lifting		H		L		<ul style="list-style-type: none"> -Handling various steel materials for example taking steel pieces off of storage rack (up to 50 lbs. can use overhead crane or other worker assistance for items weighing more). - Lifting welding wire spool up on welding cart (44 lbs.). - While working at chest height for prolonged period of time on pieces of equipment and using tools such as hand tools (up to 15 lbs.), grinders (up to 7 lbs.), welding rod (5 lbs.) etc.
Waist to Shoulder Level Lifting		H		L		<ul style="list-style-type: none"> -Handling various steel materials for example taking steel pieces off of storage rack (up to 50 lbs. can use overhead crane or other worker assistance for items weighing more). Top rack is 73" high. - While working at shoulder height for prolonged period of time on pieces of equipment and using tools such as hand tools (up to 15 lbs.), grinders (up to 7 lbs.), welding rod (5 lbs.) etc. - Retrieving hand tools from tool box (tool box is 58" high).

Waist to Overhead Level Lifting		H	L			-Handling various steel materials for example taking steel pieces off of storage rack (up to 50 lbs. can use overhead crane or other worker assistance for items weighing more). Top rack is 73" high. - While working at above shoulder height level on pieces of equipment and using tools such as hand tools (up to 15 lbs.), grinders (up to 7 lbs.), welding rod (5 lbs.) etc. - While working in confined spaces such as under equipment, in excavator buckets, where worker might kneel and reach up while welding or performing grinding tasks. <i>* Worker can sometimes modify position to avoid this position, for example standing on a stool to decrease reach</i>
Front Carry		H	L			-Carrying various steel materials for example taking steel pieces off of storage rack (up to 50 lbs. can use overhead crane or other worker assistance for items weighing more) and carrying them to workbench or work area.
Right / Left-handed Carry (Dominant Hand)				L		- Carrying tools such as hand tools (up to 15 lbs.), grinders (up to 7 lbs.), welding rod (5 lbs.) etc. throughout the shop and work area.
Shoulder Carry	X					Not required
Static Pushing/Pulling (Force)				L		Holding materials in place for welding, using hand tools, holding grinders while grinding etc.
Dynamic Pushing/Pulling (Force)			H			-Pushing/pulling welding machines (39 lbs. pull and 29 lbs. push) throughout shop. These measurements were taken on a level surface. Push/ pull could be up to a Heavy level on slopes, uneven ground, over debris etc. -Pushing down chop saw. - Pushing/pulling dollies loaded with welding cylinders.

Job Demand	Frequency					Details/Measurements
	N/R	R	O	F	C	
Upper Extremity Work:						
Hand Gripping					X	Gripping materials, tools, welding torch.
Pinch Gripping		X				Pen/pencil while doing measurements, filling out logs etc.

Upper Extremity Coordination					X	-Using hand tools. -Retrieving materials. -Holding welding rods in place with one hand while manipulating the welding torch in the other.
Reaching Forward					X	-Using hand tools. -Retrieving materials. -During cutting, welding and grinding tasks
Overhead Shoulder Level Reaching				X		- While working at above shoulder height level on large pieces of equipment. - While working in confined spaces such as under equipment, in excavator buckets, where worker might kneel and reach up while welding or performing grinding tasks. <i>* Worker can sometimes modify position to avoid this position, for example standing on a stool to decrease reach</i>
Below Shoulder Level Reaching					X	- While working at below shoulder height level on large pieces of equipment. - While working in confined spaces such as under equipment, in excavator buckets, where worker might kneel and reach up while welding or performing grinding tasks.
Throwing	X					

Job Demand	Frequency					Details/Measurements
	N/R	R	O	F	C	
Positional Work:						
Trunk Flexion (Bending)					X	-Lifting/retrieving materials and tools from lower levels. -Working in awkward or confined spaces to perform repairs on equipment such as excavator buckets. -Working on lower level pieces of equipment.
Trunk Rotation (Twisting)				X		-Working in awkward or confined spaces to perform repairs on equipment such as excavator buckets.
Kneeling				X		Can be up to frequent when working on lower level pieces of equipment or while working in awkward or confined spaces to perform repairs on equipment such as excavator buckets.
Crawling			X			To access lower level areas under equipment for repairs.

Crouching			X			While working on lower level pieces of equipment or while working in awkward or confined spaces to perform repairs on equipment. Dependent on workers preferred method may alternate between crouching or kneeling.
Squatting			X			-Retrieving equipment/materials. -While working on lower level pieces of equipment or while working in awkward or confined spaces to perform repairs on equipment.
Neck Flexion					X	Looking down while grinding/performing welds, measuring.
Neck Extension				X		Looking up if performing above shoulder level repairs including welding and grinding. Using overhead crane.
Neck Rotation					X	Checking surroundings in shop. Looking for and retrieving tools and materials. While welding and grinding.

Job Demand	Frequency					Details/Measurements
	N/R	R	O	F	C	
Static Work:						
Sitting					X	Driving truck, completing paperwork, for each site, unloading/loading bins.
Static Standing				X		While grinding or performing welds on equipment or at work table. Operating saw.
Balancing				X		While climbing on and off large equipment to perform repairs (welding and grinding).

Job Demand	Frequency					Details/Measurements
	N/R	R	O	F	C	
Ambulation:						
Walking: Level Surfaces					X	Walking in the shop to access tools, equipment for repairs etc.
Walking: Uneven Surfaces				X		Walking in the yard and various sites to access tools, equipment for repairs etc.
Walking: Slopes			X			Walking on large equipment, job sites.
Jumping	X					Not required
Running	X					Not required

Job Demand	Frequency					Details/Measurements
	N/R	R	O	F	C	
Climbing:						
Stairs		X				To access second level at the office.
Ladder			X			Uses ladders get up on large equipment to perform repairs, welding. Using ladder on waste bins to perform repairs on bin.
Other				X		Climbing on/off step stool, large equipment while performing repair tasks.

PHOTOS OF TASKS AND WORK ENVIRONMENT

Figure 1: Tiered storage rack for metal pieces/ steel tubing.



Figure 2: Working in confined space of an excavator bucket.



Figure 3: Worker using a grinder to prepare piece for welding.



Figure 4: Welding machine on cart.



Figure 5: Large equipment. Worker can work on any part of this equipment to perform repairs/welding.



Figure 6: Large tool box where worker obtains hand tools from.



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,

Erika Job BSc.OT
Occupational Therapist

SPECIFIC JOB DEMAND ADDITIONS:

Job Demand	Frequency					Details/Measurements
	N/R	R	O	F	C	
Site Specific Job Demand:						

Validation Agreement

Job Title:	Welder
Data Collection Date:	August 18, 2020

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:	Erika Job BSc.OT	Lifemark Clinician Name
Approved by:	Corinne Visser, HSE Advisor	Management Representative
Approved by:		Worker Representative
Approved by:		Labour Provider Representative