

Physical Demands Analysis

Utility Worker

Prepared for: Alberta Construction Association

Job Title:	Utility Worker	Assessment	Calgary, AB	Data	June 25, 2021
		Location:		Collection	
				Date:	

Completed By:Terilyn Miranda, OTSubmitted on:July 30, 2021	Completed By:	Terilyn Miranda, OT	Submitted on:	July 30, 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	Shift Duration: 7:00 a.m. to 7:00 p.m.	
Schedule:	Break Schedule: As able throughout shift.	
	On call is required: No	
	Overtime required: No	
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Education /	Education required : Completion of grade 12. On site Standard General orientation provided on
Experience:	hire. Required to have valid class 5 Alberta Driver's License.
	Tickets that may be required (not limited to): Confined Space, First Aid, WHMIS 2015, Roadbuilder
	Safety Training Systems (RSTS), Ground Disturbance, Traffic Safety, Crane Operation and Basic
	Safety Orientation (BSO).

Job Overview:	As a Utility Worker the worker is required to complete all labour centric tasks required to assist to complete construction or repair of roadways as appropriate. They typically work in a 3-person crew, and respond to their crew foreman who provides their assignments each shift. The worke is required to communicate with his crew members, and other crews as needed, to ensure the task is completed safely, efficiently, and as directed.			
	% of shift	Job Task	Task Description	
	5-25	Travelling to job site	 Riding in work trucks to site Travel time to site can be up to 1 hour May work at numerous sites throughout one shift depending on project duration 	
	5-10	Loading appropriate equipment onto work truck	 Use of crane and crane truck for loading/unloading heavier materials (e.g. collars, rims, etc.) Manual loading and unloading as able; 2-person lift available as needed and per the worker's discretion Ensure all tools and materials required for each project are available on the truck prior to travel to site 	



5-15	Unloading required equipment and materials	• • •	Communicating with th3ird party providers (i.e. asphalt and backhoe) as required Communicating with other crews to access equipment or materials as needed if not on hand Back hoe can assist with moving heavier equipment longer distances as needed (e.g. Tamper) Use of crane and crane truck for loading/unloading heavier materials (e.g. collars, rims, etc.) Manual loading and unloading as able; 2-person lift available as needed and per the worker's discretion
	at work site.	•	Mix cement as needed per project Evaluate site and materials being handled to determine appropriate way to unload heavier materials and equipment
25-75	Raising manhole covers	• • • • • •	Lever off manhole cover; use of backhoe as needed for larger covers Use of pick or jackhammer to break up asphalt surrounding existing manhole Use of shovels and backhoe to remove broken asphalt and excess gravel Lever system to lift manhole ring, and apply shims to raise manhole Apply cement as grout to seal open areas of lifted manhole Applying asphalt from asphalt truck to work area, and spreading around; use of tamper to level out surface Replace manhole cover and spray paint to increase visibility Requires crouching, kneeling, crawling, and reach into manhole
25-75	Inserting manholes	• • •	Use of crane to unload appropriate collar for use Sealing collar with grout as needed Carrying tubing to work area for placement to connect water routes Applying tubing, connectors, and fasteners to ensure smooth connection Requires climbing into manhole to ensure appropriate placement and sealant; confined space

Equipment/	 Work truck (Tare 4640 kg, GVW 11500 kg)
Tools:	Cement bag (44.35 lbs.)
	Mikasa Tamper MQ (100 lbs.)
	• Shovel (3.85 lbs.)
	Manhole cover (144.5 lbs.)
	Water Tank/Sprayer (20 lbs.)



Bucket of shims and cement blocks (42.8 lbs.)
 Bucket of cement to grout inside of manhole (30-35 lbs.)
 Hand tools – Hammer (0.3 lbs.), Pick (7.6 lbs.)
 Manhole rings – 10" ring (291 lbs.)
Low profile manhole rings (218 lbs.)
• Concrete collars – 2" (101.5 lbs.), 3" (144 lbs.), 4" (215 lbs.), 6" (280 lbs.)
Chop saw (25.7 lbs.)
 Jumping Jack (168.1 lbs.)
 Access to third party asphalt truck and driver
 Access to third party backhoe truck and driver
Access to third party traffic workers

Exposures /	Exposure to vibration with use of the Jumping Jack and Tamper
Environment:	• Exposure to inclement weather including high heat, rain, sleet, and mild snow (required to
	work in up to 10 ml of rain; do not work in temperatures below -15°C or above 34°C)
	 Exposure to environmental dust, debris, and allergens

Personal Protective	•	Hard hat
Equipment as Required:	•	Steel toed boots
	•	Gloves
	•	Safety vest or high visibility stripes
	•	Eye protection
	•	Specialty PPE: Full face respirator with p100 cartridges – as required

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	Frec	uency /	NOC St	rength L	evel	Details/ Measurements
	N/R	R	0	F	С	
Material Handling:						
Floor to Waist Level Lifting		H	Lim- M			Lifting manhole cover or collar from lying to upright on edge to roll to desired destination. Lifting buckets of cement/grout, fasteners, hand tools, shovels, or shims to move around work site.
Knee to Waist Level Lifting		L-H				Lifting Tamper to storage compartment on truck. Lifting water tank to move around work site.
Waist to Waist Level Lifting		Lim-H				Transferring materials from one truck bed to another (i.e. bags of cement). Replacing chop saw, or other hand held tools for storage on truck.
Waist to Chest Level Lifting		Н				Lifting Jumping Jack to storage compartment on truck (typically completed with 2-person lift).
Waist to Shoulder Level Lifting		Н				Lifting wheelbarrow for storage on truck. Lifting cement bags to load into back of truck.
Waist to Overhead Level Lifting		Lim-L				Attaching chains to crane. Lifting hand tools or spare materials out of manhole.
Front Carry		Н				Two man carry to retrieve or replace Jumping Jack from storage compartment on truck.
Right / Left-handed Carry (Dominant Hand)		Lim- M				Carrying bucket of shims or cement, water tank to manhole (up to 100'). Use of pick, hammer, or chop saw as needed.
Shoulder Carry		Lim-L				Carrying lever to work area to remove manhole cover. Carrying tubing to route water lines as needed (up to 4 metres long).
Static Pushing/Pulling (Force)		H				Rolling and positioning manhole covers, collars, and rings into position in work area, or on crane truck. Use of lever system to lift manhole covers.
Dynamic Pushing/Pulling (Force)		M-H				Maneuvering tamper when in use (light push force due to self-propelling) or to store/replace onto truck (up to 82 lbs. push force). Pushing empty or loaded wheelbarrow of cement to work area.

Job Demand	Frequency					Details/Measurements
	N/R	R	0	F	С	
Upper Extremity Work:						
Hand Gripping				Х		Gripping tools, materials, and equipment as needed.
Pinch Gripping		Х				Using nuts, bolts, shims, and screws as needed.
Upper Extremity Coordination		Х				Use of chop saw, tamper, and Jumping Jack, manipulating fasteners, installing tubing.



Reaching Forward			Х	Accessing items in back of truck (56" height).
				Loosening asphalt from truck hatches.
				Placing and securing tubing within manhole.
Overhead Shoulder Level		Х		Guiding chains on crane to item for attachment;
Reaching				guiding material while hoisted.
Ū.				Reaching into truck to retrieve materials.
Below Shoulder Level		Х		Shoveling gravel and asphalt into buckets for
Reaching				removal; using shovel to disperse asphalt around
C C				work area.
				Applying shims or grout beneath manhole.
Throwing	Х			None.

Job Demand	Frequency					Details/Measurements
	N/R	R	0	F	С	
Positional Work:						
Trunk Flexion (Bending)			Х			Shovelling debris for discarding, or spreading
						asphalt around work area.
						Leaning into manhole to place shims, grout or
						inspect as needed.
						Using lever to hoist rings, or collars.
						Using pick, spray painting, breaking concrete
						blocks, or installing tubing.
Trunk Rotation (Twisting)			Х			Shovelling debris for discarding, or spreading
						asphalt around work area; shoveling cement into
						smaller buckets.
						Retrieving grout from bucket, and applying within
						manhole.
						Guiding materials hoisted by crane.
						Loading cement and mixing within wheelbarrow.
Kneeling		Х				To reach into manhole to apply shims, grout as
						needed, or view inside work area below ground
						level.
Crawling		X				When grouting manhole, as required.
Crouching		Х				Retrieving pieces of debris and material from
						ground level.
						Using pick to lift manhole cover.
Squatting		Х				Retrieving pieces of debris and material from
						ground level.
						Using pick to lift manhole cover.
Neck Flexion			Х			Viewing ground level, work area, and environment
						as needed.
						Reaching into manhole to place shims, and grout.
Neck Extension		Х				Viewing outside when standing within manhole.
						Viewing work area and environment as needed.
						Monitoring materials being hoisted by crane or
						backhoe.



Neck Rotation		Х	Viewing work area and environment as needed.
			Pouring asphalt from truck hatch onto wok area
			i ouring asphalt nom truck haten onto wok area.
			Using tamper or Jumping Jack to flatten asphalt on
			work surface.
			Monitoring materials as they are hoisted by crane.

Job Demand		F	requenc	y		Details/Measurements		
	N/R	R	0	F	С			
Static Work:								
Sitting		Х				Driving to work site.		
Static Standing			Х			Shovelling gravel, asphalt, other debris. Viewing worksite/environment. Counterbalancing lever to lift ring/manhole. Mixing cement. Loading/unloading work truck.		
Balancing		Х				Climbing into work truck. Standing on step of truck bed to retrieve materials.		

Job Demand	Frequency					Details/Measurements		
	N/R	R	0	F	С			
Ambulation:								
Walking: Level Surfaces				Х		Walking around stock yard, and work sites.		
Walking: Uneven			Х			Work sites may contain grass, gravel, dirt/mud, or		
Surfaces						unpaved roadways.		
Walking: Slopes		Х				Roadways may be sloped; standing on road		
						shoulders or medians.		
Jumping	Х					None.		
Running	Х					None.		

Job Demand	Frequency					Details/Measurements		
	N/R	R	0	F	С			
Climbing:								
Stairs		Х				Steps required to access rear of pick up truck (17").		
Ladder		Х				Climbing into back of crane truck (51" to ladder, 70" total height). Standard ladder required to exit manhole.		
Other	Х					None.		

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PHOTOS OF TASKS AND WORK ENVIRONMENT

Figure 1: Stepping on back step of truck and unloading cement bags.



Figure 3: Kneeling and forward bend into manhole to grout



Figure 5: Shovelling asphalt to desired area

Figure 2: Use of crane to hoist out heavier materials from the truck bed



Figure 4: Releasing asphalt hatch and applying upward pressure with shovel to loosen asphalt



Figure 6: Using tamper and shovels to ensure asphalt is even and surface is level

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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,

Terilyn Miranda, M.Sc.OT, B.H.Sc Occupational Therapist



Validation Agreement

Job Title:	Utility Worker
Data Collection Date:	June 25, 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:	Terilyn Miranda, M.Sc.OT, B.H.Sc Occupational Therapist	Lifemark Clinician Name and Credentials
Approved by:		Management Representative
Approved by:		Worker Representative
Approved by:		Labour Provider Representative