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## Physical Demands Analysis

### Mass-Timber/Glu-Lam Carpenter

Prepared for:  
Alberta Construction Association

<b>Job Title:</b>	Mass-Timber/Glu-Lam Carpenter	<b>Assessment Location:</b>	Edmonton, AB	<b>Data Collection Date:</b>	April 27, 2021
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<b>Completed By:</b>	Joanna Ellingson	<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 (7:00 am – 3:30 pm); may vary depending on volume and project deadlines <b>Break Schedule:</b> Break at 10:00 am and 30 minute lunch at 12:30 pm <b>Shift Rotation:</b> Not applicable <b>On call is required:</b> No <b>Overtime required:</b> No; but may be available depending on volume and project deadlines
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<b>Education / Experience:</b>	<b>Education required:</b> 4 year Carpentry apprenticeship program; 8 weeks of practical learning. <b>Hours required for position:</b> 1,800 practical hours per year <b>Tickets that may be required (not limited to):</b> Fall protection, Elevated Work Platform (EWP) First Aid, WHMIS, Construction Safety Training Systems (CSTS) and Basic Safety Orientation (BSO), Forklift and Skid Steer tickets.
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<b>Labour Provider:</b>	N/A
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<b>Job Overview:</b>	As a mass-timber/glu-lam carpenter, the worker is required to measure and prepare material according to site specifications in the shop. The carpenter is also qualified to install the materials on site according to pre-determined plans. The carpenter may also complete repairs on pre-existing structures as needed.		
	% of shift	Job Task	Task Description
	15%	Material preparation	<ul style="list-style-type: none"><li>• Measure and prepare materials according to site specifications for the project.</li><li>• Majority of preparation is completed in shop before attending to site for installation.</li></ul>
	3-5%	Unloading from work truck	<ul style="list-style-type: none"><li>• Unloading materials, tools and equipment from work truck on to site that are required for the shift's work.</li><li>• Heavier materials will be unloaded using assistive equipment (forklifts, skid steers, cranes, etc.).</li></ul>

			<ul style="list-style-type: none"> <li>*Unloading will take more time on the first day on site.</li> </ul>
	5%	Site assessment	<ul style="list-style-type: none"> <li>Reviewing site plans, site specifications to ensure proper installation is completed.</li> <li>Identify any site hazards or cautions that workers need to document/be aware of.</li> <li>Complete personalized safety inspection (PSI) or field level hazard assessment (FLHA).</li> </ul>
	63-68%	Material installation	<ul style="list-style-type: none"> <li>Installing and securing materials as per site specification/project guidelines.</li> <li>Includes using various tools including circular saw, nail gun, drills, etc.</li> </ul>
	5%	Cleaning site	<ul style="list-style-type: none"> <li>Organize and clean any equipment and materials that will stay on site, ensuring they are safely secured and put away on site.</li> <li>Remove any debris, excess materials from the site to ensure a clean working area for the next shift.</li> </ul>
	3-5%	Loading work truck	<ul style="list-style-type: none"> <li>At the end of the shift, the worker will remove materials, equipment and tools from site and loading into work truck.</li> </ul>
	1-2%	Transporting from shop to work site	<ul style="list-style-type: none"> <li>To provide excess equipment, materials, tools as needed.</li> </ul>

<b>Equipment/ Tools:</b>	<ul style="list-style-type: none"> <li>Wood material (various weights)</li> <li>Skid steer</li> <li>Crane</li> <li>Bucket of nails (~10-15 lbs.)</li> <li>Wooden beams (~500 lbs.)</li> <li>Measuring tape</li> <li>Exacto knife</li> <li>Hammer</li> <li>Drills (3 lbs.)</li> <li>Level (5 lbs.)</li> <li>Sawhorse step ladder (12 lbs.)</li> <li>8' ladder (30 lbs.)</li> <li>Broom</li> <li>Table saw (~80 lbs.)</li> <li>Circular saw (10 lbs.)</li> <li>Timber pullers</li> <li>Pry bars (up to 13 lbs.)</li> <li>Nail gun (10 lbs.)</li> <li>Laser level (5 lbs.)</li> </ul>
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	<ul style="list-style-type: none"> <li>• Laser level receiver (5 lbs.)</li> <li>• Jig saw (5 lbs.)</li> <li>• Tool belt (up to 22 lbs.)</li> <li>• Chop saw (60 lbs.)</li> <li>• Compress (48 lbs.)</li> <li>• Router (9 lbs.)</li> <li>• Planer (8 lbs.)</li> <li>• Sander (4 lbs.)</li> <li>• Mallet</li> <li>• Clamps (4 lbs. each)</li> <li>• Chainsaw (20 lbs.)</li> <li>• Extension site (50 lbs.)</li> </ul>
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<b>Exposures / Environment:</b>	<ul style="list-style-type: none"> <li>• Outdoor elements (cold, heat, wind, etc.)</li> <li>• Adhesive fumes</li> <li>• Dust exposure (from wood)</li> <li>• Fume exposure</li> <li>• UV light exposure</li> <li>• Chemical (stain/sealer) exposure</li> </ul>
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<b>Personal Protective Equipment Required:</b>	<ul style="list-style-type: none"> <li>• Hard hat</li> <li>• Steel toed boots</li> <li>• Gloves</li> <li>• CSA approved safety glasses</li> <li>• Safety vest or high visibility stripes</li> <li>• 6" sleeves and pants</li> </ul>
<b>Personal Protective Equipment as Required:</b>	<ul style="list-style-type: none"> <li>• Fall arrest (dependent on site and project requirements)</li> <li>• Kneeling pads</li> </ul>

NOC STRENGTH LEVEL KEY	
Strength Level	Definition
<b>Limited (Lim)</b>	Up to 5 kg (11 pounds)
<b>Light (L)</b>	5 kg to 10 kg (11 – 22 pounds)
<b>Medium (M)</b>	10 kg to 20 kg (22 – 44 pounds)
<b>Heavy (H)</b>	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
<b>Not Required (N/R)</b>	0%	0
<b>Rarely (R)</b>	1 – 5%	<25 min/day
<b>Occasionally (O)</b>	6 – 33%	25 min to 2 hours 40 min/day

<b>Frequently (F)</b>	34 – 66%	2 hours 41 min to 5 hours 17 min/day
<b>Constantly (C)</b>	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		Loading and unloading materials, equipment, tools (up to 80 lbs.), lifting materials, equipment and tools (up to 22 lbs.) from the ground at the shop or on site throughout material preparation and material installation, lifting debris during cleaning of site.
Knee to Waist Level Lifting			H*	L		Loading and unloading materials, equipment (up to 80 lbs.), tools (up to 22 lbs.), lifting materials, equipment and tools (up to 22 lbs.) from knee level at the shop or on site throughout material preparation and material installation, lifting debris during cleaning of site.
Waist to Waist Level Lifting			H*	L		Loading and unloading materials, equipment (up to 80 lbs.), tools (up to 22 lbs.), lifting materials, equipment and tools (up to 22 lbs.) from waist level at the shop or on site throughout material preparation and material installation, lifting debris during cleaning of site.
Waist to Chest Level Lifting			M	L		Lifting materials, equipment (up to 20 lbs.), tools (up to 22 lbs.), during material preparation and material installation, removing debris during cleaning of site. *Skid steers, cranes and ladders are used to assist with transporting and securing heavier materials and equipment.
Waist to Shoulder Level Lifting			M	L		Lifting materials, equipment (up to 20 lbs.), tools (up to 22 lbs.), during material preparation and material installation, removing debris during cleaning of site. *Skid steers, cranes and ladders are used to assist with transporting and securing heavier materials and equipment.

<b>Waist to Overhead Level Lifting</b>			L			Lifting lighter materials, equipment (up to 20 lbs.), tools (up to 22 lbs.), during material preparation and material installation, removing debris during cleaning of site. *Skid steers, cranes and ladders are used to assist with transporting and securing heavier materials and equipment.
<b>Front Carry</b>			H*			Carrying materials, equipment, tools and boxes of supplies in the shop and on site. Carrying debris during cleaning of site.
<b>Right / Left-handed Carry (Dominant Hand)</b>			H*	L		Carrying materials and tools in the shop and on site. Carrying debris during cleaning of site.
<b>Shoulder Carry</b>			M			Carrying various wood materials on shoulder in shop or on site.
<b>Static Pushing/Pulling (Force)</b>	X					Not required.
<b>Dynamic Pushing/Pulling (Force)</b>			M	L		Pushing plywood (26.5 lbs.) through table saw to cut to site specifications, using pry bars, hammering plywood (using hammer/mallet), tac and brace, pushing circular saw through materials, using router, planer, sander to complete finishing touches on materials, guiding mass-timber in place.

\* For manual handling tasks above 50 lbs., it is recommended that the worker uses either a 2 person lift or assistive equipment (e.g. scissor lift, forklift, etc.). Materials or equipment above 80 lbs. are required on a rare basis.

Job Demand	Frequency					Details/Measurements
	N/R	R	O	F	C	
Upper Extremity Work:						
Hand Gripping					X	Gripping materials, equipment and tools during loading/unloading work truck, material preparation and installation, staining material, removing and disposing of debris during site clean.
Pinch Gripping			X			Holding and securing nails during material installation, while measuring wood, writing measurements down using a pencil.
Upper Extremity Coordination					X	Preparing and installing materials, operating equipment and tools during material preparation and installation, removing and disposing of debris during site clean, staining material, during loading/unloading of work truck, transporting from shop to site.

<b>Reaching Forward</b>				X		Measuring, cutting, installing materials, using various tools including power drills, staining material, during site cleanup.
<b>Overhead Shoulder Level Reaching</b>			X			Measuring, installing and bracing materials, using tools in higher level areas.
<b>Below Shoulder Level Reaching</b>				X		Measuring, cutting, installing and bracing materials and using tools in lower level areas, during site cleanup and loading/unloading work truck.
<b>Throwing</b>	X					Not required.

Job Demand	Frequency					Details/Measurements
	N/R	R	O	F	C	
Positional Work:						
Trunk Flexion (Bending)			X			Measuring, cutting and installing materials during lower level work, using skill/circular saw, during cleaning of site.
Trunk Rotation (Twisting)			X			Checking measurements in shop and on site, measuring wood, checking surroundings on site, operating forklift, skid steer, etc., checking surroundings.
Kneeling			X			Measuring and installing materials during lower level work.
Crawling		X				Retrieving tools or installing materials in confined spaces.
Crouching		X				Measuring and installing materials during lower level work.
Squatting	X					Not required.
Neck Flexion				X		Measuring, cutting, installing lower level work, checking surroundings in the shop, on site and during transport, operating forklift, skid steer, etc. During loading/unloading of work truck and site cleanup.
Neck Extension			X			Measuring, installing higher level work, operating forklift, skid steer, etc., checking surroundings in the shop and on site.
Neck Rotation				X		Measuring, cutting, installing materials, checking surroundings in the shop, on site and during transport, operating forklift, skid steer, etc.. During loading/unloading of work truck and site cleanup.

Job Demand	Frequency					Details/Measurements
	N/R	R	O	F	C	
Static Work:						
Sitting			X			During breaks.
Static Standing				X		Reviewing site, completing PSI/FLHA, during measurement taking and installation of materials.
Balancing			X			Dependent on site and progress of materials being installed, while climbing ladders.

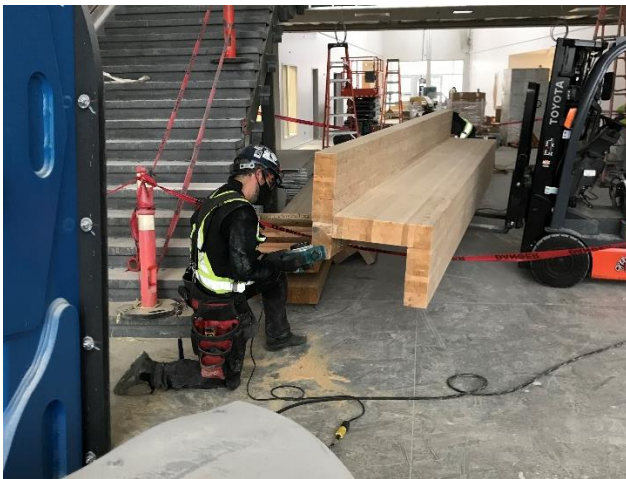
Job Demand	Frequency					Details/Measurements
	N/R	R	O	F	C	
Ambulation:						
Walking: Level Surfaces				X		Outside on developed sites, in the shop.
Walking: Uneven Surfaces			X			Outside on undeveloped sites.
Walking: Slopes		X				Dependent on site.
Jumping		X				Getting off scaffolding.
Running	X					Not required

Job Demand	Frequency					Details/Measurements
	N/R	R	O	F	C	
Climbing:						
Stairs			X			Access various levels on site; dependent on site.
Ladder			X			To access higher levels for measurements and installation; dependent on site.
Other			X			Accessing skid steers, scaffolding, rafters, etc.



## PHOTOS OF TASKS AND WORK ENVIRONMENT

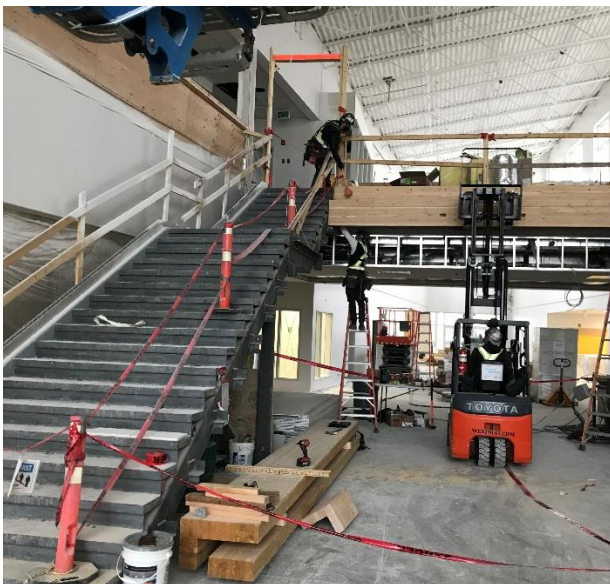
**Figure 1:** Worker is half-kneeling in order to make corrections on the bleacher for proper installation.



**Figure 2:** Kneeling and forward bending to measure and review installation site for the bleacher.



**Figure 3:** Worker at the top is forward bending and using rubber mallet to secure the bleacher. Worker on the ladder is attempting to secure the bleacher at installation site. The last worker is operating forklift and manipulating the position of the bleacher.





Physical Demands Analysis  
Job Title: Mass-Timber/Glu-Lam Carpenter  
Date Prepared: May 19, 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 black 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:						

### Validation Agreement

<b>Job Title:</b>	Mass-Timber/Glu-Lam Carpenter
<b>Data Collection Date:</b>	April 26, 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