

# **National Occupational Standards For Operating Engineers**

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## **BOOM TRUCK OPERATOR**



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## Introduction

The Construction Sector Council (CSC) is one of 40 sector councils in Canada. Sector councils are industry-led, labour/management partnership organizations designed to address human resource development issues within specific industries.

The primary objective of the CSC is the development of a highly-skilled workforce and a safe workplace environment, contributing to the organizational productivity and individual prosperity of the members of the construction industry. The development of national occupational standards for operating engineer occupations is one of the many ways the CSC is meeting this objective.

The CSC acknowledges all of the subject matter experts who provided their valuable time and efforts toward the definition and validation of these national occupational standards. Without their combined contributions, the development of these occupational analyses (OAs) would not have been possible. A complete list of the subject matter experts can be found at the back of this document.

An OA has the following objectives:

- to identify and group the tasks performed by skilled workers in particular occupations
- to identify those tasks that are performed by skilled workers in every province and territory
- to develop instruments for use in the assessment and training leading to the certification of skilled workers
- to facilitate the mobility, in Canada, of trainees and skilled workers
- to supply employers and employees, and their associations, industries, training institutions, and governments with analysis of the tasks performed in particular occupations

Therefore, the standards define the skills, knowledge, and abilities required for an occupation and against which the qualifications of an individual in that occupation can be assessed.

The vision of the Construction Sector Council is to reach a point where operators who demonstrate the skills, knowledge, and abilities in the national occupational standards will possess the nationally recognized credentials and those credentials will assist the operator in obtaining employment anywhere in Canada.

## Foreword

Operating engineer occupations can be grouped into three broad areas—hoist and crane operators, construction heavy equipment operators, and industrial equipment operators. Within each of these broad categories, there are several operating engineer occupations.

### **1. *Hoist and Crane Operators***

Crane operators' work tends to be centred in the construction industry. Operators work on a broad range of building sites including high-rise residential, institutional, and commercial structures, as well as most large industrial sites and many types of heavy engineering projects. The Statistics Canada Labour Force Survey (LFS) identifies around 4,000 crane operators in the construction industry across Canada. There are cyclical variations in employment, with low levels below 3,000 jobs in the mid-1990s and peak levels near 5,000.

### **2. *Construction Heavy Equipment Operators***

Heavy equipment operators are largely concentrated in the construction industry. Operators work on a variety of jobs from residential, institutional, and commercial structures to most large industrial sites and most types of heavy engineering. The LFS identifies around 37,000 equipment operators employed in the construction industry across Canada. This occupation is one of the larger trades in the industry, comparable in size to the workforce for electricians, pipe trades, and masonry trades. There are cyclical variations in employment, with low levels below 27,000 jobs in the early 1990s and peak levels near 40,000.

### **3. *Industrial Equipment Operators***

Industrial equipment operators encompass a variety of occupations ranging from forklift operators and environmental workers to tractor trailer drivers. The demand for environmental workers is increasing as knowledge, awareness, and regulations proliferate. Forklift training has taken on added importance due to safety regulations that require trained or certified forklift operators.

The mobility and accessibility of operating engineers is difficult if not impossible if there are no jurisdictional agreements on national occupational standards. The project to develop occupational analyses for national occupational standards for 29 operating engineer occupations began in January 2004 and was completed in March 2005.

## **Development of the Occupational Analysis**

A draft analysis was developed by a knowledgeable team of consultants (process experts) who, with the assistance of a committee of subject matter experts in the field, identified all the tasks performed in the occupation. In order to facilitate an efficient and effective process, the 29 occupations were grouped according to commonalities. Profile meetings, with both process and subject matter experts, were held for each grouping between January and March 2004 in:

- Edmonton, Alberta
  - Excavating, Feb 5 & 6
  - Paving, Feb 9 & 10
- Morrisburg, Ontario
  - Grading, Feb 24 & 25
  - Crane and Hoisting, Mar 1 & 2
  - HAZMAT, Mar 3 & 4
  - Plant Operations, Mar 23 & 24
  - Concrete Pumping, Mar 25 & 26
- Montreal, Quebec
  - Hauling, Feb 26 & 27
- Vancouver, British Columbia
  - Utilities, Mar 16 & 17
  - Material Handling, Mar 18 & 19
- Quebec City, Quebec
  - Profile Completion Forum, Mar 29 – 31

The draft OAs were then distributed to more subject matter experts and stakeholders across Canada for review and input between June and September 2004. They were also posted on a website where subject matter experts were invited to provide feedback.

The combined input from the review was collated in October 2004. Recommendations were assessed and incorporated into the final draft, which included the identification of common core tasks performed in all occupations. Validation meetings were held for each grouping, with process and subject matter experts, between October 2004 and January 2005 in:

2004:

- Saskatoon, Saskatchewan
  - Utilities, Oct 20 – 22
  - Material Handling (including HAZMAT), Oct 26 – 29
- Halifax, Nova Scotia
  - Grading, Nov 2 – 5
- St John's, Newfoundland
  - Crane and Hoisting (including Concrete Pump), Nov 15 – 19
- Winnipeg, Manitoba
  - Excavating, Nov 23 – 25
  - Hauling, Nov 30 – Dec 3

2005:

- Vancouver, British Columbia
  - Paving, Jan 5 – 7
  - Plant Operations, Jan 10 – 12
- Victoria, British Columbia
  - Validation Forum, Feb 21 – 23

The OAs were then edited, translated, and published in both official languages.

## **Scope of the Occupational Analysis**

This occupational analysis identifies all of the tasks that a qualified operator must be able to perform. The performance of these tasks is dependent on a range of related activities, described in the body of the analysis as subtasks. The analysis is composed mainly of tasks that operators perform frequently, including such tasks as cleaning, driving, and maintenance.

Most operators have a range of experience on different types of equipment. Regardless of the type of equipment, the duties of the operator remain relatively constant. Accomplishment of the operator's tasks depends largely on knowledge of the equipment and its components, experience in a wide variety of situations, and an ability to determine the most appropriate means of proceeding with the work.

Though not described in the analysis, other important attributes of operators include mechanical aptitude, mathematical ability, excellent vision, and a high degree of physical coordination. Operators are also often called upon to perform their jobs in extremely difficult conditions.

Although this analysis is not a training document, it is worthwhile noting that aspiring operators may find it useful to reflect on their own abilities to deal with lengthy periods of physical restriction and isolation coupled with frequent subjection to pressures of time and productivity. Operators are often required to demonstrate the ability to concentrate for long periods of time while enduring physical discomfort and inclement weather conditions.

Heavy equipment is used in virtually every facet of the construction sector. In some cases, an operator may work for years on a single site, such as a plant, and may, during that time, operate only one type of equipment and therefore perform similar and relatively constant tasks. Operators who work for contractors may rarely work on the same site more than once and may perform a tremendous variety of tasks using a wide range of equipment types and sizes. The work of an operator often overlaps with that of other equipment operators.

## **Structure of the Occupational Analysis**

To facilitate the understanding of the nature of the occupation, the work performed is divided into the following divisions:

- A. BLOCK**            the largest division within the analysis and reflects a distinct operation relevant to the occupation
- B. TASK**             the distinct activity that, combined with others, makes up the logical and necessary steps the operator is required to perform to complete a specific assignment within a BLOCK
- C. SUBTASK**        the smallest distinct, measurable, and observable activities into which it is practical to divide any work activity; combined with other SUBTASKS, these fully describe the logical steps required to complete a TASK

The importance of a task describes the benefits that operators, employers, and the public receive as a result of an operator's ability to perform the task.

*Trends* are any shifts or changes that are occurring in the industry and affect the task.

*Supporting Knowledge and Abilities* are the elements of skill and knowledge that an individual must acquire to perform the task adequately.

*Tools and Supplies* are those items that are needed to perform the skill.

**BLOCK A      PROFESSIONALISM**  
**Task 1        Acts Professionally**

This task is important because it helps to:

- present positive image of industry
- demonstrate personal integrity and competence
- instill confidence and maintain relations with general public, site personnel, owners/clients, and their clients
- maintain employment and advance in industry

Trends:

- Employers and employees are placing more emphasis on company/personnel fit in relation to attitudes and values.
- There is less tolerance for unprofessional behaviour, including workplace violence, substance abuse, and harassment.
- There is increased awareness of the importance of a balanced lifestyle.
- There is an increasing demand for knowledgeable and experienced operators that have the interpersonal skills and desire to advance to supervisory and management levels.
- Individuals need to continually upgrade their knowledge and skills because of technological advances and new methodologies.

	Subtasks	Supporting Knowledge and Abilities	Tools and Supplies
1.01	Demonstrates work ethic	<p>Knowledge of:</p> <ul style="list-style-type: none"> <li>• principles of work ethic and expectations, such as be punctual, prepared for work, co-operative, honest, productive, and respectful</li> </ul> <p>Ability to:</p> <ul style="list-style-type: none"> <li>• follow principles of work ethic in all situations</li> </ul>	
1.02	Is aware of factors affecting personal health	<p>Knowledge of:</p> <ul style="list-style-type: none"> <li>• factors affecting personal health</li> <li>• own current mental, emotional, and physical state</li> <li>• own limitations</li> <li>• factors/situations/conditions that cause stress in professional and personal life</li> <li>• working conditions on construction site</li> <li>• impact of fatigue on job performance</li> </ul>	
1.03	Resolves problems or disagreements with others	<p>Knowledge of:</p> <ul style="list-style-type: none"> <li>• company policies and procedures</li> <li>• applicable legislation, such as harassment</li> <li>• conflict resolution techniques</li> </ul>	

Ability to:

- communicate effectively
- use calm approach
- be open-minded and flexible
- determine cause of problem or disagreement
- discuss and resolve issues
- walk away from conflict if necessary

1.04 Participates in professional development

Knowledge of:

- industry trends
- areas requiring ongoing learning, such as new equipment, technologies, techniques, and industry practices

Ability to:

- assess own knowledge and skills
- acquire information about training opportunities
- learn through various methods, such as on-the-job training, reading, courses, co-workers

1.05 Works with others

Knowledge of:

- own role and responsibilities
- roles and responsibilities of others in industry

Ability to:

- work as team member to achieve common goals
- keep open mind
- participate in workplace meetings
- communicate clearly and accurately
- co-ordinate job-related activities
- co-operate with others

1.06 Works independently

Knowledge of:

- company policies and procedures, such as work-alone plan
- applicable legislation, such as responsibilities of supervisor/owner and site personnel
- own role and responsibilities
- own capabilities and limitations
- work assignment, location, and working conditions

Ability to:

- confirm and clarify assignment
- take initiative, such as anticipate and prepare for next steps in job
- identify and resolve potential and actual problems
- communicate with other site personnel
- co-ordinate work with others
- complete assignment

**BLOCK A      PROFESSIONALISM**  
**Task 2        Uses Communication Skills**

This task is important because it helps to:

- work safely and efficiently
- reduce errors and miscommunication
- comply with applicable legislation and insurance requirements
- represent company and industry in professional manner
- summon help in emergency
- prevent injury, save lives, and limit damage to equipment and property

Trends:

- There is an increased use of communication devices to increase productivity and improve safety.
- There is an increasing legislative requirement for documentation and participation in job site meetings.

	Subtasks	Supporting Knowledge and Abilities	Tools and Supplies
2.01	Speaks and listens effectively	<p>Knowledge of:</p> <ul style="list-style-type: none"> <li>• importance of effective communication</li> <li>• industry terms</li> <li>• roles of individuals on job site, such as supervisor, inspector, other tradespeople</li> </ul> <p>Ability to:</p> <ul style="list-style-type: none"> <li>• listen carefully to what is said</li> <li>• confirm understanding, such as repeat or paraphrase instructions</li> <li>• communicate message clearly and accurately to others</li> <li>• exchange information with others, such as supervisor, signaller, general public, inspectors, other operators and tradespeople</li> </ul>	
2.02	Uses documentation	<p>Knowledge of:</p> <ul style="list-style-type: none"> <li>• company policies and procedures</li> <li>• applicable legislation, such as Access to Information Act</li> <li>• own role and responsibilities</li> <li>• types of documentation required, such as log books, safety reports, maintenance reports, inspection reports, time cards</li> <li>• importance of complete, legible, and accurate documentation</li> <li>• where documentation is stored</li> <li>• industry terms</li> </ul>	

Ability to:

- access and store documents as required
- provide complete, legible, and accurate information in documents in timely manner
- read and interpret equipment inspection documentation from previous shifts before conducting pre-operational inspection

2.03 Communicates using signals

Knowledge of:

- company policies and procedures
- applicable legislation
- role and responsibilities of signallers
- signallers on job site
- audible and warning signals used on job site
- hand signals

Ability to:

- identify and work with signallers
- communicate using audible signals, such as back-up alarm, site emergency horn
- communicate using hand signals

2.04 Uses electronic communication equipment

Knowledge of:

- manufacturers' specifications and operating instructions
- company policies and procedures
- applicable legislation
- types of communication equipment used on job site

Ability to:

- check communication devices to verify operating condition, such as complete radio check
- deliver and receive messages using communication equipment
- follow communication protocol

*Communication devices*

**BLOCK B SAFETY**  
**Task 3 Interprets Applicable Legislation and Policies**

This task is important because it helps to:

- ensure health and safety of workers and public
- comply with applicable legislation
- prevent damage to property and environment
- decrease potential of litigation

Trends:

- There is an increasing amount of training and documentation required by amended and new legislation.
- There is an increasing demand for standardized national legislation to reduce confusion and duplication caused by differences between jurisdictions. Lack of standardized legislation may lead to fatalities and accidents, and to damage of equipment, property, and the environment.
- There is an increasing expectation that operators will be knowledgeable about relevant legislation.

	Subtasks	Supporting Knowledge and Abilities	Tools and Supplies
3.01	Interprets federal, provincial/territorial, and municipal legislation	<p>Knowledge of:</p> <ul style="list-style-type: none"> <li>• applicable federal, provincial/territorial, and municipal legislation, such as Highway Traffic Act, Occupational Health and Safety Act</li> <li>• where relevant legislation can be located</li> </ul> <p>Ability to:</p> <ul style="list-style-type: none"> <li>• locate relevant sections in legislation</li> <li>• read legislation</li> <li>• seek clarification of legislation</li> </ul>	
3.02	Interprets permits, licences, and insurance requirements	<p>Knowledge of:</p> <ul style="list-style-type: none"> <li>• applicable permits, licences, and insurance requirements</li> <li>• authorities having jurisdiction</li> </ul> <p>Ability to:</p> <ul style="list-style-type: none"> <li>• locate permits, licences, and insurance documentation, such as over-dimensional permits, ground disturbance permits, air emissions permits, water use permits</li> <li>• read permits, licences, and insurance documentation</li> <li>• seek clarification on permits, licences, and insurance documentation</li> </ul>	<i>Permits, licences, insurance documentation</i>

3.03 Interprets environmental legislation

Knowledge of:

- relevant environmental legislation
- authorities having jurisdiction, such as department of fisheries, ministry of environment, municipality
- potential environmental damage caused by construction activities

Ability to:

- locate applicable permits on job site
- read environmental legislation
- seek clarification of environmental legislation

3.04 Interprets company policies and procedures

Knowledge of:

- where copies of company policies and procedures can be located

Ability to:

- read company policies and procedures
- stay current with company policies and procedures
- seek clarification on company policies and procedures

**BLOCK B SAFETY**  
**Task 4 Works Safely**

This task is important because it helps to:

- protect self and others from injury or death
- comply with applicable legislation
- prevent damage to equipment and environment
- reduce unscheduled downtime

Trends:

- Legislation relating to PPE and training is frequently being amended to protect employees, employers, the environment, and the general public.
- The industry is involved in improving safety on job sites to reduce accidents.

	Subtasks	Supporting Knowledge and Abilities	Tools and Supplies
4.01	Uses personal protective equipment (PPE)	<p>Knowledge of:</p> <ul style="list-style-type: none"> <li>• company policies and procedures</li> <li>• applicable legislation</li> <li>• PPE required/recommended by manufacturers' manuals</li> <li>• PPE required for construction sites, such as footwear, hard hats, safety vests, safety glasses</li> <li>• PPE required for specific conditions, such as breathing apparatus for hazardous breathing conditions, dielectric boots and gloves for protection from electrical shock</li> <li>• inspection, care, and use of PPE</li> </ul> <p>Ability to:</p> <ul style="list-style-type: none"> <li>• identify PPE required for job site and situation</li> <li>• ensure PPE meets safety standard requirements, such as Canadian Standards Association (CSA)</li> <li>• inspect PPE for damage, and repair or replace as necessary</li> <li>• ensure PPE fits correctly</li> </ul>	<p><i>Steel-toed footwear, hard hat, safety gloves, appropriate safety glasses, high visibility vest, hearing protection, breathing apparatus, fall protection, and other applicable PPE</i></p>
4.02	Completes required health and safety training	<p>Knowledge of:</p> <ul style="list-style-type: none"> <li>• manufacturers' specifications, such as recommended operating procedures</li> <li>• company policies and procedures</li> <li>• applicable legislation</li> </ul>	

Ability to:

- take required health and safety training, such as confined space entry, Workplace Hazardous Materials Information System (WHMIS), first aid, cardiopulmonary resuscitation (CPR)

**BLOCK B SAFETY**  
**Task 5 Complies with Site Emergency Plan**

This task is important because it helps to:

- protect self
- prevent property damage
- ensure safety of public and job site personnel
- evacuate and secure area efficiently and effectively

Trends:

- Emergency exercises and preparedness activities are becoming more common.

	Subtasks	Supporting Knowledge and Abilities	Tools and Supplies
5.01	Prepares for emergencies	<p>Knowledge of:</p> <ul style="list-style-type: none"> <li>• manufacturers' specifications, such as equipment emergency shut-down procedure</li> <li>• company policies and procedures</li> <li>• site emergency response plan, such as evacuation routes, procedures, contact protocol</li> <li>• types of fires, i.e., Class A, B, C, and D</li> <li>• types of extinguishers</li> <li>• potential and actual hazards on work site</li> <li>• location of fire extinguishers and first aid stations (on equipment and site) and how to use them</li> <li>• inspection requirements for safety equipment and supplies, such as fire extinguisher, first aid kit</li> </ul> <p>Ability to:</p> <ul style="list-style-type: none"> <li>• take emergency response training, such as emergency response exercises, first aid, CPR</li> </ul>	<p><i>Site emergency response plan, fire extinguishers, fire blankets, respirators, masks, fire hoses, first aid kits, stretchers, WHMIS book, and other related tools and gear</i></p>
5.02	Responds to emergencies	<p>Knowledge of:</p> <ul style="list-style-type: none"> <li>• manufacturers' specifications, such as equipment emergency shut-down procedure</li> <li>• company policies and procedures</li> <li>• site emergency response plan, such as evacuation routes, procedures, contact protocol</li> <li>• types of fires, i.e., Class A, B, C, and D</li> <li>• types of extinguishers</li> <li>• potential and actual hazards on work site</li> <li>• location of fire extinguishers and first aid stations (on equipment and site) and how to use them</li> </ul>	<p><i>Fire extinguishers, fire blankets, respirators, masks, fire hoses, first aid kits, stretchers, and other related tools and gear</i></p>

- inspection requirements for safety equipment and supplies, such as fire extinguisher, first aid kit

Ability to:

- follow emergency plan
- communicate or follow instructions
- assess risks and determine course of action
- operate emergency equipment and supplies

**Block C      EQUIPMENT**  
**Task 6      Describes Equipment and Attachments**

This task is important because it helps to:

- use equipment properly and safely
- select correct attachments for materials and working conditions
- communicate with others using correct terms

Trends:

- There is an increase in the variety of boom truck sizes, applications, and attachments.
- There is an increase in the use of technology when operating boom trucks.

	Subtasks	Supporting Knowledge and Abilities	Tools and Supplies
6.01	Describes types and sizes of boom trucks	Knowledge of: <ul style="list-style-type: none"> <li>• manufacturers' specifications</li> <li>• types of cranes used on boom trucks, such as telescoping boom, articulating (also known as knuckle) boom</li> <li>• capacities and/or capabilities of types and sizes of cranes and boom trucks</li> </ul>	<i>Manufacturers' manuals and literature for truck and crane</i>
6.02	Describes major components and functions	Knowledge of: <ul style="list-style-type: none"> <li>• major components, such as telescoping or articulating boom, stabilizers, outriggers, winch, hoist line, turret (also known as turn table), cylinders, hoses, travel blocks, lifting hooks</li> <li>• operating systems, such as hydraulic, electrical, lubrication</li> <li>• types of operating controls for crane, such as wireless remote, remote with umbilical cord, fixed</li> <li>• types of operator aids, such as load moment indicator (LMI), boom angle indicator, anti-two block</li> <li>• functions of major components, such as that turret supports boom</li> </ul>	<i>Manufacturers' manuals and literature</i>
6.03	Describes attachments and purposes	Knowledge of: <ul style="list-style-type: none"> <li>• manufacturers' specifications</li> <li>• common types of attachments, such as boom extension, telescopic jibs, trailers</li> <li>• applications of attachments, such as use boom extension or jib to extend length of boom, use trailer to increase carrying capacity</li> </ul>	<i>Manufacturers' manuals and literature, attachment manuals and literature</i>

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6.04	Describes basic tools and supplies associated with boom trucks	Knowledge of: <ul style="list-style-type: none"><li>• manufacturers' specifications for tools and supplies</li><li>• basic tools, such as flashlight; hammer; grease gun; various types and sizes of wrenches, screwdrivers, pliers, and funnels</li><li>• basic supplies, such as rags, grease, oil, fuel, oil filters, tie-down gear, rope, rigging and rigging hardware, spill kit, transmission fluid</li></ul>	<i>Manufacturers' manuals and literature for tools and supplies</i>
6.05	Describes rigging equipment	Knowledge of: <ul style="list-style-type: none"><li>• types of rigging hardware, such as spreader bars, lifting and equalizing beams, chain spreaders, shackles</li><li>• types of slings, such as synthetic, wire rope, chain</li><li>• configuration of rigging, such as basket, multi-legged bridle, choking</li><li>• capacity and appropriate use of rigging hardware</li></ul>	<i>Manufacturers' manuals and literature</i>

**Block D            MAINTENANCE**  
**Task 7            Performs Pre-operational Inspection and Daily Service with Engine Off**

This task is important because it helps to:

- ensure continuous and safe operation of equipment
- meet manufacturers' specifications, company policies and procedures, and applicable legislation
- prevent damage to equipment
- reduce unscheduled downtime

Trends:

- There is an increase in due diligence to address safety issues and reduce hazardous work conditions.

	Subtasks	Supporting Knowledge and Abilities	Tools and Supplies
7.01	Inspects and services lubrication system	<p>Knowledge of:</p> <ul style="list-style-type: none"> <li>• manufacturers' specifications, such as correct engine oil</li> <li>• company policies and procedures</li> <li>• applicable legislation</li> <li>• lubrication system, components, and functions</li> <li>• normal operating conditions</li> <li>• spill kit procedures</li> </ul> <p>Ability to:</p> <ul style="list-style-type: none"> <li>• locate components to be inspected</li> <li>• identify service needs, defects, and hazardous conditions through visual inspection</li> <li>• select and use appropriate tools</li> <li>• perform basic service, such as add engine oil</li> <li>• perform or arrange for repair or replacement of defective components, such as oil filter</li> <li>• use spill kit</li> </ul>	<p><i>Manufacturers' manuals and literature, equipment maintenance documentation PPE, basic tools and supplies, spill kit</i></p>
7.02	Inspects and services electrical system	<p>Knowledge of:</p> <ul style="list-style-type: none"> <li>• manufacturers' specifications</li> <li>• company policies and procedures</li> <li>• applicable legislation</li> <li>• electrical system, components (such as alternator, starters, regulators, wiring, fuses), and functions</li> <li>• normal operating conditions</li> </ul> <p>Ability to:</p> <ul style="list-style-type: none"> <li>• locate components to be inspected</li> <li>• identify service needs, defects, and hazardous conditions through visual inspection</li> </ul>	<p><i>Manufacturers' manuals and literature, equipment maintenance documentation, PPE, basic tools and supplies, distilled water</i></p>

- select and use appropriate tools
- perform basic service, such as add distilled water to battery, clean corroded battery posts
- perform or arrange for repair or replacement of defective components, such as alternator belt

7.03 Inspects and services hydraulic system

Knowledge of:

- manufacturers' specifications
- company policies and procedures
- applicable legislation
- hydraulic systems, components (such as hydraulic fluid, filters, lines, pumps, fittings), and functions
- normal operating conditions
- spill kit procedures

*Manufacturers' manuals and literature, equipment maintenance documentation, PPE, basic tools and supplies, hydraulic fluid, spill kit*

Ability to:

- locate components to be inspected
- identify service needs, defects, and hazardous conditions through visual inspection
- read sight gauges, such as hydraulic fluid level
- select and use appropriate tools
- perform basic service, such as adjust hydraulic fluid levels
- perform or arrange for repair or replacement of defective components, such as hydraulic lines
- use spill kit

7.04 Inspects and services cooling system

Knowledge of:

- manufacturers' specifications, such as correct belt tension
- company policies and procedures
- applicable legislation
- cooling system, components (such as belts, hoses, radiator, coolant), and functions
- normal operating conditions

*Manufacturers' manuals and literature, equipment maintenance documentation, PPE, basic tools and supplies, coolant*

Ability to:

- locate components to be inspected
- identify service needs, defects, and hazardous conditions through visual inspection
- select and use appropriate tools
- perform basic service, such as adjust belt tension, check coolant levels
- perform or arrange for repair or replacement of defective components, such as hoses, belts

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7.05	Inspects and services air intake system	<p>Knowledge of:</p> <ul style="list-style-type: none"><li>• manufacturers' specifications</li><li>• company policies and procedures</li><li>• applicable legislation</li><li>• air intake system, components (such as air filters, turbo chargers), and functions</li><li>• normal operating conditions</li></ul> <p>Ability to:</p> <ul style="list-style-type: none"><li>• locate components to be inspected</li><li>• identify service needs, defects, and hazardous conditions through visual inspection</li><li>• read sight glass for air filter</li><li>• select and use appropriate tools</li><li>• perform basic service, such as change air filter</li><li>• perform or arrange for repair or replacement of defective components, such as air intake hose, clamps</li></ul>	<i>Manufacturers' manuals and literature, equipment maintenance documentation, PPE, basic tools and supplies</i>
7.06	Inspects and services suspension system	<p>Knowledge of:</p> <ul style="list-style-type: none"><li>• manufacturers' specifications</li><li>• company policies and procedures</li><li>• applicable legislation</li><li>• suspension system, components (such as fittings, air bags, springs, hangers), and functions</li><li>• normal operating conditions</li></ul> <p>Ability to:</p> <ul style="list-style-type: none"><li>• locate components to be inspected</li><li>• identify service needs, defects, and hazardous conditions through visual inspection</li><li>• select and use appropriate tools</li><li>• perform basic service, such as grease and change fittings</li><li>• perform or arrange for repair or replacement of defective components, such as air bags, springs</li></ul>	<i>Manufacturers' manuals and literature, equipment maintenance documentation, PPE, basic tools and supplies</i>

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7.07	Inspects and services drive train	<p>Knowledge of:</p> <ul style="list-style-type: none"><li>• manufacturers' specifications</li><li>• company policies and procedures</li><li>• applicable legislation</li><li>• drive train, components (such as engine, transmission, differentials, tires), and functions</li><li>• normal operating conditions</li></ul> <p>Ability to:</p> <ul style="list-style-type: none"><li>• locate components to be inspected</li><li>• identify service needs, defects, and hazardous conditions through visual inspection</li><li>• select and use appropriate tools</li><li>• perform basic service, such as adjust fluid levels for transmission and differential, adjust tire pressure</li><li>• perform or arrange for repair or replacement of defective components, such as universal joint, seals, tires</li></ul>	<i>Manufacturers' manuals and literature, equipment maintenance documentation, PPE, basic tools and supplies, tire pressure gauge, spill kit</i>
7.08	Inspects and services load-bearing structure	<p>Knowledge of:</p> <ul style="list-style-type: none"><li>• manufacturers' specifications</li><li>• company policies and procedures</li><li>• applicable legislation</li><li>• load-bearing structure, components (such as deck, chassis), and functions</li><li>• normal operating conditions</li></ul> <p>Ability to:</p> <ul style="list-style-type: none"><li>• locate components to be inspected</li><li>• identify service needs, defects, and hazardous conditions through visual inspection</li><li>• perform or arrange for repair or replacement of defective components, such as bolts, welds</li></ul>	<i>Manufacturers' manuals and literature, equipment maintenance documentation, PPE</i>
7.09	Inspects and services operator station	<p>Knowledge of:</p> <ul style="list-style-type: none"><li>• manufacturers' specifications</li><li>• company policies and procedures</li><li>• applicable legislation</li><li>• operator station, components (such as seat, instrument panel, operating controls, communication devices), and functions</li><li>• normal operating conditions</li></ul> <p>Ability to:</p> <ul style="list-style-type: none"><li>• locate components to be inspected</li><li>• identify service needs, defects, and hazardous conditions through visual inspection</li></ul>	<i>Manufacturers' manuals and literature, equipment maintenance documentation, PPE, basic tools and supplies</i>

- select and use appropriate tools
- perform basic service, such as clean windows, mirrors, operating controls; adjust mirrors
- perform or arrange for repair or replacement of defective components, such as repair damaged controls

7.10 Inspects and services fuel system

Knowledge of:

- manufacturers' specifications
- company policies and procedures
- applicable legislation
- fuel system, components (such as fuel pump, injector lines, fuel filters, water separator), and functions
- spill kit procedures
- normal operating conditions
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Ability to:

- locate components to be inspected
- identify service needs, defects, and hazardous conditions through visual inspection
- select and use appropriate tools
- perform basic service, such as refuel vehicle, drain fuel separator, change fuel filters
- perform or arrange for repair or replacement of defective components, such as repair defective lines, fix fuel pump
- use spill kit

*Manufacturers' manuals and literature, equipment maintenance documentation, PPE, basic tools and supplies, spill kit*

7.11 Inspects and services braking system

Knowledge of:

- manufacturers' specifications
- company policies and procedures
- applicable legislation related to air brakes
- braking system, components (such as brake chambers, air hoses, slack adjusters, air dryers, air tank), and functions
- normal operating conditions

Ability to:

- locate components to be inspected
- identify service needs, defects, and hazardous conditions through tests and visual inspection
- select and use appropriate tools
- perform basic service, such as adjust brakes
- perform or arrange for repair or replacement of defective components, such as air line, fittings

*Manufacturers' manuals and literature, equipment maintenance documentation, PPE, basic tools and supplies*

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7.12	Inspects and services boom components	<p>Knowledge of:</p> <ul style="list-style-type: none"><li>• manufacturers' specifications</li><li>• company policies and procedures</li><li>• applicable legislation</li><li>• boom components (boom sections, turret, boom cylinder mount) and functions</li><li>• normal operating conditions</li></ul> <p>Ability to:</p> <ul style="list-style-type: none"><li>• locate components to be inspected</li><li>• identify service needs, defects, and hazardous conditions through visual inspection</li><li>• perform basic service, such as grease fittings</li><li>• perform or arrange for replacement of damaged or worn parts, such as hoses, cylinders, welds</li></ul>	<i>Manufacturers' manuals and literature, equipment maintenance documentation, PPE, basic tools and supplies</i>
7.13	Inspects and services hoisting system	<p>Knowledge of:</p> <ul style="list-style-type: none"><li>• manufacturers' specifications</li><li>• company policies and procedures</li><li>• applicable legislation</li><li>• hoisting systems, components (wire rope, fittings, drums, hook, sheaves, winch mount), and functions</li><li>• normal operating conditions</li></ul> <p>Ability to:</p> <ul style="list-style-type: none"><li>• locate components to be inspected</li><li>• identify service needs, defects, and hazardous conditions through visual inspection</li><li>• select and use appropriate tools</li><li>• perform basic service, such as change fittings, blocks, or shackles</li><li>• perform or arrange for repairs or replacement of defective components, such as wire rope, sheaves</li></ul>	<i>Manufacturers' manuals and literature, equipment maintenance documentation, PPE, basic tools and supplies</i>
7.14	Inspects and services stabilizing system	<p>Knowledge of:</p> <ul style="list-style-type: none"><li>• manufacturers' specifications</li><li>• company policies and procedures</li><li>• applicable legislation</li><li>• stabilizing systems, components [such as outriggers, pads (also known as floats or pontoons), mats, stabilizer jack, cylinders], and functions</li><li>• normal operating conditions</li></ul>	<i>Manufacturers' manuals and literature, equipment maintenance documentation, PPE, basic tools and supplies</i>

Ability to:

- locate components to be inspected
- identify service needs, defects, and hazardous conditions through visual inspection
- perform basic service, such as grease pins
- perform or arrange for repair or replacement of defective components, such as pins, bolts, welds

7.15 Inspects and services attachments

Knowledge of:

- manufacturers' specifications
- company policies and procedures
- applicable legislation
- attachments (such as boom extension, telescopic jibs, trailers), and functions
- normal operating conditions

*Manufacturers' manuals and literature, equipment maintenance documentation, PPE, basic tools and supplies*

Ability to:

- locate components to be inspected
- identify service needs, defects, and hazardous conditions through visual inspection
- select and use appropriate tools
- perform basic service, such as grease sheave bearings on boom extension
- perform or arrange for repair or replacement of defective components, such as sheaves, bearings, anti-two block

7.16 Inspects safety equipment

Knowledge of:

- manufacturers' specifications
- company policies and procedures
- applicable legislation
- required safety equipment, such as reflectors, fire extinguisher, pylons, decals
- normal operating conditions

*Manufacturers' manuals and literature, equipment maintenance documentation, PPE, basic tools and supplies, safety equipment*

Ability to:

- identify missing safety equipment
- identify service needs, defects, and hazardous conditions through visual inspection
- select and use appropriate tools
- arrange for repair or replacement of defective components, such as fire extinguisher

**Block D            MAINTENANCE**  
**Task 8            Performs Pre-operational Inspection and Daily Service with Engine Running**

This task is important because it helps to:

- identify problems not evident when engine is off
- ensure that equipment is ready to operate
- prolong equipment life
- prevent unscheduled downtime

Trends:

- There is an increase in due diligence to address safety issues and reduce hazardous work conditions.

	Subtasks	Supporting Knowledge and Abilities	Tools and Supplies
8.01	Starts and warms up engine	<p>Knowledge of:</p> <ul style="list-style-type: none"> <li>• manufacturers' specifications</li> <li>• company policies and procedures</li> <li>• monitoring and warning systems, components, and functions</li> <li>• normal operating conditions</li> <li>• battery-boosting procedures</li> </ul> <p>Ability to:</p> <ul style="list-style-type: none"> <li>• adjust start up to weather conditions, such as use starting aids, e.g., block heater, fuel heater</li> <li>• engage ignition</li> <li>• assist with boost batteries if required</li> <li>• interpret information from gauges, lights, and sensors</li> <li>• select and use appropriate tools</li> <li>• arrange for repair or replacement of defective components, such as light bulbs, fuses</li> </ul>	<i>Manufacturers' manuals and literature, PPE, basic tools and supplies, starting aids</i>
8.02	Cycles equipment functions	<p>Knowledge of:</p> <ul style="list-style-type: none"> <li>• manufacturers' specifications</li> <li>• company policies and procedures</li> <li>• applicable legislation, such as air brakes</li> <li>• normal operating characteristics</li> <li>• impact of weather and seasonal conditions</li> <li>• functions on truck and crane</li> <li>• types of operating controls, such as wireless remote, remote with umbilical cord, local</li> <li>• power take off (PTO) procedures</li> </ul>	<i>Manufacturers' manuals and literature, equipment maintenance documentation, PPE, basic tools and supplies</i>

Ability to:

- engage and disengage PTO as required
- ensure remote control batteries are charged
  
- activate functions on truck and crane (such as boom, pump, outriggers) using operating controls
- check braking system
- identify service needs, defects, and hazardous conditions through tests and visual inspection
- perform basic service, such as clean remote control; change lights, fuses, and wiper blades; adjust air brakes
- perform or arrange for repair or replacement of defective components, such as remote control batteries, operator aids

**BLOCK D      MAINTENANCE**  
**Task 9        Complies with Scheduled Maintenance Requirements**

This task is important because it helps to:

- ensure continuous and safe operation of equipment
- validate manufacturers' equipment warranties
- prevent damage to equipment
- reduce unscheduled downtime

Trends:

- There is an increased awareness of the consequences of not complying with scheduled maintenance requirements.

Subtasks	Supporting Knowledge and Abilities	Tools and Supplies
9.01      Arranges for or performs scheduled maintenance	<p>Knowledge of:</p> <ul style="list-style-type: none"> <li>• manufacturers' specifications for scheduled maintenance</li> <li>• company policies and procedures</li> <li>• applicable legislation</li> <li>• factors that affect scheduled maintenance, such as where equipment is being used, number and characteristics of loads being lifted and moved</li> </ul> <p>Ability to:</p> <ul style="list-style-type: none"> <li>• comply with safety requirements</li> <li>• read indicators that signal need for replacement</li> <li>• read maintenance records and documentation relating to service, such as log books</li> <li>• arrange for or perform scheduled maintenance, such as grease wear pads, lubricate or change wire rope, change engine oil and filters</li> </ul>	<p><i>Manufacturers' manuals and literature; equipment maintenance documentation; PPE; basic tools and supplies; other required tools for maintenance work, such as torque wrench</i></p>

**BLOCK E OPERATING PROCEDURES**  
**Task 10 Plans Work Procedures**

This task is important because it helps to:

- ensure proper pick up, transportation, and placement of load
- prevent damage to load and equipment
- prevent injury to personnel
- prevent unscheduled downtime

Trends:  
 N/A

	Subtasks	Supporting Knowledge and Abilities	Tools and Supplies
10.01	Assesses site hazards	Knowledge of: <ul style="list-style-type: none"> <li>• manufacturers' and job specifications</li> <li>• company policies and procedures</li> <li>• applicable legislation, such as Occupational Health and Safety</li> <li>• authorities having jurisdiction</li> <li>• factors that affect equipment stability, such as ground and supporting conditions</li> <li>• actual and potential dangers, such as overhead and underground utilities and guide wires, other equipment, personnel, vehicular traffic</li> </ul> Ability to: <ul style="list-style-type: none"> <li>• inspect site visually</li> <li>• communicate with site personnel and authorities having jurisdiction</li> </ul>	<i>Manufacturers' manuals and literature, PPE</i>
10.02	Discusses environmental concerns with applicable personnel	Knowledge of: <ul style="list-style-type: none"> <li>• company policies and procedures</li> <li>• applicable legislation, such as Transportation of Dangerous Goods Act, spill reporting</li> <li>• environmental concerns</li> <li>• site characteristics and boundaries</li> </ul> Ability to: <ul style="list-style-type: none"> <li>• identify environmental concerns of site, such as proximity to water courses, allowable noise levels, fuel leaks, hazardous materials</li> <li>• communicate questions and concerns with employer, site personnel, or authorities having jurisdiction</li> </ul>	<i>PPE</i>

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10.03	Reviews job specifications and safety considerations with site personnel	<p>Knowledge of:</p> <ul style="list-style-type: none"><li>• job specifications</li><li>• company policies and procedures</li><li>• applicable legislation</li><li>• actual and potential site hazards</li><li>• other construction equipment on site</li><li>• roles of personnel on site, such as supervisor, inspector, other tradespeople</li></ul> <p>Ability to:</p> <ul style="list-style-type: none"><li>• communicate with site personnel to determine relevant safety information, such as job- or site-specific PPE needed, traffic patterns, procedures</li><li>• confirm details of job to be completed, such as load and unload site</li></ul>	<i>PPE, utility locate document</i>
10.04	Assesses load	<p>Knowledge of:</p> <ul style="list-style-type: none"><li>• load characteristics, such as weight, dimensions, configuration, container type, centre of gravity, surface profile, state (i.e., gas, liquid, or solid)</li><li>• load contents, such as hazardous or explosive materials</li></ul> <p>Ability to:</p> <ul style="list-style-type: none"><li>• inspect load visually</li><li>• determine load weight and contents, such as read weigh bills, communicate with site personnel</li></ul>	<i>PPE</i>
10.05	Plans tasks	<p>Knowledge of:</p> <ul style="list-style-type: none"><li>• manufacturers' specifications for truck and crane</li><li>• job specifications, such as where to load and unload materials</li><li>• company policies and procedures</li><li>• applicable legislation</li><li>• load assessment</li><li>• crane weight deductions</li><li>• rigging requirements and techniques</li><li>• lift procedures</li></ul>	<i>Manufacturers' manuals and literature, PPE</i>

Ability to:

- determine gross load
- determine whether crane is rated to hoist load and/or truck is rated to transport load
  
- determine whether load dimensions are within legislated specifications for truck's capacity and configuration
- select appropriate rigging
- read and interpret load charts to determine most efficient way to lift load
- participate in specialty-lift planning, such as lift for laminated beams

10.06 Plans or confirms travel route

Knowledge of:

- job specifications
- applicable legislation, such as transportation
- traffic patterns on job sites, such as site access, egress points
- on- and off-site destinations
- terrain, hazards, and obstructions, such as railway tracks, ramps, inclines, bridges, overpasses

*PPE, maps*

Ability to:

- obtain necessary permits
- read maps
- plan or confirm routes and destinations

10.07 Determines best set-up location on site

Knowledge of:

- manufacturers' and job specifications
- company policies and procedures
- applicable legislation
- radius requirements
- set-up requirements
- warning signs and site markers
- number of tasks that can be accomplished from one position

*Manufacturers' manuals and literature, PPE*

Ability to:

- select set-up location with consideration of limitations, such as overhead and turning clearances, ground stability, access and egress points

10.08	Determines work procedures	<p>Knowledge of:</p> <ul style="list-style-type: none"><li>• manufacturers' specifications</li><li>• job specifications, such as priority of lifts, number of lifts</li><li>• company policies and procedures</li><li>• scheduling requirements for materials to co-ordinate with ground personnel</li></ul> <p>Ability to:</p> <ul style="list-style-type: none"><li>• schedule lifts and minimize downtime</li><li>• minimize number of set-ups</li><li>• co-ordinate activities with other site personnel</li></ul>	<i>Manufacturers' manuals and literature, PPE</i>
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**BLOCK E OPERATING PROCEDURES**  
**Task 11 Operates Boom Truck**

This task is important because it helps to:

- prevent damage to loads, property, and equipment
- prevent injury to personnel
- fulfill job specifications
- co-ordinate boom truck operations with other construction activities on site
- ensure public safety
- comply with applicable transportation legislation

Trends:

- Aerial platforms are replacing personnel baskets mounted on boom trucks, resulting in less liability for boom truck operators.
- Increased size and variations in the configuration of boom trucks is requiring higher skill levels of operators and posing greater risk.

	Subtasks	Supporting Knowledge and Abilities	Tools and Supplies
11.01	Complies with safety requirements	<p>Knowledge of:</p> <ul style="list-style-type: none"> <li>• manufacturers' specifications</li> <li>• company policies and procedures</li> <li>• applicable legislation</li> <li>• safety controls and equipment functions, such as fire extinguisher</li> <li>• caution, warning, and hazard decals, lights, and symbols</li> </ul> <p>Ability to:</p> <ul style="list-style-type: none"> <li>• use equipment safety controls and safety equipment</li> <li>• respond to caution, warning, and hazard decals, lights, and symbols</li> </ul>	<i>Manufacturers' manuals and literature, PPE, fire extinguisher, roadside safety equipment</i>
11.02	Sets up equipment	<p>Knowledge of:</p> <ul style="list-style-type: none"> <li>• manufacturers' specifications</li> <li>• company policies and procedures</li> <li>• permit requirements, such as use of barricades</li> <li>• actual and potential site hazards</li> <li>• correct positioning and stabilizing of equipment</li> <li>• required information to program load moment indicator (LMI), such as boom length, sections to be erected and stowed, parts of line</li> <li>• factors that affect equipment stability, such as ground settlement and placing blocking (also known as timber blocking, pads, dunnage) under equipment to improve support</li> </ul>	<i>Manufacturers' manuals and literature, PPE, basic tools and supplies, barricades, blocking</i>

Ability to:

- follow lift plan
- recognize actual and potential dangers
- interpret manufacturers' manuals and load charts
- maneuver and position equipment correctly
- extend stabilizers and/or outriggers
- address factors affecting equipment stability, such as blocking
- install boom extensions and attachments correctly and safely
- input data into LMI
- relocate equipment on job site as required

11.03 Installs attachments

Knowledge of:

- manufacturers' specifications for equipment and attachments
- job specifications
- certification requirements for after-market attachments, such as professional engineering seal
- installation procedures

*Manufacturers' manuals and literature, PPE, basic tools and supplies*

Ability to:

- select and use appropriate tools
- position equipment and attachments for installation
- follow installation procedures

11.04 Uses safe rigging techniques

Knowledge of:

- manufacturers' specifications of rigging hardware and slings
- applicable legislation, such as Occupational Health and Safety, CSA Z248
- load assessment
- appropriate rigging hardware and slings for load
- rigging configurations
- load hook-up points

*Manufacturers' literature for rigging hardware and slings, PPE, basic tools and supplies, rigging, slings*

Ability to:

- select appropriate rigging and slings for load
- inspect rigging components for wear and defects
- identify best rigging configuration
- inspect hook-up points before lifting

11.05 Performs hoisting operations	<p>Knowledge of:</p> <ul style="list-style-type: none"><li>• manufacturers' specifications</li><li>• applicable legislation</li><li>• hoisting operations, such as raising and lowering boom; raising, lowering, extending, and retracting boom; articulating boom; slewing</li><li>• lift plan</li><li>• required information to program LMI, such as boom length, sections to be erected and stowed, parts of line</li><li>• operating controls</li><li>• safe rigging techniques</li><li>• limitations of job site, such as ground stability</li><li>• specialty lift procedures</li><li>• hand signals and radio use</li></ul> <p>Ability to:</p> <ul style="list-style-type: none"><li>• operate boom and hoisting systems</li><li>• perform simultaneous hoisting operations</li><li>• follow lift plan</li><li>• place load on truck or trailer deck for transport</li><li>• position load with consideration of capacities, limitations of job site, weight distribution, and restrictions of public roads</li><li>• unload truck or trailer deck at designated site</li><li>• ensure that load does not exceed limitations of placement location</li><li>• interpret computer readouts</li><li>• use and respond to hand signals and radio instructions</li></ul>	
11.06 Performs specialty lifts	<p>Knowledge of:</p> <ul style="list-style-type: none"><li>• manufacturers' specifications of equipment and attachments, such as personnel platform or basket</li><li>• job specifications, such as lifting personnel, multi-crane lifts</li><li>• engineering specifications</li><li>• company policies and procedures</li><li>• applicable legislation, such as permit, certification inspection requirements</li><li>• documentation requirements, such as recording inspections, tests, modifications, maintenance, and repairs</li><li>• exact weight and maximum radius of load</li><li>• roles and responsibilities of other personnel</li><li>• hand signals and radio use</li></ul>	<p><i>Manufacturers' manuals and literature, equipment maintenance documentation and other records, PPE</i></p>

Ability to:

- possess required documentation, such as load charts, permits
- check certification tags
- complete documentation for specialty lift operations
- plan specialty lift with others
- follow lift plan, such as follow signaller's directions, co-ordinate activities in multi-crane lift, use approved personnel hoisting equipment
- use and respond to hand signals and radio instructions

11.07 Prepares to haul load

Knowledge of:

- manufacturers' specifications for proper positioning of boom, attachments, and outriggers for travel
- company policies and procedures
- applicable legislation, such as required class of driver's licence, oversize load signs, flag and light requirements, route, destination
- truck capacities, such as attached trailers (e.g., gross vehicle weight, net capacity), weight of load
- load assessment
- numbers, types, length, grade, and condition of required tie-down hardware
- attachment points and patterns for securing loads
- hand signals and radio use

*Manufacturers' manuals and literature, PPE, basic tools and supplies*

Ability to:

- select appropriate tie-down hardware
- secure load using tie-down hardware and proper attachment points and patterns
- attach oversize load signs, flags, and lights to load if required
- position and secure boom, attachments, and outriggers for travel
- clean equipment
- check brakes, lights, flashers, and steering
- perform circle check
- use and respond to hand signals and radio instructions

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11.08	Hauls load	<p>Knowledge of:</p> <ul style="list-style-type: none"><li>• manufacturers' specifications</li><li>• company policies and procedures</li><li>• applicable legislation, such as traffic laws, Transportation of Dangerous Goods Act</li><li>• road and weather conditions</li></ul> <p>Ability to:</p> <ul style="list-style-type: none"><li>• read maps</li><li>• follow route to destination</li><li>• adjust to load, road, and weather conditions</li><li>• recognize potential hazards, such as overhead lines, overpass</li></ul>	<i>Manufacturers' manuals and literature, PPE, maps, licence, permits</i>
11.09	Monitors activities on site	<p>Knowledge of:</p> <ul style="list-style-type: none"><li>• site traffic patterns</li><li>• actual and potential site hazards, such as personnel, other equipment</li><li>• equipment blind spots and when to use signaller</li><li>• hand signals and radio use</li></ul> <p>Ability to:</p> <ul style="list-style-type: none"><li>• observe and respond to movement of others around work area</li><li>• avoid collisions</li><li>• respond to signaller</li><li>• communicate with designated signaller</li></ul>	<i>PPE</i>
11.10	Monitors equipment performance	<p>Knowledge of:</p> <ul style="list-style-type: none"><li>• manufacturers' specifications</li><li>• normal operating characteristics</li><li>• operator aid devices</li><li>• monitoring and warning systems</li></ul> <p>Ability to:</p> <ul style="list-style-type: none"><li>• read and interpret information from gauges, symbols, and operator aid devices</li><li>• use own senses to monitor equipment performance</li><li>• identify performance problems and possible solutions</li></ul>	<i>Manufacturers' manuals and literature, PPE</i>

## ***Boom Truck Operator Occupational Analysis***

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11.11	Troubleshoots equipment problems	<p>Knowledge of:</p> <ul style="list-style-type: none"><li>• proper mechanical operation</li><li>• normal operating characteristics</li><li>• equipment systems</li></ul> <p>Ability to:</p> <ul style="list-style-type: none"><li>• identify problems and possible solutions</li><li>• communicate problems accurately to others, such as mechanic, supervisor</li><li>• record mechanical problems in equipment maintenance documentation, such as log book</li></ul>	<i>Manufacturers' manuals and literature, equipment maintenance documentation, PPE, basic tools and supplies, communication devices</i>
11.12	Optimizes equipment capabilities	<p>Knowledge of:</p> <ul style="list-style-type: none"><li>• manufacturers' specifications for equipment and attachments</li><li>• job specifications</li><li>• impact of attachments and load on rated load capacity and capabilities of equipment</li><li>• factors affecting operation, motion, balance, and stability, such as fulcrum points, centre of gravity, longitudinal and lateral stability</li><li>• site conditions (such as ground and weather conditions) that affect operating techniques</li></ul> <p>Ability to:</p> <ul style="list-style-type: none"><li>• follow planned work procedures and adjust as necessary</li><li>• optimize equipment capabilities by adjusting to factors, such as limitations of attachment, characteristics of load, site conditions</li><li>• use operating controls smoothly and simultaneously</li></ul>	<i>Manufacturers' manuals and literature, PPE, basic tools and supplies</i>
11.13	Responds to weather and site conditions	<p>Knowledge of:</p> <ul style="list-style-type: none"><li>• manufacturers' specifications</li><li>• company policies and procedures</li><li>• applicable legislation</li><li>• impact of weather (such as frozen ground, soft ground, lightning, wind, freezing rain) on operation of equipment</li></ul> <p>Ability to:</p> <ul style="list-style-type: none"><li>• adjust set up and operation of equipment (such as adjust outriggers for changing ground conditions) to accommodate weather and site conditions</li><li>• determine when to proceed or not proceed with equipment operation</li></ul>	<i>Manufacturers' manuals and literature, PPE</i>

**BLOCK E OPERATING PROCEDURES**  
**Task 12 Follows Shut-down Procedures**

This task is important because it helps to:

- ensure that equipment is ready for next shift
- prevent unscheduled downtime
- prevent vandalism and unauthorized movement of equipment

Trends:

N/A

	Subtasks	Supporting Knowledge and Abilities	Tools and Supplies
12.01	Cleans wheels/tracks and attachments before parking	<p>Knowledge of:</p> <ul style="list-style-type: none"> <li>• manufacturers' specifications</li> <li>• company policies and procedures</li> <li>• importance of cleaning parts, such as wheels, attachments</li> </ul> <p>Ability to:</p> <ul style="list-style-type: none"> <li>• select and use appropriate tools</li> <li>• remove debris from wheels and attachments</li> </ul>	<i>Manufacturers' manuals and literature, PPE, basic tools and supplies, shovel, long bar</i>
12.02	Parks equipment in appropriate location	<p>Knowledge of:</p> <ul style="list-style-type: none"> <li>• manufacturers' specifications</li> <li>• company policies and procedures</li> <li>• applicable legislation, such as minimum distance that equipment must be parked from water course</li> <li>• suitable and safe parking area that is out of traffic paths, level, not near emergency exits, dry, clean, secure, and away from fuel storage</li> </ul> <p>Ability to:</p> <ul style="list-style-type: none"> <li>• find appropriate location</li> <li>• position equipment</li> </ul>	<i>Manufacturers' manuals and literature, PPE</i>
12.03	Shuts down and secures equipment	<p>Knowledge of:</p> <ul style="list-style-type: none"> <li>• manufacturers' specifications</li> <li>• company policies and procedures, such as remove keys, disable boom controls</li> </ul> <p>Ability to:</p> <ul style="list-style-type: none"> <li>• secure equipment against movement, such as apply brakes</li> <li>• secure equipment against theft and vandalism</li> </ul>	<i>Manufacturers' manuals and literature, PPE, basic tools and supplies</i>

## ***Boom Truck Operator Occupational Analysis***

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- follow shut-down procedures, such as drain air tanks, idle equipment to cool down, turn off engine

12.04 Performs housekeeping tasks

Knowledge of:

- manufacturers' specifications
- company policies and procedures
- housekeeping practices, such as return items to proper storage place, remove debris

*Manufacturers' manuals and literature, PPE, basic tools and supplies, whisk broom*

Ability to:

- follow housekeeping practices, such as ensure that controls are free of grease and oil, clean windows in cab

12.05 Conducts post-operational inspection

Knowledge of:

- manufacturers' specifications
- company policies and procedures

*Manufacturers' manuals and literature, equipment maintenance documentation, PPE*

Ability to:

- perform circle check to inspect condition of equipment
- identify defects, such as leaks, low air pressure in tires
- document and communicate concerns to appropriate personnel, such as supervisor, mechanic



## Boom Truck Operator DACUM Chart

Block	Task	Subtask					
<b>A. PROFESSIONALISM</b>	<b>1. Acts Professionally</b>	1.01 Demonstrates work ethic	1.02 Is aware of factors affecting personal health	1.03 Resolves problems or disagreements with others	1.04 Participates in professional development	1.05 Works with others	1.06 Works independently
	<b>2. Uses Communication Skills</b>	2.01 Speaks and listens effectively	2.02 Uses documentation	2.03 Communicates using signals	2.04 Uses electronic communication equipment		
<b>B. SAFETY</b>	<b>3. Interprets Applicable Legislation and Policies</b>	3.01 Interprets federal, provincial/territorial, and municipal legislation	3.02 Interprets permits, licenses, and insurance requirements	3.03 Interprets environmental legislation	3.04 Interprets company policies and procedures		
	<b>4. Works Safely</b>	4.01 Uses personal protective equipment (PPE)	4.02 Completes required health and safety training				
	<b>5. Complies with Site Emergency Plan</b>	5.01 Prepares for emergencies	5.02 Responds to emergencies				

### Boom Truck Operator DACUM Chart

Block	Task	Subtask					
<b>C. EQUIPMENT</b>	<b>6. Describes Equipment and Attachments</b>	6.01 Describes types and sizes of boom trucks	6.02 Describes major components and functions	6.03 Describes attachments and purposes	6.04 Describes basic tools and supplies associated with boom trucks	6.05 Describes rigging equipment	
<b>D. MAINTENANCE</b>	<b>7. Performs Pre-operational Inspection and Daily Service with Engine Off</b>	7.01 Inspects and services lubrication system	7.02 Inspects and services electrical system	7.03 Inspects and services hydraulic system	7.04 Inspects and services cooling system	7.05 Inspects and services air intake system	7.06 Inspects and services suspension system
		7.07 Inspects and services drive train	7.08 Inspects and services load-bearing structure	7.09 Inspects and services operator station	7.10 Inspects and services fuel system	7.11 Inspects and services braking system	7.12 Inspects and services boom components
		7.13 Inspects and services hoisting system	7.14 Inspects and services stabilizing system	7.15 Inspects and services attachments	7.16 Inspects safety equipment		
	<b>8. Performs Pre-operational Inspection and Daily Service with Engine Running</b>	8.01 Starts and warms up engine	8.02 Cycles equipment functions				
<b>9. Complies with Scheduled Maintenance Requirements</b>	9.01 Arranges for or performs scheduled maintenance						

### Boom Truck Operator DACUM Chart

Block	Task	Subtask					
<b>E. OPERATING PROCEDURES</b>	<b>10. Plans Work Procedures</b>	10.01 Assesses site hazards	10.02 Discusses environmental concerns with applicable personnel	10.03 Reviews job specifications and safety considerations with site personnel	10.04 Assesses load	10.05 Plans tasks	10.06 Plans or confirms travel route
		10.07 Determines best set-up location on site	10.08 Determines work procedures				
	<b>11. Operates Boom Truck</b>	11.01 Complies with safety requirements	11.02 Sets up equipment	11.03 Installs attachments	11.04 Uses safe rigging techniques	11.05 Performs hoisting operations	11.06 Performs specialty lifts
		11.07 Prepares to haul load	11.08 Hauls load	11.09 Monitors activities on site	11.10 Monitors equipment performance	11.11 Troubleshoots equipment problems	11.12 Optimizes equipment capabilities
		11.13 Responds to weather and site conditions					
		<b>12. Follows Shut-down Procedures</b>	12.01 Cleans wheels/tracks and attachments before parking	12.02 Parks equipment in appropriate location	12.03 Shuts down and secures equipment	12.04 Performs housekeeping tasks	12.05 Conducts post-operational inspection

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