

## Alberta Small Employer OHS Legislated Requirements

**Industry Code: 42159**

**Caisson Operations**

**This document is a guideline only.** Employers have a responsibility of assessing all applicable occupational health and safety legislation, for the tasks they are performing.

This industry describes pile driving, cast in place and caisson pilings, and foundation boring. The purpose and activity of this industry is to establish a solid footing for buildings, bridges or other similar construction projects.

A pile foundation transfers the weight or load of a structure to the soil or rock below the earth's surface. A pile is used when upper layers of soil or earth are too soft to support the load of a superstructure (building, bridge, etc.).

Task description	Type of equipment used and workers employed
Piles are structural 'pins' that are driven into the earth by large mobile cranes that act as hammers. The simplest type of hammer is a steel weight raised above the pile by crane and allowed to fall by gravity, hoisted up again by the crane, and repeated until the Other methods of pile-driving or foundation boring involve drilling a hole into the soil with an auger and filling the hole with concrete.pile is inserted to its desired depth.	<p>Pile driving operations have a large truck-mounted pile driver or mobile cranes to hoist the weight that drives the pile. Piles are usually made of steel, such as the same steel pipe used in oilfield drilling, sections of which can be screwed together.</p> <p>Another type of hammer is a diesel hammer. With this system, conducted repeatedly and quickly, the weight still falls by gravity onto the pile, and upon impact, a ram is fired by a diesel unit which hoists the weight back up.</p>
Caissons pilings are also used for construction foundations over bodies of water. This involves placing a watertight box or barrier, made of wood or steel, in the water. Water inside is pumped out, the area dried, excavated, steel pipes may be driven down and forms constructed, reinforcing steel may be placed, and concrete poured. Caisson operations like this are usually conducted in winter months when water levels are typically lower, and approaches are more manageable on frozen ground.	Employers may use pile drivers, cranes, equipment/tools for constructing wood/steel piles, scaffolding, mixers, and may employ iron workers, equipment operators, technical staff, labourers, sales/estimators, and office/administration staff.

Relevant sections of OHS Legislation:

### Occupational Health and Safety Act

**Section 3,4,5** Obligations of employers, workers, etc.

- 40 Serious injuries and accidents
- 53 Investigation of injuries and incident
- 31 Existence of imminent danger
- 37 Discriminatory action complaint

16-17 Joint Work Site Health and Safety Committees and Health and Safety Rep.

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**Occupational Health and Safety Regulation**

<b>Section</b>	7	Availability of specifications
	12	Equipment
	13	General protection of workers
	14	Duties of workers
	15	Safety training

**Occupational Health and Safety Code (2009)**

<b>Part 1</b>	<b>Section</b>	
Definitions and	1	Definitions
General Application	2.2	Designated person to prepare plan

<b>Part 2</b>	<b>Section</b>	
Hazard Assessment,	7	Hazard assessment
Elimination and	8	Worker participation
Control	9	Hazard elimination and control

<b>Part 3</b>	<b>Section</b>	
Specifications and	12	Following specifications
Certifications	13	Manufacturer's and Professional Engineer's specifications
	14	Certification by a professional engineer
	15	Approved equipment

<b>Part 6</b>	<b>Section</b>	
Cranes, Hoists and	59	Application
Lifting Equipment	60	Not commercially manufactured
	61	Identification of components
	62	Rated load capacity
	63	Load charts
	64	Operator requirements
	65	Log books
	66	Preventing an unsafe lift
	67	Preventing collisions
	68	Load weight
	68.1	Lift calculation
	69	Loads over work areas
	70	Tag and hoisting lines
	71	Hand signals
	72	Controls
	73	Repairs and modifications
	74	Containers for hoisting
	75.1	Suspended personnel baskets

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	88	Safety codes for mobile cranes
	88.1	Personnel baskets
	89	Non-destructive testing
	90	Counterweights and outriggers
	91	Warning device
	92	Preventing damage
	92.1	Load blocks
	92.2	Outriggers

<b>Part 7</b>	<b>Section</b>	
Emergency	115	Emergency response plan
Preparedness and Response	116	Contents of plan

<b>Part 9</b>	<b>Section</b>	
Fall Protection	139	General protection
	140	Fall protection plan
	141	Instruction of workers
	142	Full body harness
	143	Connectors, carabiners and snap hooks
	144	Fall arrestors
	150	Equipment compatibility
	150.1	Inspection and maintenance
	150.2	Removal from service
	151	Clearance, maximum arresting force and swing
	152	Anchor strength – permanent
	152.1	Anchor strength – temporary
	152.2	Duty to use anchors
	152.3	Independence of anchors

<b>Part 11</b>	<b>Section</b>	
First Aid	178	Providing services, supplies, equipment
	179	Location of first aid
	180	Emergency transportation
	181	First aid providers
	182	Duty to report injury or illness
	183	Record of injury or illness
	184	First aid record access
		<b>Refer to Schedule 2</b>

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<b>Part 12</b>	<b>Section</b>	
General Safety	185	Housekeeping
Precautions	186	Lighting
	189	Securing equipment and materials
	191	Signallers
	194	Vehicle traffic control
	195	Working on ice

<b>Part 15</b>	<b>Section</b>	
Managing the Control of Hazardous Energy	212	Isolation
	213	Verifying Isolation
	214	Securing by Individual Workers
	215.3	Returning to operation

<b>Part 16</b>	<b>Section</b>	
Noise Exposure	218	Worker exposure to noise
	222	Hearing protection
<b>Refer to schedule 3</b>		

<b>Part 17</b>	<b>Section</b>	
Overhead Power Lines	225	Safe limit of approach distances
	226	Transport loads, equipment and buildings
<b>Refer to schedule 4</b>		

<b>Part 18</b>	<b>Section</b>	
Personal Protective Equipment	228	Duty to use personal protective equipment
	229	Eye protection (compliance with standards)
	233	Footwear
	234	Head protection
	242	Limb and body protection

<b>Part 19</b>	<b>Section</b>	
Powered Mobile Equipment	256	Operator Responsibilities
	257	Visual inspection
	258	Dangerous movement
	260	Inspection and maintenance
	261	Maintenance on elevated parts
	262	Starting engines
	263	Unattended equipment
	264	Lights
	265	Windows and windshields
	266	Other safety equipment
	273	Recertification after modification
	274	Fuel tank in cab

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	279	Refuelling
	285	Chocking
	286	Pile hoisting
	287	Restraining hoses and connections
	288	Brake bands and clutches
	289	Timber piles
	290	Crane boom inspection

<b>Part 21</b>	<b>Section</b>	
Rigging	292	Breaking strength
	292.1	Safety factors
	293	Load ratings
	294	Inspection
	295	Prohibition
	296	Rigging protection
	297	Standards
	298	Slings
	299	Rope wound on drum
	300	Cable clips
	301	Ferrules
	302	Matching components
	303	Safety latches
	304	Makeshift rigging and welding
	305	Synthetic fibre slings
	306	Wire rope
	307	Metal mesh slings
308	Electric arc damage	
309	Damaged hooks	

<b>Part 22</b>	<b>Section</b>	
Safeguards	310	Safeguards
	311	Tampering with safeguards
	312	No safeguards

<b>Part 24</b>	<b>Section</b>	
Toilets and Washing Facilities	354	Restrictions by employer
	355	Drinking fluids
	357	Toilet facilities
	360	Supplies and waste receptacle
	361	Condition of facilities

<b>Part 25</b>	<b>Section</b>	
Tools, Equipment and Machinery	362	Contact by clothing, etc.

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<b>Part 27</b>		<b>Section</b>
Violence and	389	Hazard assessment
Harassment	390	Violence prevention plan
	390.4	Harassment prevention plan
	391	Training of workers
	391.1	Investigation and reporting of incidents

<b>Part 29</b>		<b>Section</b>
Workplace Hazardous	397	Training
Materials Information System (WHMIS)	398	Label required
	400	Decanted products
	404	Safety Data Sheet - Supplier
	406	Information current (SDS)
	407	Availability of Safety Data Sheet