The purpose of this report is to describe as accurately as possible the heavy equipment operator trade as currently practiced in Québec’s construction industry. It is a record of discussions held by a group of workers who met for the occasion after industry partners recommended them to the Commission de la construction du Québec for their expertise in the trade.

The occupational analysis is a first step in the definition of the competencies required for practicing the trade. This report becomes one of the reference and decision-making tools used by the Commission for teaching and learning purposes.

The present report does not bind the Commission in any way. It has no legal effect and is meant as a reflection of discussions held on the date of the analysis workshop.
PRODUCTION TEAM

The Commission de la construction du Québec wishes to thank the production team for this occupational analysis.

Responsibility
Jean Mathieu
Section Manager
Commission de la construction du Québec

Coordination
Doris Gagnon
Training Advisor
Commission de la construction du Québec

Conduct of the workshop and writing of the validated version of the report
Jean-François Pouliot
Training Consultant

Note-taking
Michel Caouette
Training Consultant

Production support
Michel Bernard
Instructor
Commission scolaire des Navigateurs

Jocelyn Fugère
Instructor
Commission scolaire des Navigateurs

Michel Couillard
Training Advisor
Commission de la construction du Québec

Secretarial Work and Page Layout
Sylvie Brien
Commission de la construction du Québec

Translation
Traductions Globe Translations inc.

The masculine gender is used generically in this document to facilitate reading.
ACKNOWLEDGEMENTS

Production of the present report was made possible by the collaboration and participation of many people. The Commission de la construction du Québec (CCQ) is grateful for the quality of the information provided by those consulted, and gives special thanks to the heavy equipment operators who so generously agreed to participate in the analysis workshop regarding their trade. The persons consulted are:

Luc Benoit
Excavation AM
Laval

Richard Labonté
Sintra Inc.
Notre-Dame-du-Bon-Conseil

Michel Bournival
Continental DJL
Shawinigan

Jacques Lampron
Sintra Inc.
Notre-Dame-du-Bon-Conseil

David Carré
Jean Leclerc Excavation
Beauport

Jean-Yves Leblanc
Demix Construction
Laval

Roger Coutu
Entreprises Vaillant
Rigaud

Jacques Mongrain
Continental Asphalte
Shawinigan

Gilles Duquette
Michel Forest Inc.
Saint-Lin–Laurentides

Daniel Ouellet
Pavage UCP
Quebec City

Stéphane Guimond
CR Ménard Inc.
Longueuil

Hugo Roy
Lambert et Grenier Inc.
Notre-Dame-du-Bon-Conseil

Robert Hoskins
Kativik Regional Government
Nunavik

Jean-Claude Valade
Can-Du Ltd.
Laval
The following persons attended the meeting as observers:

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
<th>Organization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serge Massé</td>
<td>Machine Safety Consultant</td>
<td>Representative of the Commission de la santé et de la sécurité du travail</td>
</tr>
<tr>
<td>Marie Talbot</td>
<td>Sector Director</td>
<td>Ministère de l’Éducation, du Loisir et du Sport</td>
</tr>
<tr>
<td>Carl Grenier</td>
<td>Sector Director</td>
<td>Ministère de l’Éducation, du Loisir et du Sport</td>
</tr>
<tr>
<td>Laila Valin</td>
<td>Competency Evaluation Advisor</td>
<td>Commission de la construction du Québec</td>
</tr>
<tr>
<td>Michel Couillard</td>
<td>Training Advisor</td>
<td>Commission de la construction du Québec</td>
</tr>
</tbody>
</table>

The CCQ extends special thanks to the Commission de la santé et de la sécurité du travail and its representative, Mr. Serge Massé, for their collaboration in producing the occupational health and safety grids appended to the present report.
APPROVAL

This occupational analysis of the heavy equipment operator trade was read and approved by the following decision-making bodies and persons on the dates mentioned below:

Heavy Equipment Operator Professional Subcommittee
January 18, 2011

Pierre Maisonneuve
Association de la construction du Québec

Jean Boivin
Jacques Lampron
Thomas Dupuis-Ducharme
Association des constructeurs de routes et grands travaux du Québec

Nathalie Veillet
Association provinciale des constructeurs d’habitations du Québec

Alain Pépin
Centrale des syndicats démocratiques – Construction

Claude Roberge
Confédération des syndicats nationaux – Construction

Jean-Marc Morin
Conseil provincial du Québec des métiers de la construction – International

Dominic Girard
Fédération des travailleurs et travailleuses du Québec – Construction

Alain Bousquet
Syndicat québécois de la construction

Committee on Vocational Training in the Construction Industry
February 10, 2011

Board of Directors, Commission de la construction du Québec
February 23, 2011
# TABLE OF CONTENTS

INTRODUCTION......................................................................................................................... 1

1. GENERAL CHARACTERISTICS OF THE TRADE.............................................................. 3
   1.1 DEFINITION OF THE TRADE.................................................................................... 3
   1.2 JOB TITLES........................................................................................................... 4
   1.3 SECTORS OF ACTIVITY....................................................................................... 5
   1.4 FIELD OF PRACTICE........................................................................................... 6
   1.5 LEGISLATION AND REGULATIONS......................................................................... 6
   1.6 WORKING CONDITIONS........................................................................................ 7
   1.7 JOB MARKET ENTRY CONDITIONS........................................................................ 9
   1.8 PLACE OF WOMEN IN THE TRADE..................................................................... 11
   1.9 CAREER PROSPECTS.......................................................................................... 11
   1.10 DEVELOPMENT OF THE TRADE........................................................................... 11
   1.11 IMPACT OF ENVIRONMENTAL STANDARDS ON THE PRACTICE OF THE TRADE ............................................................... 12

2. WORK DESCRIPTION....................................................................................................... 13
   2.1 TASKS AND OPERATIONS .................................................................................... 13
   2.2 OPERATIONS, SUB-OPERATIONS AND CLARIFICATIONS ................................. 19
   2.3 ACHIEVEMENT CONDITIONS AND PERFORMANCE CRITERIA.......................... 41
   2.4 FUNCTIONS............................................................................................................ 55

3. QUANTITATIVE DATA ON TASKS................................................................................... 57
   3.1 OCCURRENCE ....................................................................................................... 57
   3.2 WORK TIME ......................................................................................................... 58
   3.3 IMPORTANCE AND DIFFICULTY OF TASKS ......................................................... 58
   3.4 TASKS PERFORMED............................................................................................. 61

4. KNOWLEDGE, SKILLS AND ATTITUDES........................................................................ 63
   4.1 KNOWLEDGE ........................................................................................................ 63
   4.2 SKILLS..................................................................................................................... 65
      4.2.1 Cognitive Skills .............................................................................................. 65
      4.2.2 Motor Skills .................................................................................................... 65
      4.2.3 Perceptual Skills ............................................................................................ 66
   4.3 ATTITUDES............................................................................................................. 66

5. TRAINING SUGGESTIONS............................................................................................... 69

ANNEXES................................................................................................................................. 71
  Annex 1 Tools and Equipment............................................................................................ 73
  Annex 2 Grid of Occupational Health and Safety Elements ........................................... 87
# List of Tables

1.1 Work Time Distribution per Sector.................................................................................. 5  

2.1 Tasks and Operations........................................................................................................ 14  
2.2 Sub-Operations and Operation Clarifications ................................................................. 19  
2.3 Achievement Conditions ............................................................................................... 41  
2.4 Performance Criteria....................................................................................................... 51  

3.1 Occurrence of Tasks......................................................................................................... 57  
3.2 Work Time Allocated to Tasks......................................................................................... 58  
3.3 Importance and Difficulty of Tasks.................................................................................. 60  
3.4 Tasks Performed.............................................................................................................. 61  

A.1 Tools and Equipment........................................................................................................ 73  
A.2 Description of Hazards ..................................................................................................... 87  
A.3 Hazards per Task and Operation...................................................................................... 93
INTRODUCTION

In early 2009, the Commission de la construction du Québec’s (CCQ) Direction de la formation professionnelle launched a large-scale operation to review the occupational analyses\(^1\) of all construction industry trades.

The CCQ undertook this operation for many reasons, particularly the following:

- the project to reform the construction workforce apprenticeship and management system, and the eventual design of qualitative apprenticeship booklets requiring a detailed description of each trade;
- the fact that most construction occupational analyses\(^2\) had been conducted between 1987 and 1991 and had not been reviewed since;
- updates to vocational qualification examination question banks;
- implementation of Chapter 7 of the Agreement on Internal Trade (AIT) and of the Québec-France Understanding on the Mutual Recognition of Professional Qualifications.

These factors demonstrate the necessity of updating the occupational analyses in order to obtain a current and complete profile of the various trades in Quebec.

The analysis of the heavy equipment operator trade belongs to this context\(^3\). Its purpose is to describe the trade as currently practiced by journeymen in the construction industry. The present report was written in order to collate and organize the information gathered during the occupational analysis workshop held in Laval on February 22, 23 and 24, 2010.

This occupational analysis aims to draw a portrait of the trade, including its tasks and their operations and sub-operations, its entry requirements, the skills and behaviours required, etc. The report reflects the consensus reached by a group of experienced heavy equipment operators. A special effort was made to include in this report all the data collected during the workshop and to ensure that the data accurately depict the realities of the trade analysed and its four specialties.

---

1. The terms “profession” and “trade” are considered synonymous.
2. Called “Work Situation Analyses” at the time.
3. This occupational analysis was conducted according to the Cadre de référence et instrumentation pour l’analyse d’une profession produced in 2007 by the ministère de l’Éducation, du Loisir et du Sport (Direction générale de la formation professionnelle et technique) and the Commission des partenaires du marché du travail, ministère de l’Emploi et de la Solidarité sociale.
1. GENERAL CHARACTERISTICS OF THE TRADE

1.1 DEFINITION OF THE TRADE

According to the Regulation respecting the vocational training of workforce in the construction industry (Sched. A, sec. 5), the term “heavy equipment operator” means:

[...] Anyone who operates equipment included in any of the following specialties:

1. **Specialty of the tractor operator:** Is part of the specialty of the tractor operator, the operation of wheel or track-mounted tractors with booms, buckets or attachments, “pépine” backdiggers, concrete breakers, bulldozers, scrapers, overhead and front-end loaders, trench-cutting machines, sideboom and endboom tractors, wheel-mounted tractors with excavating or forked attachment [sic].

2. **Specialty of the grader operator:** Is part of the specialty of the grader operator, the operation of graders.

3. **Specialty of the spreader operator:** Is part of the specialty of the spreader operator, the operation of grader-spreaders and asphalt or concrete spreaders.

4. **Specialty of the roller operator:** Is part of the specialty of the roller operator, the operation of rollers and power compactors.

The operators of equipment included in the 4 specialties mentioned above also operate the equipment when it is electrically-driven.

The heavy equipment operators attending the occupational analysis workshop estimate that this definition represents quite well the practice of the trade for persons who work on construction sites.

They specified that many of those machines now have electronic driving assistance systems (GPS and sensors, notably) for more precise work.
The participants also pointed out that operators can drive other types of machines than those mentioned in the definition. Following a discussion, they agreed to describe the work with the following machines:

- Loader-backhoe (backdigger)
- Front-end loader
- Bulldozer
- Grader
- Concrete or compacted concrete spreader
- Asphalt spreader
- Stabilizer sprayer
- Cold milling machine (leveller)
- Power compactor

1.2 JOB TITLES

The job title used for describing the practice of the trade in this occupational analysis is “heavy equipment operator”, but often the operator is designated according to the machine he is operating: “grader operator”, “loader operator”, etc.

Job titles not to be confused with that of the heavy equipment operator trade are:

- shovel operator;
- dump truck or dumper;
- mining machine operator.

---

4. The participants also mentioned the trench excavator and the motorized transfer vehicle. However, those machines were not retained by the Heavy Equipment Operator Professional Subcommittee as among equipment most used in Quebec.
1.3 SECTORS OF ACTIVITY

Heavy equipment operators are active in all four sectors of the construction industry:

- civil engineering and roads;
- industrial;
- institutional and commercial;
- residential.

However, it should be noted that the civil engineering and roads sector accounted for almost 83% of the hours worked by heavy equipment operators in 2008\(^5\).

Table 1.1 Work Time Distribution per Sector

The heavy equipment operators who attended the workshop consider that this table corresponds well to their perception of the places where their trade is practiced.

---

Asked about the sector of activity in which they work, all the heavy equipment operators in attendance, except one⁶, stated that they work mainly in the civil engineering and roads sector. Three participants work in the industrial and commercial sectors.

1.4 FIELD OF PRACTICE

The trade’s field of practice is the construction industry. The Act respecting labour relations, vocational training, and workforce management in the construction industry (R.S.Q., c. R-20) defines construction as follows:

[…] the foundation, erection, maintenance, renewal, repair, alteration and demolition work on buildings and civil engineering works carried out on the job site itself and vicinity including the previous preparatory work on the ground;

In addition, the word “construction” includes the installation, repair and maintenance of machinery and equipment, work carried out in part on the job site itself and in part in the shop, moving of buildings, transportation of employees, dredging, turfing, cutting and pruning of trees and shrubs and laying out of golf courses, but solely in the cases determined by regulation.

1.5 LEGISLATION AND REGULATIONS

Les heavy equipment operators in the construction industry are subject to:

- the Act respecting Labour relations, vocational training and workforce management in the construction industry (R.S.Q., c. R-20);
- the Regulation respecting the vocational training of workforce in the construction industry (R-20, r.6.2);
- the four sector-based collective agreements for the construction industry;
- the National Building Code – Canada 2005 (NBC);
- the Quebec Building Code, Chapter I – “Building”;
- the Act Respecting Occupational Health and Safety (R.S.Q., c. S-2.1);

⁶ That person works in the residential sector.
1.6 WORKING CONDITIONS

The following information provides an overview of the conditions and context of the work of heavy equipment operators, as commented by the participants in the occupational analysis workshop. To obtain up-to-date and complete information that has legal effect, it is necessary to refer to the four collective agreements for the construction industry sectors.

Salary

According to the collective agreements, a journeyman’s daytime hourly wage in May 2009 was as follows:

<table>
<thead>
<tr>
<th>Salary</th>
<th>Industrial, Institutional and Commercial</th>
<th>Civil Engineering and Roads</th>
<th>Light Residential</th>
<th>Heavy Residential</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class AA</td>
<td>$30.97</td>
<td>$31.08</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Class A</td>
<td>$29.97</td>
<td>$30.15</td>
<td>$27.04</td>
<td>$30.14</td>
</tr>
<tr>
<td>Class B</td>
<td>$29.21</td>
<td>$29.45</td>
<td>$26.38</td>
<td>$29.43</td>
</tr>
</tbody>
</table>

Vacations and time off

Mandatory annual holidays of four weeks – two weeks in summer and two in winter at periods predetermined in collective agreements – are the general rule in the construction industry. To avoid penalizing employers and employees experiencing special constraints, the industry’s four collective agreements allow certain possibilities for changing the vacation periods prescribed by the general rule.

To these vacation periods are added eight not worked statutory holidays, as well as a lump sum for sick leaves not otherwise paid.

Pension plan

Construction industry workers participate in a pension plan. They retain their eligibility for this pension plan throughout their career in construction, even if they change employer, trade or sector.

---

Insurance

The group insurance plan (medications, illness, disability, death) is fully paid by employers. Workers (and their families, as the case may be) are eligible for it so long as they remain active in the construction industry and work the required number of hours, whether or not they change employer.

Physical requirements

The heavy equipment operator trade involves particular physical requirements. The person must have:

- physical coordination;
- dexterity;
- physical endurance.

Stress factors

The work can be stressful. The sources of stress mentioned by the heavy equipment operators are:

- high precision requirements;
- working under pressure and with tight deadlines;
- the productivity required by the employer;
- the consequences of inadequate execution (ruptured conduit or broken electric wire, for example);
- interpersonal relations within a large team.

Work schedules

A 40-hour work week from Monday to Friday is the general rule in all construction industry sectors. The daily limit is 8 hours a day, except in the light residential sector, where it can be 10 hours within a 40-hour week.
To avoid penalizing employers and employees experiencing special constraints, the industry’s four collective agreements allow many possibilities for changing the schedule prescribed by the general rule: compressed schedule, schedule shift, make-up time in light residential construction, etc. These special schedules confer flexibility to the work schedules in effect in the construction industry.

The schedule of heavy equipment operators is variable and often depends on weather conditions and cities’ requirements for the daily opening and closing of construction sites.

The participants emphasized that persons working in excavation or in road construction or repair may work during the day, evening or night, with a schedule of 45 hours or more per week. In addition, work on large construction sites are sometimes organized in 10-hour shifts.

Finally, from July to October, the work schedule is often intensive.

**Work autonomy and organization**

Depending on the type of machine and the work to be done, heavy equipment operators work alone or in a team. Thus, operators driving a bulldozer or sprayer often work individually. Those who do asphalting work may do so in teams of 16, and those who do infrastructure work in teams of 8 to 10.

Heavy equipment operators work under a foreman’s supervision.

**1.7 JOB MARKET ENTRY CONDITIONS**

To obtain the competency certificate-apprentice in the trade (CCA), candidates must present to the CCQ the original version of an academic transcript or apprenticeship transcript attesting that they have passed the course of study for the DEP in operating construction machines\(^8\), as well as a guarantee of employment from an employer registered with the CCQ for at least 150 hours within a period of not more than three consecutive months\(^9\).

---

\(^8\) To apply, candidates must additionally: supply proof that they are at least 16 years of age; supply their social insurance number and their home address; present their certificate for having passed the course Santé et sécurité générale sur les chantiers de construction; pay the required fees; and designate the union association to which they wish to belong. Source: [http://www.ccq.org/E_CertificatsCompetence/E02_Apprenti/E02_3_CandidatDiplome.aspx?sc_lang=en&profil=GrandPublic](http://www.ccq.org/E_CertificatsCompetence/E02_Apprenti/E02_3_CandidatDiplome.aspx?sc_lang=en&profil=GrandPublic).

Although the construction industry favours graduates for access to the trade, labour shortages may at times make it necessary for the CCQ to admit candidates without a diploma. Thus, candidates without a diploma\textsuperscript{10} are eligible to obtain a competency certificate-apprentice only during a labour shortage and must\textsuperscript{11}:

- Supply proof that they have the academic prerequisites for the program leading to a vocational studies diploma (DEP) in the trade referred to in the application or pledge, by signing a consent letter, to take the necessary training to obtain a DEP;

- Present a guarantee of employment registered during a labour-pool opening by an employer registered with the CCQ, for at least 150 hours over a period of at most three consecutive months\textsuperscript{12}.

The apprentice heavy equipment operator must have completed an apprenticeship period of 2,000 hours in order to be eligible for the four provincial qualification examinations that lead to obtaining the competency certificate-journeyman for each specialty. Credits are paid into the apprenticeship record book of an apprentice heavy equipment operator who has obtained his diploma.

Moreover, certain qualities are sought by employers hiring new heavy equipment operators. The following list presents some of those qualities, in the order they were mentioned and not in order of importance:

- versatility, i.e., the ability to operate several types of machines;
- reliability;
- precision, particularly in doing finishing work.

\textsuperscript{10} Of the 14 heavy equipment operators who participated in the workshop, 4 took the training in operating construction machines.

\textsuperscript{11} Source: 

\textsuperscript{12} The CCQ must have received the employee's complete file within 14 working days following the date of reservation of a place authorized by an employer in a situation of labour shortage and labour-pool opening in order for the employee to obtain the competency certificate applied for.
1.8 PLACE OF WOMEN IN THE TRADE

According to the CCQ\textsuperscript{13}, the proportion of women active in the heavy equipment operator trade was 0.52\% in 2008 (33 women out of 6,329 persons).

According to the heavy equipment operators attending the occupational analysis workshop, there is no explanation for the low proportion of women in the trade.

They point out that the “strong man” image associated with the trade by analogy with the machines’ large size is not justified, since the trade does not involve particular physical requirements.

1.9 CAREER PROSPECTS

Depending on their fields of interest and skills, heavy equipment operators who want to advance in their career will, out of a desire to meet a challenge, seek to work on machines of greater tonnage and more complex operation. The new technologies have a certain attraction.

With experience, operators can also become, for example, team leaders, foremen, superintendents or contractors.

1.10 DEVELOPMENT OF THE TRADE

In recent years, electronics have been integrated into machine operation. Sensors, GPS systems and data display screens are thus present in machines.

The new technologies make it possible to program certain operations and assess the progress of work. The participants think they can therefore understand and assess their work better, and thus improve the quality and precision of their work.

New materials, such as plant mixes and new types of aggregate, are also available.

In addition, the size of machines is changing; small machines are now appearing on construction sites. Nowadays it is possible to work in areas that used to be inaccessible, or to work inside large-area buildings.

1.11 IMPACT OF ENVIRONMENTAL STANDARDS ON THE PRACTICE OF THE TRADE

The execution of some environmental protection work and the observance of environmental standards are more and more prevalent in the trade. The heavy equipment operators attending the workshop gave the following examples of the impact of environmental concerns on the practice of the trade:

- preservation of wetlands;
- installation of membranes inside curves, to lessen the consequences of accidental spills;
- measures for preventing sedimentation when digging ditches, for preventing excess asphalt and bitumen as well as oil leaks, and for recovering waste oil;
- greater precautions to be taken for cleaning machines and servicing them roadside.
2. WORK DESCRIPTION

2.1 TASKS AND OPERATIONS

List of tasks

The following list presents the main tasks performed by heavy equipment operators. The order in which the tasks are presented does not necessarily reflect their importance in the trade.

1. Drive a loader-backhoe
2. Drive a front-end loader
3. Drive a bulldozer
4. Drive a grader
5. Drive a concrete and compacted concrete spreader
6. Drive an asphalt spreader
7. Drive a stabilizer sprayer
8. Drive a cold milling machine (leveller)
9. Drive power compactors (double drum, combined and pneumatic)
10. Load and unload a machine on a long-load dolly or a platform

The table of tasks and operations performed by heavy equipment operators is presented in the following pages.
Table 2.1  Tasks and Operations

<table>
<thead>
<tr>
<th>TASKS</th>
<th>OPERATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Drive a loader-backhoe</td>
<td>1.1 Take instructions from one’s supervisor</td>
</tr>
<tr>
<td></td>
<td>1.2 Inspect the machine and report defects</td>
</tr>
<tr>
<td></td>
<td>1.3 Take safety measures and apply safety standards</td>
</tr>
<tr>
<td></td>
<td>1.4 Plan the work</td>
</tr>
<tr>
<td>1.7 Break materials</td>
<td>1.5 Start the machine</td>
</tr>
<tr>
<td>(hydraulic rock-breaker)</td>
<td>1.6 Stabilize the machine</td>
</tr>
<tr>
<td>1.7 Break materials</td>
<td>1.8 Clear the ground</td>
</tr>
<tr>
<td>1.8 Clear the ground</td>
<td>1.9 Load materials or pile them</td>
</tr>
<tr>
<td>1.9 Load materials or pile</td>
<td>1.10 Transport materials</td>
</tr>
<tr>
<td>them</td>
<td>1.11 Pick up materials (mobile lip bucket, grapple or fork)</td>
</tr>
<tr>
<td>1.12 Equalize surfaces</td>
<td>1.13 Dig trenches and holes and detect infrastructures</td>
</tr>
<tr>
<td>1.12 Equalize surfaces</td>
<td>1.14 Deposit and spread materials as necessary in trenches and holes</td>
</tr>
<tr>
<td>1.14 Deposit and spread</td>
<td>1.15 Handle pipes, fire hydrants, sumps, etc.</td>
</tr>
<tr>
<td>materials as necessary in</td>
<td>1.16 Backfill the excavation</td>
</tr>
<tr>
<td>trenches and holes</td>
<td>1.17 Compact the ground (back bucket)</td>
</tr>
<tr>
<td>1.19 Store various</td>
<td>1.20 Park the machine at the prescribed location</td>
</tr>
<tr>
<td>construction materials</td>
<td>1.21 Clean the machine</td>
</tr>
<tr>
<td></td>
<td>1.22 Maintain the machine</td>
</tr>
<tr>
<td>1.23 Stop the machine</td>
<td>1.24 Write reports and records and report defects</td>
</tr>
<tr>
<td>2. Drive a front-end loader</td>
<td>2.1 Take instructions from one’s supervisor</td>
</tr>
<tr>
<td></td>
<td>2.2 Inspect the machine and report defects</td>
</tr>
<tr>
<td></td>
<td>2.3 Take safety measures and apply safety standards</td>
</tr>
<tr>
<td></td>
<td>2.4 Plan the work</td>
</tr>
<tr>
<td>2.7 Load materials or pile</td>
<td>2.5 Start the machine</td>
</tr>
<tr>
<td>2.8 Pick up materials (fork)</td>
<td>2.6 Clear the ground</td>
</tr>
<tr>
<td>2.9 Transport materials</td>
<td>2.10 Equalize surfaces</td>
</tr>
<tr>
<td>2.13 Spread gravel on the</td>
<td>2.11 Deposit and spread materials as necessary in trenches and holes</td>
</tr>
<tr>
<td>shoulder (body/spreader)</td>
<td>2.12 Handle pipes, fire hydrants, sumps, etc.</td>
</tr>
<tr>
<td>2.14 Sweep surfaces (mechanical broom)</td>
<td>2.15 Park the machine at the prescribed location</td>
</tr>
<tr>
<td>2.15 Park the machine at the</td>
<td>2.16 Clean the machine</td>
</tr>
<tr>
<td>prescribed location</td>
<td>2.17 Stop the machine</td>
</tr>
<tr>
<td>2.18 Maintain the machine</td>
<td>2.19 Write reports and records and report defects</td>
</tr>
<tr>
<td>TASKS</td>
<td>OPERATIONS</td>
</tr>
<tr>
<td>-------</td>
<td>------------</td>
</tr>
<tr>
<td><strong>3. Drive a bulldozer</strong></td>
<td>3.1 Take instructions from one’s supervisor</td>
</tr>
<tr>
<td>3.7 Grub fields</td>
<td>3.8 Rip hard surfaces (ripper)</td>
</tr>
<tr>
<td>3.13 Dig trenches for conduits or wires (mole or torpedo)</td>
<td>3.14 Handle pipes (side boom)</td>
</tr>
<tr>
<td>3.19 Park the machine at the prescribed location</td>
<td>3.20 Remove the electronic system, if applicable</td>
</tr>
<tr>
<td><strong>4. Drive a grader</strong></td>
<td>4.1 Take instructions from one’s supervisor</td>
</tr>
<tr>
<td>4.7 Scarify the work platform</td>
<td>4.8 Shape the construction while observing foundation profiles</td>
</tr>
<tr>
<td>4.13 Remove the electronic system, if applicable</td>
<td>4.14 Clean the machine</td>
</tr>
<tr>
<td>TASKS</td>
<td>OPERATIONS</td>
</tr>
<tr>
<td>-------</td>
<td>------------</td>
</tr>
<tr>
<td><strong>5. Drive a concrete and compacted concrete spreader</strong></td>
<td><strong>5.1 Take instructions from one's supervisor</strong></td>
</tr>
<tr>
<td><strong>5.7 Use an escort to move the machine to its work area and position the machine</strong></td>
<td><strong>5.8 Prepare the machine for operations</strong></td>
</tr>
<tr>
<td><strong>5.13 Clean the machine</strong></td>
<td><strong>5.14 Maintain the machine</strong></td>
</tr>
<tr>
<td><strong>6. Drive an asphalt spreader</strong></td>
<td><strong>6.1 Take instructions from one's supervisor</strong></td>
</tr>
<tr>
<td><strong>6.7 Plan the work</strong></td>
<td><strong>6.8 Use an escort to move the machine to its work area and position the machine</strong></td>
</tr>
<tr>
<td><strong>6.13 Put the machine in the stop position</strong></td>
<td><strong>6.14 Clean the machine</strong></td>
</tr>
<tr>
<td>TASKS</td>
<td>OPERATIONS</td>
</tr>
<tr>
<td>---------------------</td>
<td>-----------------------------------</td>
</tr>
<tr>
<td>7. Drive a stabilizer sprayer</td>
<td>7.1 Take instructions from one's supervisor</td>
</tr>
<tr>
<td></td>
<td>7.2 Inspect the machine and report defects</td>
</tr>
<tr>
<td></td>
<td>7.3 Take safety measures and apply safety standards</td>
</tr>
<tr>
<td></td>
<td>7.4 Start the machine</td>
</tr>
<tr>
<td>7.13 Stop the machine</td>
<td>7.5 Inspect the drum and teeth</td>
</tr>
<tr>
<td></td>
<td>7.6 Plan the work</td>
</tr>
<tr>
<td>7.7 Use an escort to move the machine to its work area and position the machine</td>
<td>7.8 Prepare the machine for operations to be performed</td>
</tr>
<tr>
<td></td>
<td>7.9 Carry out the work</td>
</tr>
<tr>
<td></td>
<td>7.10 Use an escort to move the machine to its parking platform</td>
</tr>
<tr>
<td></td>
<td>7.11 Clean the machine</td>
</tr>
<tr>
<td>8. Drive a cold milling machine (leveller)</td>
<td>8.1 Take instructions from one's supervisor</td>
</tr>
<tr>
<td></td>
<td>8.2 Inspect the machine and report defects</td>
</tr>
<tr>
<td></td>
<td>8.3 Take safety measures and apply safety standards</td>
</tr>
<tr>
<td></td>
<td>8.4 Start the machine</td>
</tr>
<tr>
<td>7.19 Stop the machine</td>
<td>8.5 Install and check the electronic system, if applicable</td>
</tr>
<tr>
<td></td>
<td>8.6 Inspect the drum and teeth</td>
</tr>
<tr>
<td>8.13 Carry out the work</td>
<td>8.7 Fill the tank with water to be sprayed</td>
</tr>
<tr>
<td></td>
<td>8.8 Check the operation of water sprinklers</td>
</tr>
<tr>
<td></td>
<td>8.9 Plan the work</td>
</tr>
<tr>
<td></td>
<td>8.10 Use an escort to move the machine to its work area and position the machine</td>
</tr>
<tr>
<td></td>
<td>8.11 Prepare the machine for operations to be performed</td>
</tr>
<tr>
<td></td>
<td>8.12 Monitor the safety of personnel on the ground</td>
</tr>
<tr>
<td>8.19 Stop the machine</td>
<td>8.14 Remove the electronic system, if applicable</td>
</tr>
<tr>
<td></td>
<td>8.15 Park the machine at the cleaning location</td>
</tr>
<tr>
<td></td>
<td>8.16 Clean the machine</td>
</tr>
<tr>
<td></td>
<td>8.17 Use an escort to move the machine to its parking platform</td>
</tr>
<tr>
<td></td>
<td>8.18 Maintain the machine</td>
</tr>
<tr>
<td>TASKS</td>
<td>OPERATIONS</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td><strong>9. Drive power compactors (double drum, combined and pneumatic)</strong></td>
<td>9.1 Take instructions from one's supervisor</td>
</tr>
<tr>
<td></td>
<td>9.2 Inspect the machine and report defects</td>
</tr>
<tr>
<td></td>
<td>9.3 Take safety measures and apply safety standards</td>
</tr>
<tr>
<td></td>
<td>9.4 Plan the work</td>
</tr>
<tr>
<td></td>
<td>9.5 Start the machine</td>
</tr>
<tr>
<td></td>
<td>9.6 Install the electronic system, if applicable</td>
</tr>
<tr>
<td></td>
<td>9.7 Fill the water tank for spraying (plant mix)</td>
</tr>
<tr>
<td></td>
<td>9.8 Check the operation of water sprinklers (plant mix)</td>
</tr>
<tr>
<td></td>
<td>9.9 Move the machine to the place of work</td>
</tr>
<tr>
<td></td>
<td>9.10 Select vibration amplitude and frequency (plant mix and aggregate)</td>
</tr>
<tr>
<td></td>
<td>9.11 Select the tire pressure and speed (plant mix)</td>
</tr>
<tr>
<td></td>
<td>9.12 Proceed to compaction</td>
</tr>
<tr>
<td></td>
<td>9.13 Disengage the vibration system before each change in direction (plant mix and aggregate)</td>
</tr>
<tr>
<td></td>
<td>9.14 Park the machine at the prescribed location</td>
</tr>
<tr>
<td></td>
<td>9.15 Remove the electronic system, if applicable</td>
</tr>
<tr>
<td></td>
<td>9.16 Clean the machine</td>
</tr>
<tr>
<td></td>
<td>9.17 Stop the machine</td>
</tr>
<tr>
<td></td>
<td>9.18 Maintain the machine</td>
</tr>
<tr>
<td></td>
<td>9.19 Write reports and records and report defects</td>
</tr>
<tr>
<td><strong>10. Load and unload a machine on a long-load dolly or a platform</strong></td>
<td>10.1 Clean the machine of any mud, clay, etc.</td>
</tr>
<tr>
<td></td>
<td>10.2 Ensure the cleanliness and adhesion of the long-load dolly’s or platform’s floor</td>
</tr>
<tr>
<td></td>
<td>10.3 Ensure the solidness of access ramps, if applicable</td>
</tr>
<tr>
<td></td>
<td>10.4 Mount the machine on the long-load dolly or platform</td>
</tr>
<tr>
<td></td>
<td>10.5 Put the machine in the stop position and power the accessories</td>
</tr>
<tr>
<td></td>
<td>10.6 Apply the machine’s parking brakes</td>
</tr>
<tr>
<td></td>
<td>10.7 Unload the machine from the long-load dolly or platform</td>
</tr>
</tbody>
</table>
2.2 OPERATIONS, SUB-OPERATIONS AND CLARIFICATIONS

In the following pages are presented the sub-operations related to some of the operations, as well as a few clarifications made by the participants.

Task 10, “Load and unload a machine on a long-load dolly or a platform,” was not matched with a description of sub-operations or clarifications by the participants.

Table 2.2 Sub-Operations and Operation Clarifications

<table>
<thead>
<tr>
<th>TASK 1</th>
<th>DRIVE A LOADER-BACKHOE</th>
</tr>
</thead>
</table>

Examples of work outcomes: loading and handling; preparation of curbs and sidewalks; installation of sumps, conduits, posts; embankments; excavation; surface preparation; etc.

<table>
<thead>
<tr>
<th>Operations</th>
<th>Sub-Operations</th>
<th>Clarifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1 Take instructions from one’s supervisor</td>
<td>1.1.1 Obtain information about:  • the nature of work to be done  • obstacles on the ground  1.1.2 Interpret plans, if applicable</td>
<td></td>
</tr>
<tr>
<td>1.2 Inspect the machine and report defects</td>
<td>1.2.1 Inspect the machine’s mechanisms and accessories  1.2.2 Check oil and fluid levels  1.2.3 Inspect cutting blades and the front and back buckets  1.2.4 Check the condition, air pressure and rims of tires  1.2.5 Check the automatic back-up horn</td>
<td></td>
</tr>
<tr>
<td>1.3 Take safety measures and apply safety standards</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.4 Plan the work</td>
<td>1.4.1 Identify the nature of soils to work on  1.4.2 Read and interpret data written on grade skates:  • interpret grade skates  • find out about required elevation levels  1.4.3 Detect underground conduits or wires</td>
<td></td>
</tr>
<tr>
<td>Operations</td>
<td>Sub-Operations</td>
<td>Clarifications</td>
</tr>
<tr>
<td>------------------------------------</td>
<td>----------------------------------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>1.5 Start the machine</td>
<td>1.5.1 Put the main switch on “on” position</td>
<td>In cold weather, the machine has to warm up and the operator has to start it as soon as he arrives at work. Under these circumstances, the sequence of operations is inverted and the work is planned after startup.</td>
</tr>
<tr>
<td></td>
<td>1.5.2 Apply the startup procedure while taking the outdoor temperature into account</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.5.3 Check the smoke</td>
<td></td>
</tr>
<tr>
<td>1.6 Stabilize the machine</td>
<td>1.6.1 Position the machine</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.6.2 Lower the outriggers</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.6.3 Lower the front bucket</td>
<td></td>
</tr>
<tr>
<td>1.7 Break materials</td>
<td>(hydraulic rock-breaker)</td>
<td></td>
</tr>
<tr>
<td>1.8 Clear the ground</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.9 Load materials or pile them</td>
<td>1.9.1 Raise back accessories to their highest level</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.9.2 Place the locking detent on accessories</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.9.3 Use the front bucket</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.9.4 Maintain an equal work platform</td>
<td></td>
</tr>
<tr>
<td>1.10 Transport materials</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.11 Pick up materials</td>
<td>(mobile lip bucket, grapple or fork)</td>
<td>Accessories are in the front of the machine.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.12 Equalize surfaces</td>
<td>(bucket)</td>
<td>The bucket may be in the front or rear of the machine.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.13 Dig trenches and holes and</td>
<td>1.13.1 Unlock the arm</td>
<td>This operation must be performed with care to avoid breaking infrastructures.</td>
</tr>
<tr>
<td>detect infrastructures</td>
<td>1.13.2 Extend the boom</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.13.3 Open the bucket</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.13.4 Lower the boom, retract and close the bucket</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.13.5 Raise the boom</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.13.6 Make the bucket pivot to the side</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.13.7 Unload bucket contents in a truck or on the ground</td>
<td></td>
</tr>
</tbody>
</table>
## TASK 1 DRIVE A LOADER-BACKHOE

<table>
<thead>
<tr>
<th>Operations</th>
<th>Sub-Operations</th>
<th>Clarifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.14 Deposit and spread materials as necessary in trenches and holes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.15 Handle pipes, fire hydrants, sumps, etc.</td>
<td>1.15.1 Check and install slings, if applicable</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.15.2 Attach the equipment, if applicable</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.15.3 Place the equipment at the prescribed location</td>
<td></td>
</tr>
<tr>
<td>1.16 Backfill the excavation</td>
<td></td>
<td>Backfilling must be done in uniform layers.</td>
</tr>
<tr>
<td>1.17 Compact the ground (back bucket)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.18 Sweep surfaces (mechanical broom)</td>
<td></td>
<td>This operation is usually performed to clean the shoulders after asphalting or concrete surfacing.</td>
</tr>
<tr>
<td>1.19 Store various construction materials</td>
<td>1.19.1 Choose flat dry ground located in a safe area</td>
<td>The materials used may be pipes, manholes, sewers, wood, street lamps, sumps, wire rolls, etc.</td>
</tr>
<tr>
<td></td>
<td>1.19.2 Ensure that the area is accessible to other machines</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.19.3 Pile the materials up</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.19.4 Ensure the stability of materials</td>
<td></td>
</tr>
<tr>
<td>1.20 Park the machine at the prescribed location</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.21 Clean the machine</td>
<td>1.21.1 Clean the anchor points</td>
<td>Bucket cleaning prevents soil contamination and can be done at any time during the work if circumstances require it.</td>
</tr>
<tr>
<td></td>
<td>1.21.2 Clean the buckets</td>
<td></td>
</tr>
<tr>
<td>1.22 Maintain the machine</td>
<td>1.22.1 Lubricate the components</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.22.2 Replace the back bucket teeth, if applicable¹⁴</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.22.3 Reclose and block the accessories</td>
<td></td>
</tr>
</tbody>
</table>

¹⁴ The CCQ’s Direction de l’application des conventions collectives has issued a notice to the effect that the heavy machinery mechanic is responsible for this sub-operation.
### TASK 1  DRIVE A LOADER-BACKHOE

<table>
<thead>
<tr>
<th>Operations</th>
<th>Sub-Operations</th>
<th>Clarifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.23 Stop the machine</td>
<td>1.23.1 Lower the accessories</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.23.2 Apply the closing procedure</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.23.3 Put the main switch on &quot;off&quot; position</td>
<td></td>
</tr>
<tr>
<td>1.24 Write reports and records and report defects</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### TASK 2  DRIVE A FRONT-END LOADER

Examples of work outcomes: loading and unloading; spreading of aggregate; preparation of surfaces; etc.

<table>
<thead>
<tr>
<th>Operations</th>
<th>Sub-Operations</th>
<th>Clarifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.1 Take instructions from one's supervisor</td>
<td>2.1.1 Obtain information about:</td>
<td>Obtain information about:</td>
</tr>
<tr>
<td></td>
<td>• the nature of work to be done</td>
<td>• the nature of work to be done</td>
</tr>
<tr>
<td></td>
<td>• obstacles on the ground</td>
<td>• obstacles on the ground</td>
</tr>
<tr>
<td></td>
<td>2.1.2 Interpret plans, if applicable</td>
<td>Interpret plans, if applicable</td>
</tr>
<tr>
<td>2.2 Inspect the machine and report defects</td>
<td>2.2.1 Inspect the machine’s mechanisms and accessories</td>
<td>Inspect the machine’s mechanisms and accessories</td>
</tr>
<tr>
<td></td>
<td>2.2.2 Check oil and fluid levels</td>
<td>Check oil and fluid levels</td>
</tr>
<tr>
<td></td>
<td>2.2.3 Inspect the front bucket’s cutting blades</td>
<td>Inspect the front bucket’s cutting blades</td>
</tr>
<tr>
<td></td>
<td>2.2.4 Check the condition, air pressure and rims of tires</td>
<td>Check the condition, air pressure and rims of tires</td>
</tr>
<tr>
<td></td>
<td>2.2.5 Check the automatic back-up horn</td>
<td>Check the automatic back-up horn</td>
</tr>
<tr>
<td>2.3 Take safety measures and apply safety standards</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.4 Plan the work</td>
<td>2.4.1 Identify the nature of soils to work on</td>
<td>Identify the nature of soils to work on</td>
</tr>
<tr>
<td></td>
<td>2.4.2 Read and interpret data written on grade skates</td>
<td>Read and interpret data written on grade skates</td>
</tr>
<tr>
<td></td>
<td>2.4.3 Adjust the balance for loading work</td>
<td>Adjust the balance for loading work</td>
</tr>
</tbody>
</table>
## TASK 2  DRIVE A FRONT-END LOADER

<table>
<thead>
<tr>
<th>Operations</th>
<th>Sub-Operations</th>
<th>Clarifications</th>
</tr>
</thead>
</table>
| 2.5 2.5 Start the machine | 2.5.1 Put the main switch on “on” position  
2.5.2 Apply the startup procedure while taking the outdoor temperature into account  
2.5.3 Check the smoke | In cold weather, the machine has to warm up and the operator has to start it as soon as he arrives at work. Under these circumstances, the sequence of operations is inverted and the work is planned after startup. |
| 2.6 Clear the ground |                                                                                |                                                                                |
| 2.7 Load materials or pile them |                                                                                |                                                                                |
| 2.8 Pick up materials (fork) |                                                                                |                                                                                |
| 2.9 Transport materials |                                                                                |                                                                                |
| 2.10 Equalize surfaces |                                                                                |                                                                                |
| 2.11 Deposit and spread materials as necessary in trenches and holes |                                                                                |                                                                                |
| 2.12 Handle pipes, fire hydrants, sumps, etc. | 2.12.1 Check and install slings, if applicable  
2.12.2 Attach the equipment, if applicable  
2.12.3 Place the equipment at the prescribed location |                                                                                |
| 2.13 Spread gravel on the shoulder (body/spreader) |                                                                                |                                                                                |
| 2.14 Sweep surfaces (mechanical broom) |                                                                                | This operation is usually performed to clean the shoulders after asphalting or concrete surfacing. |
| 2.15 Park the machine at the prescribed location |                                                                                |                                                                                |
### TASK 2  DRIVE A FRONT-END LOADER

<table>
<thead>
<tr>
<th>Operations</th>
<th>Sub-Operations</th>
<th>Clarifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.16 Clean the machine</td>
<td>2.16.1 Clean the anchor points</td>
<td>Bucket cleaning prevents soil contamination and can be done at any time during the work if circumstances require it.</td>
</tr>
<tr>
<td></td>
<td>2.16.2 Clean the bucket</td>
<td></td>
</tr>
<tr>
<td>2.17 Stop the machine</td>
<td>2.17.1 Lower the accessories</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2.17.2 Apply the closing procedure</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2.17.3 Put the main switch on “off”</td>
<td></td>
</tr>
<tr>
<td></td>
<td>position</td>
<td></td>
</tr>
<tr>
<td>2.18 Maintain the machine</td>
<td>2.18.1 Lubricate the components</td>
<td></td>
</tr>
<tr>
<td>2.19 Write reports and records and report defects</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### TASK 3  DRIVE A BULLDOZER

Examples of work outcomes: topsoil stripping and preparation; civil engineering work, for example roads, parking lots, terrepleins, shoulders, overpass approaches, etc.

<table>
<thead>
<tr>
<th>Operations</th>
<th>Sub-Operations</th>
<th>Clarifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1 Take instructions from one's supervisor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.2 Inspect the machine and report defects</td>
<td>3.2.1 Inspect the machine’s mechanisms and accessories</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3.2.2 Check oil and fluid levels</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3.2.3 Check the fuel</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3.2.4 Inspect the cutting blades</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3.2.5 Check the automatic back-up horn</td>
<td></td>
</tr>
<tr>
<td>3.3 Take safety measures and apply safety standards</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.4 Plan the work</td>
<td>3.4.1 Identify the nature of soils to work on</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3.4.2 Read and interpret data</td>
<td></td>
</tr>
<tr>
<td></td>
<td>written on grade skates</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• interpret grade skates</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• find out about required</td>
<td></td>
</tr>
<tr>
<td></td>
<td>elevation levels</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• adjust electronic grading</td>
<td></td>
</tr>
<tr>
<td></td>
<td>instruments</td>
<td></td>
</tr>
</tbody>
</table>
### TASK 3  DRIVE A BULLDOZER

<table>
<thead>
<tr>
<th>Operations</th>
<th>Sub-Operations</th>
<th>Clarifications</th>
</tr>
</thead>
</table>
| 3.5        | Start the machine | 3.5.1 Put the main switch on «on» position  
3.5.2 Apply the startup procedure while taking the outdoor temperature into account | In cold weather, the machine has to warm up and the operator has to start it as soon as he arrives at work. Under these circumstances, the sequence of operations is inverted and the work is planned after startup. |
| 3.6        | Install and check the electronic system, if applicable | 3.6.1 Adjust compensation settings, if applicable |
| 3.7        | Grub fields | 3.7.1 Use the winch  
3.7.2 Use the cutting blade |
| 3.8        | Rip hard surfaces (ripper) | 3.8.1 Adjust the ripper’s tooth according to the work to be done  
3.8.2 Move forward while gradually lowering the tooth |
| 3.9        | Clear the ground | 3.9.1 Back up to the prescribed location  
3.9.2 Lower the blade  
3.9.3 Move forward while raising the blade  
3.9.4 Spread the materials or pile them | The purpose of this operation is to clean the working area. |
| 3.10       | Scarify the work platform |  |
| 3.11       | Shape the construction while observing foundation profiles | 3.11.1 Continually adjust the blade’s horizontal and vertical angles  
3.11.2 Continually adjust blade elevation to ensure uniform grading  
3.11.3 Estimate the required quantity of materials  
3.11.4 Spread and grade materials  
3.11.5 Ensure that elevation levels are observed | This operation is performed with the corner of the blade. |
<table>
<thead>
<tr>
<th>Operations</th>
<th>Sub-Operations</th>
<th>Clarifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.12 Spread and grade materials</td>
<td>3.12.1 Determine cutting blade angles</td>
<td>The angles vary according to the nature of work to be done.</td>
</tr>
<tr>
<td></td>
<td>3.12.2 Adjust cutting blade angles</td>
<td></td>
</tr>
<tr>
<td>3.13 Dig trenches for conduits or</td>
<td>3.13.1 Slowly approach the other machine</td>
<td></td>
</tr>
<tr>
<td>wires (mole or torpedo)</td>
<td>3.13.2 Move in position</td>
<td></td>
</tr>
<tr>
<td>3.14 Handle pipes (side boom)</td>
<td>3.14.1 Move forward</td>
<td></td>
</tr>
<tr>
<td>3.15 Backfill the terrain</td>
<td></td>
<td>This operation can be performed with on-site or addition materials.</td>
</tr>
<tr>
<td>3.16 Check elevation levels</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.17 Push other machines</td>
<td>3.17.1 Ask for assistance from another worker to run</td>
<td></td>
</tr>
<tr>
<td></td>
<td>the cable</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3.17.2 Apply the machine's brakes</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3.17.3 Ensure that no workers are near the cable</td>
<td></td>
</tr>
<tr>
<td></td>
<td>when the winch is used</td>
<td></td>
</tr>
<tr>
<td>3.19 Park the machine at the</td>
<td></td>
<td></td>
</tr>
<tr>
<td>prescribed location</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.20 Remove the electronic system,</td>
<td></td>
<td></td>
</tr>
<tr>
<td>if applicable</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.21 Clean the machine</td>
<td>3.21.1 Clean the undercarriage</td>
<td>This operation prevents soil contamination and can be performed at any time if</td>
</tr>
<tr>
<td></td>
<td>3.21.2 Clean the blade</td>
<td>circumstances require it.</td>
</tr>
<tr>
<td>3.22 Maintain the machine</td>
<td>3.22.1 Lubricate the components</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3.22.2 Clean the cab and windows</td>
<td></td>
</tr>
</tbody>
</table>
### TASK 3  DRIVE A BULLDOZER

<table>
<thead>
<tr>
<th>Operations</th>
<th>Sub-Operations</th>
<th>Clarifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.23   Stop the machine</td>
<td>3.23.1 Lower the accessories</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3.23.2 Apply the closing procedure</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3.23.3 Put the main switch on «off» position</td>
<td></td>
</tr>
</tbody>
</table>

3.24 Write reports and records and report defects

### TASK 4  DRIVE A GRADER

Examples of work outcomes: site preparation; grading of roads, parking lots, shoulders, airport runways; scarifying work; etc.

<table>
<thead>
<tr>
<th>Operations</th>
<th>Sub-Operations</th>
<th>Clarifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.1 Take instructions from one’s supervisor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.2 Inspect the machine and report defects</td>
<td>4.2.1 Inspect the machine’s mechanisms and accessories</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4.2.2 Check oil and fluid levels</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4.2.3 Inspect the cutting blades</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4.2.4 Check the condition, air pressure and rims of tires</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4.2.5 Check the automatic back-up horn</td>
<td></td>
</tr>
<tr>
<td>4.3 Take safety measures and apply safety standards</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.4 Plan the work</td>
<td>4.4.1 Identify the nature of soils to work on</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4.4.2 Read and interpret data written on grade skates:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• interpret grade skates</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• find out about required elevation levels</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• adjust electronic grading instruments</td>
<td></td>
</tr>
<tr>
<td>4.5 Start the machine</td>
<td>4.5.1 Put the main switch on «on» position</td>
<td>In cold weather, the machine has to warm up and the operator has to start it</td>
</tr>
</tbody>
</table>
### TASK 4  DRIVE A GRADER

<table>
<thead>
<tr>
<th>Operations</th>
<th>Sub-Operations</th>
<th>Clarifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.6</td>
<td>Install and check the electronic system, if applicable</td>
<td>4.6.1 Adjust compensation settings, if applicable</td>
</tr>
<tr>
<td>4.7</td>
<td>Scarify the work platform</td>
<td></td>
</tr>
</tbody>
</table>
| 4.8        | Shape the construction while observing foundation profiles | 4.8.1 Continually adjust the blade’s horizontal and vertical angles  
4.8.2 Continually adjust blade elevation to ensure uniform grading  
4.8.3 Estimate the required quantity of materials  
4.8.4 Spread and grade materials  
4.8.5 Ensure that elevation levels are observed |
| 4.9        | Do the finish grading | 4.9.1 Continually adjust the blade’s horizontal and vertical angles  
4.9.2 Continually adjust blade elevation to ensure uniform grading  
4.9.3 Estimate the required quantity of materials  
4.9.4 Ensure that materials are discharged beyond the passage of the machine’s rear wheels  
4.9.5 Spread and grade materials  
4.9.6 Ensure that elevation levels are observed |
| 4.10       | Spread gravel on the shoulder (body/spreader) | |
| 4.11       | Report detected abnormalities in the aggregate and the structure profiles | 4.11.1 Check whether the aggregate is too dry or too moist  
4.11.2 Check the possibility of incorrect surveying reference points  
4.11.3 Notify the persons concerned |
**TASK 4 DRIVE A GRADER**

<table>
<thead>
<tr>
<th>Operations</th>
<th>Sub-Operations</th>
<th>Clarifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.12 Park the machine at the prescribed location at the end of work</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.13 Remove the electronic system, if applicable</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.14 Clean the machine</td>
<td>4.14.1 Clean the windows</td>
<td></td>
</tr>
<tr>
<td>4.15 Maintain the machine</td>
<td>4.15.1 Lubricate the components</td>
<td></td>
</tr>
</tbody>
</table>
| 4.16 Stop the machine | 4.16.1 Lower the blade  
4.16.2 Apply the closing procedure  
4.16.3 Put the main switch on «off» position | |
| 4.17 Write reports and records and report defects | | |

**TASK 5 DRIVE A CONCRETE AND COMPACTED CONCRETE SPREADER**

Work results: surfacing of concrete roads, parking lots; building cement concrete safety barriers (New Jersey type barrier).

<table>
<thead>
<tr>
<th>Operations</th>
<th>Sub-Operations</th>
<th>Clarifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.1 Take instructions from one’s supervisor</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| 5.2 Inspect the machine and report defects | 5.2.1 Check oil and fluid levels  
5.2.2 Check the water level  
5.2.3 Check the tracks adjustment  
5.2.4 Check the automatic back-up horn | |
| 5.3 Take safety measures and apply safety standards | 5.3.1 Check whether the work area is secured  
5.3.2 Ensure the presence of signs | |
## TASK 5  DRIVE A CONCRETE AND COMPACTED CONCRETE SPREADER

<table>
<thead>
<tr>
<th>Operations</th>
<th>Sub-Operations</th>
<th>Clarifications</th>
</tr>
</thead>
</table>
| 5.4  Plan the work | 5.4.1 Read and interpret data written on grade skates:  
• interpret grade skates  
• find out about required elevation levels  
• adjust electronic grading instruments  
5.4.2 Determine the starting and arrival points |  |
| 5.5  Install and check the electronic system, if applicable | 5.5.1 Adjust compensation settings, if applicable | Depending on the type of machine, the electronic system can be installed after 5.7. |
| 5.6  Start the machine | | |
| 5.7  Use an escort to move the machine to its work area and position the machine | | |
| 5.8  Prepare the machine for operations | 5.8.1 Adjust the electronic system:  
• level  
• steering shaft  
5.8.2 Ensure that all work team members are in position  
5.8.3 Spray vegetable oil on the mould, the screw, etc.  
5.8.4 Order the machine’s hopper to be loaded  
5.8.5 Make sure to have a sufficient volume of concrete before it is laid |  |
| 5.9  Lay the concrete | 5.9.1 Depending on surface configuration (road, parking lot, intersection, etc.), adjust:  
• the machine’s speed  
• paving thickness  
• paving width (concrete paver only) | Paving thickness and width are set in cooperation with the grading labourers. |
<table>
<thead>
<tr>
<th>Operations</th>
<th>Sub-Operations</th>
<th>Clarifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.10</td>
<td>Monitor the safety of personnel on the ground</td>
<td></td>
</tr>
<tr>
<td>5.11</td>
<td>Put the machine in the stop position</td>
<td></td>
</tr>
<tr>
<td>5.12</td>
<td>Remove the electronic system, if applicable</td>
<td></td>
</tr>
<tr>
<td>5.13</td>
<td>Clean the machine</td>
<td>5.13.1 Wash with water</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5.13.2 If the concrete is set, scratch or break it with a sledgehammer</td>
</tr>
<tr>
<td>5.14</td>
<td>Maintain the machine</td>
<td>5.14.1 Lubricate the gantry and the endless screw, or check and activate the automatic lubrication system</td>
</tr>
<tr>
<td>5.15</td>
<td>Use an escort to move the machine to its parking platform</td>
<td>5.15.1 Start the machine</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5.15.2 Go to the parking platform</td>
</tr>
<tr>
<td>5.16</td>
<td>Stop the machine</td>
<td>5.16.1 Apply the closing procedure</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5.16.2 Put the main switch on «off» position</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5.16.3 Install security bars</td>
</tr>
<tr>
<td>5.17</td>
<td>Write reports and records and report defects</td>
<td>5.17.1 Enter the machine’s hours of use</td>
</tr>
</tbody>
</table>
## TASK 6  DRIVE AN ASPHALT SPREADER

Work results: asphalting of roads, parking lots, runways, etc.

<table>
<thead>
<tr>
<th>Operations</th>
<th>Sub-Operations</th>
<th>Clarifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.1 Take instructions from one's supervisor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.2 Inspect the machine and report defects</td>
<td>6.2.1 Inspect the machine’s mechanisms and accessories (conveyors, screws, doors, etc.)</td>
<td>The number of vibrators varies according to table width.</td>
</tr>
<tr>
<td></td>
<td>6.2.2 Inspect the table</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6.2.3 Check the fuel</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6.2.4 Check oil and fluid levels</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6.2.5 Check the vibrators</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6.2.6 Check the condition, air pressure and rims of tires</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6.2.7 Check the automatic back-up horn</td>
<td></td>
</tr>
<tr>
<td>6.3 Take safety measures and apply safety standards</td>
<td>6.3.1 Check whether the work area is secured</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6.3.2 Ensure the presence of signs</td>
<td></td>
</tr>
<tr>
<td>6.4 Start the machine</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.5 Heat the smoothing bar</td>
<td>6.5.1 Start the table’s heating system</td>
<td>The table’s heating system can operate on diesel, propane or electricity.</td>
</tr>
<tr>
<td></td>
<td>6.5.2 Check the table’s temperature</td>
<td></td>
</tr>
<tr>
<td>6.6 Install and check the electronic system, if applicable</td>
<td>6.6.1 Adjust the table’s compensation settings, if applicable</td>
<td></td>
</tr>
<tr>
<td>6.7 Plan the work</td>
<td>6.7.1 Read and interpret data written on grade skates:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• interpret grade skates</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• find out about required elevation levels</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• adjust electronic grading instruments</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6.7.2 Determine the starting and arrival points</td>
<td></td>
</tr>
<tr>
<td>Operations</td>
<td>Sub-Operations</td>
<td>Clarifications</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>----------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>6.8 Use an escort to move</td>
<td>6.9.1 Adjust the electronic system:</td>
<td>Paving thickness, paving width and slope percentages are set in cooperation with grading labourers.</td>
</tr>
<tr>
<td>the machine to its work area and</td>
<td>• level</td>
<td></td>
</tr>
<tr>
<td>position the machine</td>
<td>• steering shaft</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6.9.2 Activate the chain drive and spreading screws for</td>
<td></td>
</tr>
<tr>
<td></td>
<td>laying the plant mix</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6.9.3 Ensure that all work team members are in position</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6.9.4 Install the thickness guide</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6.9.5 Lower the smoothing bar</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6.9.6 Adjust the alignment guide</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6.9.7 Adjust the approach angle of the smoothing bar</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6.9.8 Order the machine’s hopper to be loaded</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Make sure to have a sufficient volume of plant mix before it is laid</td>
<td></td>
</tr>
<tr>
<td>6.9 Prepare the machine for</td>
<td>6.10.1 Depending on surface configuration (road, parking</td>
<td></td>
</tr>
<tr>
<td>operations</td>
<td>lot, intersection, etc.), adjust:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• machine speed</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• paving thickness</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• paving width</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• slope percentages</td>
<td></td>
</tr>
<tr>
<td>6.10 Lay the plant mix</td>
<td>6.11 Monitor the safety of personnel on the ground</td>
<td></td>
</tr>
<tr>
<td>6.12 Remove the electronic</td>
<td>6.13 Put the machine in the stop position</td>
<td></td>
</tr>
<tr>
<td>system, if applicable</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### TASK 6  DRIVE AN ASPHALT SPREADER

<table>
<thead>
<tr>
<th>Operations</th>
<th>Sub-Operations</th>
<th>Clarifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.14 Clean the machine</td>
<td>6.14.1 Stop the machine</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6.14.2 Clean the machine of any plant mix</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6.14.3 Spray the hopper, screw feeder, spreading screws and smoothing bar with a washing agent</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6.14.4 Leave the smoothing bar raised and fasten it</td>
<td></td>
</tr>
<tr>
<td>6.15 Maintain the machine</td>
<td>6.15.1 Lubricate the gantry and the endless screw, or check and activate the automatic lubrication system</td>
<td></td>
</tr>
<tr>
<td>6.16 Use an escort to move the machine to its parking platform</td>
<td>6.16.1 Start the machine</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6.16.2 Go to the parking platform</td>
<td></td>
</tr>
<tr>
<td>6.17 Stop the machine</td>
<td>6.17.1 Apply the closing procedure</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6.17.2 Put the main switch on «off» position</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6.17.3 Install security bars</td>
<td></td>
</tr>
<tr>
<td>6.18 Write reports and records and report defects</td>
<td>6.18.1 Enter the machine’s hours of use</td>
<td></td>
</tr>
</tbody>
</table>

---

### TASK 7  DRIVE A STABILIZER SPRAYER

Work results: recycling road surfaces with aggregate and plant mix; spraying aggregate.

<table>
<thead>
<tr>
<th>Operations</th>
<th>Sub-Operations</th>
<th>Clarifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.1 Take instructions from one’s supervisor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.2 Inspect the machine and report defects</td>
<td>7.2.1 Check oil and fluid levels</td>
<td></td>
</tr>
<tr>
<td>7.3 Take safety measures and apply safety standards</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operations</td>
<td>Sub-Operations</td>
<td>Clarifications</td>
</tr>
<tr>
<td>------------</td>
<td>----------------</td>
<td>----------------</td>
</tr>
<tr>
<td>7.4 Start the machine</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.5 Inspect the drum and teeth</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.6 Plan the work</td>
<td>7.6.1 Inspect the path (manholes, rail, expansion joint, other obstacles)</td>
<td>The binder is used for doing road stabilization work.</td>
</tr>
<tr>
<td></td>
<td>7.6.2 Mark obstacles with paint</td>
<td></td>
</tr>
<tr>
<td>7.7 Use an escort to move the machine to its work area and position the machine</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.8 Prepare the machine for operations to be performed</td>
<td>7.8.1 Activate the drum</td>
<td>On certain occasions, aggregate can be added to modify the granulometry of materials.</td>
</tr>
<tr>
<td></td>
<td>7.8.2 Gradually lower the drum to the desired cutting depth</td>
<td></td>
</tr>
<tr>
<td></td>
<td>7.8.3 Adjust the binder’s flow rate, if applicable</td>
<td></td>
</tr>
<tr>
<td>7.9 Carry out the work</td>
<td>7.9.1 Adjust the machine’s advance according to the nature of work to be done</td>
<td></td>
</tr>
<tr>
<td></td>
<td>7.9.2 Gradually raise the drum back up</td>
<td></td>
</tr>
<tr>
<td></td>
<td>7.9.3 Disengage the drum</td>
<td></td>
</tr>
<tr>
<td></td>
<td>7.9.4 Check the wear of the teeth, teeth holders and drum</td>
<td></td>
</tr>
<tr>
<td>7.10 Use an escort to move the machine to its parking platform</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.11 Clean the machine</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.12 Maintain the machine</td>
<td>7.12.1 Replace teeth and teeth holders</td>
<td></td>
</tr>
<tr>
<td></td>
<td>7.12.2 Arc weld (SMAW) the teeth holders</td>
<td></td>
</tr>
</tbody>
</table>

15. The CCQ’s Direction de l’application des conventions collectives has issued a notice to the effect that the heavy machinery mechanic is responsible for sub-operations 7.12.1 and 7.12.2.
### TASK 7  DRIVE A STABILIZER SPRAYER

<table>
<thead>
<tr>
<th>Operations</th>
<th>Sub-Operations</th>
<th>Clarifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.13 Stop the machine</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.14 Write reports and records and report defects</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### TASK 8  DRIVE A COLD MILLING MACHINE (LEVELLER)

Work results: recycling plant mix and concrete road surfaces.

<table>
<thead>
<tr>
<th>Operations</th>
<th>Sub-Operations</th>
<th>Clarifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.1 Take instructions from one's supervisor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.2 Inspect the machine and report defects</td>
<td>8.2.1 Check oil and fluid levels</td>
<td></td>
</tr>
<tr>
<td>8.3 Take safety measures and apply safety standards</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.4 Start the machine</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.5 Install and check the electronic system, if applicable</td>
<td>8.5.1 Adjust compensation settings, if applicable</td>
<td></td>
</tr>
<tr>
<td>8.6 Inspect the drum and teeth</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.7 Fill the tank with water to be sprayed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.8 Check the operation of water sprinklers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.9 Plan the work</td>
<td>8.9.1 Inspect the path (manholes, rail, expansion joint, other obstacles)</td>
<td>8.9.2 Mark obstacles with paint</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### TASK 8  DRIVE A COLD MILLING MACHINE (LEVELLER)

<table>
<thead>
<tr>
<th>Operations</th>
<th>Sub-Operations</th>
<th>Clarifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.10 Use an escort to move the machine to its work area and position the machine</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.11 Prepare the machine for operations to be performed</td>
<td>8.11.1 Activate the drum countersink</td>
<td></td>
</tr>
<tr>
<td></td>
<td>8.11.2 Activate the conveyor and place it over the truck box</td>
<td></td>
</tr>
<tr>
<td></td>
<td>8.11.3 Gradually lower the drum countersink to the desired depth</td>
<td></td>
</tr>
<tr>
<td></td>
<td>8.11.4 Adjust the water flow rate</td>
<td></td>
</tr>
<tr>
<td>8.12 Monitor the safety of personnel on the ground</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.13 Carry out the work</td>
<td>8.13.1 Adjust the machine’s advance according to the nature of work to be done</td>
<td></td>
</tr>
<tr>
<td></td>
<td>8.13.2 Gradually raise the drum countersink back up</td>
<td></td>
</tr>
<tr>
<td></td>
<td>8.13.3 Disengage the drum countersink</td>
<td></td>
</tr>
<tr>
<td></td>
<td>8.13.4 Check the wear of the teeth, teeth holders and drum</td>
<td></td>
</tr>
<tr>
<td>8.14 Remove the electronic system, if applicable</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.15 Park the machine at the cleaning location</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.16 Clean the machine</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.17 Use an escort to move the machine to its parking platform</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.18 Maintain the machine</td>
<td>8.18.1 Replace teeth and teeth holders</td>
<td></td>
</tr>
<tr>
<td></td>
<td>8.18.2 Arc weld (SMAW) the teeth holders</td>
<td></td>
</tr>
</tbody>
</table>

---

16. The CCQ’s Direction de l’application des conventions collectives has issued a notice to the effect that the heavy machinery mechanic is responsible for sub-operations 8.18.1 and 8.18.2.
### TASK 8  DRIVE A COLD MILLING MACHINE (LEVELLER)

<table>
<thead>
<tr>
<th>Operations</th>
<th>Sub-Operations</th>
<th>Clarifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.19 Stop the machine</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.20 Write reports and records and report defects</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### TASK 9  DRIVE POWER COMPACTORS (DOUBLE DRUM, COMBINED AND PNEUMATIC)

Work results: plant mix rolling; plant mix compacting; aggregate compacting; concrete compacting.

<table>
<thead>
<tr>
<th>Operations</th>
<th>Sub-Operations</th>
<th>Clarifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.1 Take instructions from one’s supervisor</td>
<td></td>
<td>There are also rolling patterns that inform on the nature of work to be done [number of passes, nature of the material and frequency of vibrations (high, low or static)].</td>
</tr>
<tr>
<td>9.2 Inspect the machine and report defects</td>
<td>9.2.1 Check oil and fluid levels</td>
<td></td>
</tr>
<tr>
<td></td>
<td>9.2.2 Check the condition of tires and rims</td>
<td></td>
</tr>
<tr>
<td></td>
<td>9.2.3 Check the automatic back-up horn</td>
<td></td>
</tr>
<tr>
<td>9.3 Take safety measures and apply safety standards</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.4 Plan the work</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.5 Start the machine</td>
<td>9.5.1 Put the main switch on «on» position</td>
<td>In cold weather, the machine has to warm up and the operator has to start it as soon as he arrives at work. Under these circumstances, the sequence of operations is inverted and the work is planned after startup.</td>
</tr>
<tr>
<td></td>
<td>9.5.2 Apply the startup procedure while taking the outdoor temperature into account</td>
<td></td>
</tr>
<tr>
<td>9.6 Install the electronic system, if applicable</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operations</td>
<td>Sub-Operations</td>
<td>Clarifications</td>
</tr>
<tr>
<td>------------</td>
<td>----------------</td>
<td>----------------</td>
</tr>
<tr>
<td>9.7</td>
<td>Fill the water tank for spraying (plant mix)</td>
<td></td>
</tr>
<tr>
<td>9.8</td>
<td>Check the operation of water sprinklers (plant mix)</td>
<td></td>
</tr>
<tr>
<td>9.9</td>
<td>Move the machine to the place of work</td>
<td></td>
</tr>
<tr>
<td>9.10</td>
<td>Select vibration amplitude and frequency (plant mix and aggregate)</td>
<td></td>
</tr>
<tr>
<td>9.11</td>
<td>Select the tire pressure and speed (plant mix)</td>
<td></td>
</tr>
<tr>
<td>9.12</td>
<td>Proceed to compaction</td>
<td></td>
</tr>
<tr>
<td>9.12.1</td>
<td>Adjust the rolling speed and vibration according to the pattern</td>
<td>It is important not to compact aggregate more than necessary, because that would cause their segregation. In addition, too many passes on moist ground may make water resurface and wet the materials.</td>
</tr>
<tr>
<td>9.12.2</td>
<td>Make sure of the required moisture level</td>
<td></td>
</tr>
<tr>
<td>9.12.3</td>
<td>Make the required number of passes</td>
<td></td>
</tr>
<tr>
<td>9.12.4</td>
<td>Adjust the amplitude, speed and vibration</td>
<td></td>
</tr>
<tr>
<td>9.12.5</td>
<td>Take the mix’s temperature and behaviour into account</td>
<td></td>
</tr>
<tr>
<td>9.12.6</td>
<td>Compact</td>
<td></td>
</tr>
<tr>
<td>9.12.7</td>
<td>Make the required number of passes</td>
<td></td>
</tr>
<tr>
<td>9.13</td>
<td>Disengage the vibration system before each change in direction (plant mix and aggregate)</td>
<td>To avoid creating a hole, it is important to make a stop with an angle of at least 10 degrees while the plant mix is being compacted.</td>
</tr>
<tr>
<td>9.14</td>
<td>Park the machine at the prescribed location</td>
<td></td>
</tr>
</tbody>
</table>
### TASK 9  DRIVE POWER COMPACTORS
(DOUBLE DRUM, COMBINED AND PNEUMATIC)

<table>
<thead>
<tr>
<th>Operations</th>
<th>Sub-Operations</th>
<th>Clarifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.15 Remove the electronic system, if applicable</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.16 Clean the machine</td>
<td>9.16.1 Clean the windows</td>
<td></td>
</tr>
<tr>
<td></td>
<td>9.16.2 Clean roller scrapers</td>
<td></td>
</tr>
<tr>
<td>9.17 Stop the machine</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.18 Maintain the machine</td>
<td>9.18.1 Lubricate the components</td>
<td></td>
</tr>
<tr>
<td></td>
<td>9.18.2 In cold weather, drain the pumps and fill them with antifreeze</td>
<td></td>
</tr>
<tr>
<td>9.19 Write reports and records and report defects</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### TASK 10  LOAD AND UNLOAD A MACHINE ON A LONG-LOAD DOLLY OR A PLATFORM
This task was not matched with a description of sub-operations or clarifications by the participants.
2.3 ACHIEVEMENT CONDITIONS AND PERFORMANCE CRITERIA

2.3.1 Achievement Conditions

Data on achievement conditions were collected for the heavy equipment operator trade as a whole. The data pertain to aspects such as work areas, level of collaboration, work instructions, reference documents consulted, raw materials used, and health and safety hazards. In Annex 1 is a list of tools and equipment used for each task.

Table 2.3 Achievement Conditions

<table>
<thead>
<tr>
<th>TASK 1</th>
<th>DRIVE A LOADER-BACKHOE</th>
</tr>
</thead>
</table>
| **Work areas** | On the construction site.  
|            | Outdoors and indoors.    |
| **Level of collaboration** | In a team.  
|            | Under the supervision of the foreman or team leader. |
| **Instructions and references** | Based on plans, specifications, contractor instructions, Info-Excavation data and survey data. |
| **Raw materials** | Aggregate, sand, concrete, plant mix, stone, humus (topsoil) and infrastructure elements. |
| **Health and safety hazards** | In a context involving hazards: |
| | • of personal falls;  
| | • related to weather conditions (cold and intense heat);  
| | • related to dust;  
| | • related to gasses;  
| | • of explosion;  
| | • of electrocution;  
| | • of collapse;  
| | • related to road traffic;  
| | • of the machine turning over;  
| | • of crushing someone;  
| | • related to the loss of an accessory. |
### TASK 2  DRIVE A FRONT-END LOADER

<table>
<thead>
<tr>
<th>Work areas</th>
<th>On the construction site. Outdoors and indoors.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level of collaboration</td>
<td>Individually. In a team (for example, in cooperation with the power shovel operator during work with aggregate). Under the supervision of the foreman or team leader.</td>
</tr>
<tr>
<td>Instructions and references</td>
<td>Based on plans, specifications, contractor instructions and survey data.</td>
</tr>
<tr>
<td>Raw materials</td>
<td>Aggregate, sand, concrete, plant mix, stone, humus (topsoil) and infrastructure elements.</td>
</tr>
</tbody>
</table>
| Health and safety hazards | In a context involving hazards:  
  - of personal falls;  
  - related to weather conditions (cold and intense heat);  
  - related to dust;  
  - related to gasses;  
  - of explosion;  
  - of electrocution;  
  - related to road traffic;  
  - of the machine turning over;  
  - of burial;  
  - related to the loss of an accessory. |
**TASK 3   DRIVE A BULLDOZER**

<table>
<thead>
<tr>
<th><strong>Work areas</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>On the construction site.</td>
</tr>
<tr>
<td>Outdoors and indoors.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Level of collaboration</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Individually.</td>
</tr>
<tr>
<td>In a team (for example, in cooperation with the power shovel operator during sewer and aqueduct construction work).</td>
</tr>
<tr>
<td>Under the supervision of the foreman or team leader.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Instructions and references</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Based on plans, specifications, contractor instructions and survey data.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Raw materials</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Aggregate, sand, clay, stone, humus (topsoil).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Health and safety hazards</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>In a context involving hazards:</td>
</tr>
<tr>
<td>• of personal falls;</td>
</tr>
<tr>
<td>• of the machine turning over;</td>
</tr>
<tr>
<td>• related to weather conditions (cold and intense heat);</td>
</tr>
<tr>
<td>• related to dust;</td>
</tr>
<tr>
<td>• related to gasses;</td>
</tr>
<tr>
<td>• of explosion;</td>
</tr>
<tr>
<td>• of deafness;</td>
</tr>
<tr>
<td>• of injuries while the machine is being cleaned.</td>
</tr>
</tbody>
</table>
## TASK 4  DRIVE A GRADER

**Work areas**

On the construction site.
Outdoors and indoors.

**Level of collaboration**

In a team.
Under the supervision of the foreman or team leader.

**Instructions and references**

Based on plans, specifications, contractor instructions and survey data.

**Raw materials**

Aggregate, sand and, occasionally, plant mix to spread a corrective layer.

**Health and safety hazards**

In a context involving hazards:
- of personal falls;
- related to weather conditions (cold and intense heat);
- related to dust;
- related to road traffic;
- of the machine turning over;
- of injuries to persons near the machine.
### Task 5  Drive a Concrete or Compacted Concrete Spreader

<table>
<thead>
<tr>
<th><strong>Work areas</strong></th>
</tr>
</thead>
</table>
| On the construction site.  
| Outdoors and indoors. |  
| **Level of collaboration** |  
| In a team.  
| Under the supervision of the foreman or team leader. |  
| **Instructions and references** |  
| Based on plans, specifications, contractor instructions and survey data. |  
| **Raw materials** |  
| 32 mPa concrete, 35 mPa concrete, reinforced concrete, roller-compacted concrete (RCC), etc. |  
| **Health and safety hazards** |  
| In a context involving hazards:  
| • of personal falls;  
| • related to weather conditions (cold and intense heat);  
| • related to dust;  
| • related to gasses;  
| • of explosion;  
| • of electrocution;  
| • of the machine turning over;  
| • of concrete in the eyes;  
| • of contact burns;  
| • of being hit on the head;  
| • of deafness. |
## TASK 6  DRIVE AN ASPHALT SPREADER

| **Work areas** |  
|---|---|
| On the construction site. |  
| Outdoors and indoors. |  

| **Level of collaboration** |  
|---|---|
| In a team. |  
| Under the supervision of the foreman or team leader. |  

| **Instructions and references** |  
|---|---|
| Based on plans, specifications, contractor instructions and survey data. |  

| **Raw materials** |  
|---|---|
| Various types of plant mixes: for the surface (EG-10), the base (GB-20), a single layer (ESG-14), corrective work (EC-10), etc. |  

| **Health and safety hazards** |  
|---|---|
| In a context involving hazards: |  
| • of personal falls; |  
| • related to weather conditions (cold and intense heat); |  
| • related to dust; |  
| • related to gasses; |  
| • of explosion; |  
| • of electrocution; |  
| • of burns; |  
| • of crushing; |  
| • related to inhaling bitumen fumes; |  
| • related to road traffic; |  
| • of the machine turning over. |
## TASK 7  DRIVE A STABILIZER SPRAYER

<table>
<thead>
<tr>
<th>Work areas</th>
</tr>
</thead>
<tbody>
<tr>
<td>On the construction site.</td>
</tr>
<tr>
<td>Outside.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Level of collaboration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alone.</td>
</tr>
<tr>
<td>Under the supervision of the foreman or team leader</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Instructions and references</th>
</tr>
</thead>
<tbody>
<tr>
<td>Based on specifications, on instructions from the contractor and the civil engineering technician, and on mix recipes.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Raw materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aggregate, plant mix and binders.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Health and safety hazards</th>
</tr>
</thead>
<tbody>
<tr>
<td>In a context involving hazards:</td>
</tr>
<tr>
<td>• of personal falls;</td>
</tr>
<tr>
<td>• related to weather conditions (cold and intense heat);</td>
</tr>
<tr>
<td>• related to dust;</td>
</tr>
<tr>
<td>• of electrocution;</td>
</tr>
<tr>
<td>• related to road traffic;</td>
</tr>
<tr>
<td>• of the machine turning over;</td>
</tr>
<tr>
<td>• of crushing someone;</td>
</tr>
<tr>
<td>• of hand and face injuries;</td>
</tr>
<tr>
<td>• of deafness;</td>
</tr>
<tr>
<td>• related to the machine backing up while the drum is lowered.</td>
</tr>
</tbody>
</table>
## TASK 8  DRIVE A COLD MILLING MACHINE

<table>
<thead>
<tr>
<th><strong>Work areas</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>On the construction site.</td>
</tr>
<tr>
<td>Outside.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Level of collaboration</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>In a team.</td>
</tr>
<tr>
<td>Under the supervision of the foreman or team leader.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Instructions and references</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Based on plans, specifications and instructions from the contractor and the civil engineering technician.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Raw materials</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Aggregate, plant mix.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Health and safety hazards</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>In a context involving hazards:</td>
</tr>
<tr>
<td>• of personal falls;</td>
</tr>
<tr>
<td>• related to weather conditions (cold and intense heat);</td>
</tr>
<tr>
<td>• related to dust;</td>
</tr>
<tr>
<td>• of electrocution;</td>
</tr>
<tr>
<td>• related to road traffic;</td>
</tr>
<tr>
<td>• of the machine turning over;</td>
</tr>
<tr>
<td>• of crushing someone;</td>
</tr>
<tr>
<td>• of hand and face injuries;</td>
</tr>
<tr>
<td>• of deafness;</td>
</tr>
<tr>
<td>• related to the machine backing up while the drum countersink is lowered.</td>
</tr>
</tbody>
</table>
### TASK 9  DRIVE POWER COMPACTORS
(DOUBLE DRUM, COMBINED AND PNEUMATIC)

<table>
<thead>
<tr>
<th><strong>Work areas</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>On the construction site.</td>
</tr>
<tr>
<td>Outdoors and indoors.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Level of collaboration</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Alone, for aggregate compaction work.</td>
</tr>
<tr>
<td>In a team, for plant mix compaction work.</td>
</tr>
<tr>
<td>Under the supervision of the foreman or team leader.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Instructions and references</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Based on plans, specifications and a rolling pattern.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Raw materials</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Plant mix, aggregate, sand, concrete and clay (with a tamping foot).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Health and safety hazards</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>In a context involving hazards:</td>
</tr>
<tr>
<td>• of personal falls;</td>
</tr>
<tr>
<td>• related to weather conditions (cold and intense heat);</td>
</tr>
<tr>
<td>• related to dust;</td>
</tr>
<tr>
<td>• of electrocution;</td>
</tr>
<tr>
<td>• related to road traffic;</td>
</tr>
<tr>
<td>• of the machine turning over;</td>
</tr>
<tr>
<td>• of injuries to persons near the machine;</td>
</tr>
<tr>
<td>• of deafness;</td>
</tr>
<tr>
<td>• of drowsiness.</td>
</tr>
</tbody>
</table>
## TASK 10  LOAD AND UNLOAD A MACHINE ON A LONG-LOAD DOLLY OR A PLATFORM

| Work areas          | On the construction site.  
<table>
<thead>
<tr>
<th></th>
<th>Outside.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level of collaboration</td>
<td>Alone or in a team.</td>
</tr>
<tr>
<td>Instructions and references</td>
<td>Based on contractor instructions.</td>
</tr>
<tr>
<td>Raw materials</td>
<td>None.</td>
</tr>
<tr>
<td>Health and safety hazards</td>
<td>In a context involving hazards:</td>
</tr>
<tr>
<td></td>
<td>of personal falls;</td>
</tr>
<tr>
<td></td>
<td>related to weather conditions (cold and intense heat);</td>
</tr>
<tr>
<td></td>
<td>related to dust;</td>
</tr>
<tr>
<td></td>
<td>of the machine turning over;</td>
</tr>
<tr>
<td></td>
<td>of injuries to persons during fastening.</td>
</tr>
</tbody>
</table>
2.3.2 Performance Criteria

Performance criteria were gathered for each task. They are used for assessing whether the tasks were performed satisfactorily. The criteria pertain to aspects such as the quantity and quality of work done, the observance of a work procedure, the attitudes adopted, etc.

To draw the list of criteria related to each task, the participants worked in teams of three. The teams’ results were then collected and presented in full session.

| Table 2.4 Performance Criteria |

<table>
<thead>
<tr>
<th>TASK 1 DRIVE A LOADER-BACKHOE</th>
<th>Performance Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Using appropriate hand signals</td>
<td>Observing the road safety code</td>
</tr>
<tr>
<td>Vigilance</td>
<td>No materials contaminated</td>
</tr>
<tr>
<td>Dexterity</td>
<td>No handled materials broken</td>
</tr>
<tr>
<td>Wearing personal safety equipment</td>
<td>Observing the machine’s capacity</td>
</tr>
<tr>
<td>Observing elevation levels</td>
<td>Observing the bucket’s load capacity</td>
</tr>
<tr>
<td>Correct machine maintenance</td>
<td>Observing speed limits on the construction site</td>
</tr>
<tr>
<td>Using the machine carefully</td>
<td>Observing distances between machines</td>
</tr>
<tr>
<td>Piling materials safely and according to requirements</td>
<td>Observing rights-of-way and data indicated by grade skates</td>
</tr>
<tr>
<td>No broken infrastructures</td>
<td>Observing deadlines</td>
</tr>
<tr>
<td>Machine cleanliness</td>
<td>Respecting the environment</td>
</tr>
<tr>
<td>Observance of slopes</td>
<td>Observing occupational health and safety rules</td>
</tr>
<tr>
<td>Driving carefully</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TASK 2 DRIVE A FRONT-END LOADER</th>
<th>Performance Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Using appropriate hand signals</td>
<td>Driving carefully</td>
</tr>
<tr>
<td>Vigilance</td>
<td>Observing the road safety code</td>
</tr>
<tr>
<td>Dexterity</td>
<td>No contaminated materials</td>
</tr>
<tr>
<td>Wearing personal safety equipment</td>
<td>No handled materials broken</td>
</tr>
<tr>
<td>Observing elevation levels</td>
<td>Observing the machine’s capacity</td>
</tr>
<tr>
<td>Correct machine maintenance</td>
<td>Observing the bucket’s load capacity</td>
</tr>
</tbody>
</table>

51
### TASK 2  DRIVE A FRONT-END LOADER

<table>
<thead>
<tr>
<th>Performance Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Using the machine carefully</td>
</tr>
<tr>
<td>Piling materials safely and according to requirements</td>
</tr>
<tr>
<td>No broken infrastructures</td>
</tr>
<tr>
<td>Machine cleanliness</td>
</tr>
<tr>
<td>Observance of slopes</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

### TASK 3  DRIVE A BULLDOZER

<table>
<thead>
<tr>
<th>Performance Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Using appropriate hand signals</td>
</tr>
<tr>
<td>Attention</td>
</tr>
<tr>
<td>Dexterity</td>
</tr>
<tr>
<td>Wearing personal safety equipment</td>
</tr>
<tr>
<td>Uniform grading</td>
</tr>
<tr>
<td>Observing elevation levels</td>
</tr>
<tr>
<td>Correct machine maintenance</td>
</tr>
<tr>
<td>Using the machine carefully</td>
</tr>
<tr>
<td>Working according to requirements</td>
</tr>
<tr>
<td>No contaminated materials</td>
</tr>
</tbody>
</table>

### TASK 4  DRIVE A GRADER

<table>
<thead>
<tr>
<th>Performance Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Using appropriate hand signals</td>
</tr>
<tr>
<td>Attention</td>
</tr>
<tr>
<td>Dexterity</td>
</tr>
<tr>
<td>Wearing personal safety equipment</td>
</tr>
<tr>
<td>Uniform grading</td>
</tr>
<tr>
<td>Scarifying according to requirements</td>
</tr>
<tr>
<td>Shaping according to requirements</td>
</tr>
</tbody>
</table>
### TASK 4  DRIVE A GRADER

<table>
<thead>
<tr>
<th>Performance Criteria</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Overlapping passes in final grading: half on ground already graded and half on ground to be graded</td>
<td>Observing rights-of-way</td>
</tr>
<tr>
<td>Using the machine carefully</td>
<td>Observing deadlines</td>
</tr>
<tr>
<td>No aggregate segregation</td>
<td>Respecting the environment</td>
</tr>
<tr>
<td>Observing elevation levels</td>
<td>Observing occupational health and safety rules</td>
</tr>
<tr>
<td>Correct machine maintenance</td>
<td></td>
</tr>
</tbody>
</table>

### TASK 5  DRIVE A CONCRETE AND COMPACTED CONCRETE SPREADER

<table>
<thead>
<tr>
<th>Performance Criteria</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Using appropriate hand signals</td>
<td>Machine cleanliness</td>
</tr>
<tr>
<td>Attention</td>
<td>Observing the machine’s capacity</td>
</tr>
<tr>
<td>Dexterity</td>
<td>Observing speed limits on the construction site</td>
</tr>
<tr>
<td>Wearing personal safety equipment</td>
<td>Observing distances between machines</td>
</tr>
<tr>
<td>Concrete thickness according to requirements</td>
<td>Observing rights-of-way</td>
</tr>
<tr>
<td>Spreading width according to requirements</td>
<td>Observing deadlines</td>
</tr>
<tr>
<td>Observing elevation levels</td>
<td>Respecting the environment</td>
</tr>
<tr>
<td>Correct machine maintenance</td>
<td>Observing occupational health and safety rules</td>
</tr>
<tr>
<td>Using the machine carefully</td>
<td></td>
</tr>
</tbody>
</table>

### TASK 6  DRIVE AN ASPHALT SPREADER

<table>
<thead>
<tr>
<th>Performance Criteria</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Using appropriate hand signals</td>
<td>Machine cleanliness</td>
</tr>
<tr>
<td>Attention</td>
<td>Observing the machine’s capacity</td>
</tr>
<tr>
<td>Dexterity</td>
<td>Observing speed limits on the construction site</td>
</tr>
<tr>
<td>Wearing personal safety equipment</td>
<td>Observing distances between machines</td>
</tr>
<tr>
<td>Plant mix thickness according to requirements</td>
<td>Observing rights-of-way</td>
</tr>
<tr>
<td>Spreading width according to requirements</td>
<td>Observing deadlines</td>
</tr>
<tr>
<td>Observing elevation levels</td>
<td>Respecting the environment</td>
</tr>
<tr>
<td>TASK 6</td>
<td>DRIVE AN ASPHALT SPREADER</td>
</tr>
<tr>
<td>--------</td>
<td>---------------------------</td>
</tr>
<tr>
<td><strong>Performance Criteria</strong></td>
<td></td>
</tr>
<tr>
<td>Correct machine maintenance</td>
<td>Observing occupational health and safety rules</td>
</tr>
<tr>
<td>Using the machine carefully</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TASK 7</th>
<th>DRIVE A STABILIZER SPRAYER</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Performance Criteria</strong></td>
<td></td>
</tr>
<tr>
<td>Using appropriate hand signals</td>
<td>Using the machine carefully</td>
</tr>
<tr>
<td>Attention</td>
<td>Machine cleanliness</td>
</tr>
<tr>
<td>Dexterity</td>
<td>Observing the machine’s capacity</td>
</tr>
<tr>
<td>Wearing personal safety equipment</td>
<td>Observing distances between machines</td>
</tr>
<tr>
<td>Observing elevation levels</td>
<td>Observing rights-of-way</td>
</tr>
<tr>
<td>Granulometry according to requirements</td>
<td>Observing deadlines</td>
</tr>
<tr>
<td>Working according to requirements</td>
<td>Respecting the environment</td>
</tr>
<tr>
<td>Correct machine maintenance</td>
<td>Observing occupational health and safety rules</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TASK 8</th>
<th>DRIVE A COLD MILLING MACHINE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Performance Criteria</strong></td>
<td></td>
</tr>
<tr>
<td>Using appropriate hand signals</td>
<td>Machine cleanliness</td>
</tr>
<tr>
<td>Attention</td>
<td>Observing the machine’s capacity</td>
</tr>
<tr>
<td>Dexterity</td>
<td>Observing distances between machines</td>
</tr>
<tr>
<td>Wearing personal safety equipment</td>
<td>Observing rights-of-way</td>
</tr>
<tr>
<td>Observing elevation levels</td>
<td>Observing deadlines</td>
</tr>
<tr>
<td>Correct machine maintenance</td>
<td>Respecting the environment</td>
</tr>
<tr>
<td>Using the machine carefully</td>
<td>Observing occupational health and safety rules</td>
</tr>
<tr>
<td>Working according to requirements</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TASK 9</th>
<th>DRIVE POWER COMPACTORS (DOUBLE DRUM, COMBINED AND PNEUMATIC)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Performance Criteria</strong></td>
<td></td>
</tr>
<tr>
<td>Attention</td>
<td>Using the machine carefully</td>
</tr>
<tr>
<td>Dexterity</td>
<td>Machine cleanliness</td>
</tr>
<tr>
<td>Wearing personal safety equipment</td>
<td>Observing the machine’s capacity</td>
</tr>
</tbody>
</table>
### TASK 9 DRIVE POWER COMPACTORS (DOUBLE DRUM, COMBINED AND PNEUMATIC)

<table>
<thead>
<tr>
<th>Performance Criteria</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Passes overlapping half on the surface already compacted and half on the surface to be compacted</td>
<td>Correct machine maintenance</td>
</tr>
<tr>
<td>No roller vibration on the entire concrete structure</td>
<td>Observing speed limits on the construction site</td>
</tr>
<tr>
<td>Uniform compaction</td>
<td>Observing distances between machines</td>
</tr>
<tr>
<td>Starting the passes at the lowest point</td>
<td>Observing rights-of-way</td>
</tr>
<tr>
<td>Rolling method adapted to longitudinal and transverse joints</td>
<td>Observing deadlines</td>
</tr>
<tr>
<td>Respecting the environment</td>
<td>Observing occupational health and safety rules</td>
</tr>
<tr>
<td>Using the machine carefully</td>
<td></td>
</tr>
</tbody>
</table>

### TASK 10 LOAD AND UNLOAD A MACHINE ON A LONG-LOAD DOLLY OR A PLATFORM

<table>
<thead>
<tr>
<th>Performance Criteria</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Using appropriate hand signals</td>
<td>Machine cleanliness</td>
</tr>
<tr>
<td>Attention</td>
<td>Observing the long-load dolly’s capacity</td>
</tr>
<tr>
<td>Dexterity</td>
<td>Observing deadlines</td>
</tr>
<tr>
<td>Wearing personal safety equipment</td>
<td>Respecting the environment</td>
</tr>
<tr>
<td>Using the machine carefully</td>
<td>Observing occupational health and safety rules</td>
</tr>
</tbody>
</table>

### 2.4 FUNCTIONS

A function:

- is a set of interrelated tasks;
- may be defined by work outcomes or a procedure;
- is a natural and concrete set of tasks.

The heavy equipment operators identified four functions for their trade:

- a function related to building a road surface and including task 6, “Drive an asphalt spreader,” and task 5, “Drive a concrete and compacted concrete spreader;”
- a function related to loading and handling operations and including task 1, “Drive a loader-backhoe,” and task 2, “Drive a front-end loader;”
• a function related to earthmoving operations and including task 4, “Drive a grader,” and task 3, “Drive a bulldozer;”

• a function related to material recycling operations and including task 8, “Drive a cold milling machine (leveller),” and task 7, “Drive a stabilizer sprayer.”

Tasks 9 and 10 – “Drive power compactors” and “Load and unload a machine on a long-load dolly or a platform” – are different and cannot be grouped by affinity.
3. QUANTITATIVE DATA ON TASKS

3.1 OCCURRENCE

Occurrence data concern the percentage of heavy equipment operators\textsuperscript{17} who perform a task in the same work environment. The data presented in the tables below are the average results of the participants. However, they account for the use of time not only of the heavy equipment operators attending the workshop, but also of all heavy equipment operators working in the companies represented.

Table 3.1 Occurrence of Tasks

<table>
<thead>
<tr>
<th>Task</th>
<th>Occurrence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive a loader-backhoe</td>
<td>35.3%</td>
</tr>
<tr>
<td>Drive a front-end loader</td>
<td>44.1%</td>
</tr>
<tr>
<td>Drive a bulldozer</td>
<td>27.7%</td>
</tr>
<tr>
<td>Drive a grader</td>
<td>13.7%</td>
</tr>
<tr>
<td>Drive a concrete and compacted concrete spreader</td>
<td>12.5%</td>
</tr>
<tr>
<td>Drive an asphalt spreader</td>
<td>5.7%</td>
</tr>
<tr>
<td>Drive a stabilizer sprayer</td>
<td>0.6%</td>
</tr>
<tr>
<td>Drive a cold milling machine (leveller)</td>
<td>13.7%</td>
</tr>
<tr>
<td>Drive power compactors</td>
<td>37.7%</td>
</tr>
<tr>
<td>Load and unload a machine on a long-load dolly or a platform</td>
<td>65.4%</td>
</tr>
</tbody>
</table>

\textsuperscript{17} The data do not include apprentices.
3.2 WORK TIME

Work time, also expressed in percentages, represents the average time allocated to each task by the experts, on an annual basis.

Table 3.2 Work Time Allocated to Tasks

<table>
<thead>
<tr>
<th>Tasks</th>
<th>Work Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Drive a loader-backhoe</td>
<td>9.5%</td>
</tr>
<tr>
<td>2. Drive a front-end loader</td>
<td>16.1%</td>
</tr>
<tr>
<td>3. Drive a bulldozer</td>
<td>11.4%</td>
</tr>
<tr>
<td>4. Drive a grader</td>
<td>11.2%</td>
</tr>
<tr>
<td>5. Drive a concrete and compacted concrete spreader</td>
<td>0.1%</td>
</tr>
<tr>
<td>6. Drive an asphalt spreader</td>
<td>8.5%</td>
</tr>
<tr>
<td>7. Drive a stabilizer sprayer</td>
<td>0.1%</td>
</tr>
<tr>
<td>8. Drive a cold milling machine (leveller)</td>
<td>12.8%</td>
</tr>
<tr>
<td>9. Drive power compactors</td>
<td>19.7%</td>
</tr>
<tr>
<td>10. Load and unload a machine on a long-load dolly or a platform</td>
<td>2.7%</td>
</tr>
</tbody>
</table>

3.3 IMPORTANCE AND DIFFICULTY OF TASKS

The importance of a task is estimated according to the more or less harmful consequences of performing a task poorly or not at all. The importance is assessed according to the following scale:

1. Not important at all: Poor execution of the task has no consequences on the overall quality of the product or service.

2. Not very important: Poor execution of the task could have minimal consequences on the overall quality of the product or service.
3. Important: Poor execution of the task could have major consequences on the overall quality of the product or service.

4. Very important: Poor execution of the task could have very major consequences on the overall quality of the product or service.

A task’s **difficulty** is assessed according to the following scale:

1. Very easy: The task involves little risk of error; it requires no notable physical or mental effort; it is less difficult than average.

2. Easy: The task involves a few risks of error; it requires minimal mental or physical effort; it is of average difficulty.

3. Difficult: The task involves many risks of error; it requires a major mental or physical effort; it is more difficult than average.

4. Very difficult: The task involves a very high risk of error; it requires a very major mental or physical effort; it is among the most difficult in the trade.

The data presented in the following table are the average results for the heavy equipment operators who participated in the workshop.
<table>
<thead>
<tr>
<th>Task</th>
<th>Importance</th>
<th>Difficulty</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Drive a loader-backhoe</td>
<td>3.4</td>
<td>2.8</td>
</tr>
<tr>
<td>2. Drive a front-end loader</td>
<td>3.2</td>
<td>2.3</td>
</tr>
<tr>
<td>3. Drive a bulldozer</td>
<td>3.3</td>
<td>2.7</td>
</tr>
<tr>
<td>4. Drive a grader</td>
<td>3.7</td>
<td>3.5</td>
</tr>
<tr>
<td>5. Drive a concrete and compacted concrete spreader</td>
<td>3.8</td>
<td>2.8</td>
</tr>
<tr>
<td>6. Drive an asphalt spreader</td>
<td>4.0</td>
<td>3.3</td>
</tr>
<tr>
<td>7. Drive a stabilizer sprayer</td>
<td>3.5</td>
<td>2.6</td>
</tr>
<tr>
<td>8. Drive a cold milling machine (leveller)</td>
<td>3.6</td>
<td>3.0</td>
</tr>
<tr>
<td>9. Drive power compactors</td>
<td>3.8</td>
<td>2.4</td>
</tr>
<tr>
<td>10. Load and unload a machine on a long-load dolly or a platform</td>
<td>2.5</td>
<td>1.8</td>
</tr>
</tbody>
</table>
3.4 TASKS PERFORMED

The participants answered the following question: “In the past year, did you perform the task regularly, occasionally or not at all”?

Table 3.4 Tasks Performed
The data are presented according to the number of persons.

<table>
<thead>
<tr>
<th>Task</th>
<th>Regularly</th>
<th>Occasionally</th>
<th>Not at all</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Drive a loader-backhoe</td>
<td>3</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>2. Drive a front-end loader</td>
<td>4</td>
<td>7</td>
<td>0</td>
</tr>
<tr>
<td>3. Drive a bulldozer</td>
<td>2</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>4. Drive a grader</td>
<td>2</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>5. Drive a concrete and compacted concrete spreader</td>
<td>0</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>6. Drive an asphalt spreader</td>
<td>2</td>
<td>1</td>
<td>8</td>
</tr>
<tr>
<td>7. Drive a stabilizer sprayer</td>
<td>0</td>
<td>2</td>
<td>9</td>
</tr>
<tr>
<td>8. Drive a cold milling machine (leveller)</td>
<td>2</td>
<td>0</td>
<td>9</td>
</tr>
<tr>
<td>9. Drive power compactors</td>
<td>5</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>10. Load and unload a machine on a long-load dolly or a platform</td>
<td>5</td>
<td>5</td>
<td>1</td>
</tr>
</tbody>
</table>

18 Three questionnaires were not compiled because they contained errors.
4. KNOWLEDGE, SKILLS AND ATTITUDES

The occupational analysis enabled us to specify some of the knowledge, skills and attitudes necessary for performing the tasks. Those qualities are transferable, i.e., applicable to a variety of tasks and situations.

The following pages present the knowledge, skills and attitudes that, according to the participants, are considered essential for performing the tasks of the heavy equipment operator.

4.1 KNOWLEDGE

Mathematics

Heavy equipment operators must be able to perform the four basic operations, to calculate slope percentages, estimate the volumes and quantities of materials, and convert units of measurement (imperial and metric systems).

Soil properties

Knowledge of materials (classes and properties) and soil types (organic and mineral) is essential for practicing the trade, i.e., for:

- choosing materials and spreading them in the required order;
- performing sorting and loading operations;
- performing various excavation and filling tasks;
- anticipating the reaction of materials and, for example, avoiding their segregation or the formation of mud;
- understanding the importance of soil non-contamination;
- doing compaction work;
- doing scarifying work.
Mechanics

Heavy equipment operators are not mechanics, but they must have some knowledge of this field. They can thus detect breakages, describe a malfunction, report information on possible causes of a problem, and interpret machine data to adapt their conduct to the machine's capacity.

Mechanical knowledge is also useful for inspecting and maintaining the machine.

Characteristics of constructions built

Basic knowledge of engineering and roadwork aspects enable operators:

- detect certain defects (for example, a missing membrane);
- do drainage work;
- anticipate problems (for example, a line buried for many years could crack following compaction work);
- understand the nature of work to be done and thus plan it better.

Surveying

The trade requires surveying knowledge. The worker must understand and interpret the meaning of much surveying data and related codes. Concepts of chaining, elevations, reference points and elevation points are thus useful on many occasions.

Surveying data and grade skates indicate the physical markers of work to be done in tasks 1 to 6, i.e., “Drive a loader-backhoe,” “Drive a front-end loader,” “Drive a bulldozer,” “Drive a grader,” “Drive a concrete and compacted concrete spreader” and “Drive an asphalt spreader.”

Reading plans

In the absence of surveying data or to locate buried infrastructure elements, heavy equipment operators must be able to interpret plans in order to plan the work to be done.
Laws and regulations

In addition to the laws and regulations mentioned in Section 1.5, the operators attending the workshop specified that knowledge of the road safety code is important for practicing the trade. That knowledge pertains to safe driving rules, registration fees and the various machine driving restrictions.

Loader-backhoe (task 1), front-end loader (task 2) and grader (task 4) operators are more concerned by the road safety code, since they drive more on the road.

4.2 SKILLS

Skills are types of know-how. They are divided into three categories: cognitive, motor and perceptual.

4.2.1 Cognitive skills

Planning activities

This skill is useful for facing contingencies, coordinating work, choosing work methods and improving the productivity of operations.

Problem-solving

This skill is useful for facing contingencies.

4.2.2 Motor skills

Motor skills involve gestures and movements. The main motor skills that heavy equipment operators need are the following:

- fine dexterity, to handle hydraulic controls;
- coordination of feet, hands and sight, to perform distinct operations with pedals, the steering wheel and hydraulic controls;
• physical strength, i.e., the ability to lift, carry, push and pull loads of 25 kg to 50 kg, particularly in certain maintenance work and to assist the mechanic when there is a malfunction.

4.2.3 Perceptual skills

Perceptual skills are sensory skills enabling a person to perceive by his senses what is happening in his environment. The main perceptual skills that heavy equipment operators need are the following: vision, hearing and touch.

Good peripheral vision is important for practicing the trade, not only in doing the work, but also in preventing accident hazards (hitting personnel on the ground, for example).

Good hearing is useful for perceiving abnormal noises and thus detecting the machine’s abnormal operation or breakages.

Tactile skills are used for handling hydraulic controls, feeling abnormal vibrations, sensing the machine’s spatial position, and perceiving slopes.

4.3 ATTITUDES

Attitudes are ways of acting, reacting and relating with others or with one’s environment. They involve personal skills.

The main attitudes that heavy equipment operators need are the following:

Personal and interpersonal attitudes

With regard to personal attitudes, the operators mentioned that an open mind and a positive attitude are important in doing the work. They also pointed out that certain tasks can be very repetitive (driving a bulldozer, grader or power compactor) and therefore require vigilance and patience.

Good interpersonal skills are essential for practicing the trade, because the work is often done in a team of many persons.
Professional ethics

Professional ethics is demonstrated by respect for others, courtesy in client relations, and good relations with other operators.

Preventive attitudes and behaviours in matters of health and safety

These attitudes and behaviours are particularly demonstrated by:

- wearing personal protection equipment;
- mutual assistance between workers;
- active participation in the various meetings of occupational health and safety committees;
- regular consultation of material safety data sheets;
- constant concern for the safety of personnel on the ground;
- cautioning a co-worker who has violated occupational health and safety rules;
- cautious use of machines.
5. **TRAINING SUGGESTIONS**

The heavy equipment operators attending the occupational analysis workshop made suggestions on initial training and the training of apprentices.

With regard to initial training, the participants made the following suggestions:

- Equipment driving training should be lengthened.
- Student evaluation could be improved, because after their training certain graduates have developed few skills in driving heavy equipment.
- Student selection and the use of skill tests should be improved.
- Training should include a beginning of specialization in certain machines.
- There should be training in the workplace.

As for the training of apprentices, the participants stated that the employment guarantee of at least 150 hours that is given by an employer registered with the CCQ does not enable the apprentice to demonstrate his skills sufficiently, or the employer to assess the worker's potential and productivity.

Finally, given the large number of machines and accessories, heavy equipment operators pointed out the importance of development courses for practicing the trade.
Annexes
For each task of the heavy equipment operator trade, and on the basis of a list submitted to them\textsuperscript{19}, the participants determined the tools and equipment they use: construction site machines and accessories; tools and instruments; light accessories and equipment; raw materials; small tools and accessories; safety equipment and accessories; equipment maintenance accessories.

Table A.1  Tools and Equipment

**TASK 1  DRIVE A LOADER-BACKHOE**

<table>
<thead>
<tr>
<th>Construction Machines and Accessories</th>
</tr>
</thead>
<tbody>
<tr>
<td>Loader-backhoe</td>
</tr>
<tr>
<td>Broom</td>
</tr>
<tr>
<td>Hydraulic rock-breaker</td>
</tr>
<tr>
<td>Ripper tooth</td>
</tr>
<tr>
<td>Forks</td>
</tr>
<tr>
<td>Trench bucket</td>
</tr>
<tr>
<td>Mobile lip bucket</td>
</tr>
<tr>
<td>Grapple</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tools and Instruments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pen knife</td>
</tr>
<tr>
<td>Combination wrench</td>
</tr>
<tr>
<td>Adjustable wrench</td>
</tr>
<tr>
<td>Toolbox</td>
</tr>
<tr>
<td>Sockets</td>
</tr>
<tr>
<td>Sledgehammer</td>
</tr>
<tr>
<td>Line level</td>
</tr>
<tr>
<td>Square and narrow shovels</td>
</tr>
<tr>
<td>Hose clamp</td>
</tr>
<tr>
<td>Measuring tape</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Light Accessories and Equipment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gun adapter</td>
</tr>
<tr>
<td>Transport chain</td>
</tr>
<tr>
<td>Load chain</td>
</tr>
<tr>
<td>Mobile radio</td>
</tr>
<tr>
<td>Portable radio</td>
</tr>
</tbody>
</table>

\textsuperscript{19}  This list is based on that of the *Guide d'organisation* developed by the ministère de l'Éducation, du Loisir et du Sport for the program of study 5220, *Conduite d'engins de chantier*, Quebec City, 1998.
## TASK 1  DRIVE A LOADER-BACKHOE

<table>
<thead>
<tr>
<th>Raw Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mason’s line</td>
</tr>
<tr>
<td>Windshield washer fluid</td>
</tr>
<tr>
<td>Absorbent paper towel</td>
</tr>
<tr>
<td>Glass cleaner</td>
</tr>
<tr>
<td>Grease</td>
</tr>
<tr>
<td>Aerosol paint</td>
</tr>
<tr>
<td>Penetrating oil</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Small Tools and Accessories</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teeth (wheel-type loader)</td>
</tr>
<tr>
<td>Flat tip screwdriver</td>
</tr>
<tr>
<td>Grease gun</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Safety Equipment and Accessories</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fire extinguisher</td>
</tr>
<tr>
<td>Safety glasses</td>
</tr>
<tr>
<td>Gloves</td>
</tr>
<tr>
<td>Road safety vest</td>
</tr>
</tbody>
</table>
## TASK 2  DRIVE A FRONT-END LOADER

### Construction Site Machines and Accessories

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Front-end loader</td>
<td>Body/spreader</td>
</tr>
<tr>
<td>Mechanical broom</td>
<td>Grapple</td>
</tr>
<tr>
<td>Forks</td>
<td>Boom</td>
</tr>
<tr>
<td>Bucket for aggregate, for sand, with teeth, with blade, V-shaped</td>
<td></td>
</tr>
</tbody>
</table>

### Tools and Instruments

<table>
<thead>
<tr>
<th>Tool</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Combination wrench</td>
<td>Socket</td>
</tr>
<tr>
<td>Adjustable wrench</td>
<td>Sledgehammer</td>
</tr>
<tr>
<td>Connector tightening wrenches</td>
<td>Line level</td>
</tr>
<tr>
<td>Toolbox</td>
<td>Hose clamp</td>
</tr>
<tr>
<td>Knife</td>
<td>Measuring tape</td>
</tr>
</tbody>
</table>

### Light Accessories and Equipment

<table>
<thead>
<tr>
<th>Accessory</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adapter (for grease gun)</td>
<td>Mobile radio</td>
</tr>
<tr>
<td>Load chain</td>
<td>Portable radio</td>
</tr>
</tbody>
</table>

### Raw Materials

<table>
<thead>
<tr>
<th>Material</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mason’s line</td>
<td>Penetrating oil</td>
</tr>
<tr>
<td>Shop towel</td>
<td>Hand cleaner</td>
</tr>
<tr>
<td>Grease</td>
<td>Glass cleaner</td>
</tr>
<tr>
<td>Oil (diesel engine)</td>
<td>Aerosol paint</td>
</tr>
</tbody>
</table>

### Small Tools and Accessories

<table>
<thead>
<tr>
<th>Tool</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pin (roller)</td>
<td>Flat tip screwdriver</td>
</tr>
<tr>
<td>Grease gun</td>
<td></td>
</tr>
</tbody>
</table>

### Safety Equipment and Accessories

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety boots</td>
<td>Safety glasses</td>
</tr>
<tr>
<td>Hard hat</td>
<td>Hearing protector</td>
</tr>
<tr>
<td>Fire extinguisher</td>
<td>First aid kit</td>
</tr>
<tr>
<td>Gloves</td>
<td>Road safety vest</td>
</tr>
</tbody>
</table>
### TASK 3  DRIVE A BULLDOZER

<table>
<thead>
<tr>
<th>Construction Site Machines and Accessories</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulldozer</td>
</tr>
<tr>
<td>Ripper tooth et Ripper teeth</td>
</tr>
<tr>
<td>Side boom</td>
</tr>
<tr>
<td>Mole</td>
</tr>
<tr>
<td>Torpedo</td>
</tr>
<tr>
<td>Winch</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tools and Instruments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stationary laser beam detector</td>
</tr>
<tr>
<td>Mobile laser beam detector (ROD-EYE 4)</td>
</tr>
<tr>
<td>Laser emitter</td>
</tr>
<tr>
<td>Tripod level (transit)</td>
</tr>
<tr>
<td>Hand level</td>
</tr>
<tr>
<td>Square and narrow shovels</td>
</tr>
<tr>
<td>Hose clamp</td>
</tr>
<tr>
<td>Measuring tape</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Light Accessories and Equipment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laser system fastener</td>
</tr>
<tr>
<td>Sliding hook</td>
</tr>
<tr>
<td>Grapple hook</td>
</tr>
<tr>
<td>Vox earphone</td>
</tr>
<tr>
<td>Sling</td>
</tr>
<tr>
<td>Mobile radio</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Raw Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diesel fuel</td>
</tr>
<tr>
<td>Absorbent paper towel</td>
</tr>
<tr>
<td>Grease</td>
</tr>
<tr>
<td>Oil (diesel engine)</td>
</tr>
<tr>
<td>Windshield washer fluid</td>
</tr>
<tr>
<td>Glass cleaner</td>
</tr>
<tr>
<td>Coolant</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Small Tools and Accessories</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corner bit and cutting edge (for bulldozer blade)</td>
</tr>
<tr>
<td>Ripper tooth (for bulldozer)</td>
</tr>
<tr>
<td>Grease gun</td>
</tr>
<tr>
<td>Grease gun connector</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Safety Equipment and Accessories</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety boots</td>
</tr>
<tr>
<td>Hard hat</td>
</tr>
<tr>
<td>Fire extinguisher</td>
</tr>
<tr>
<td>Gloves</td>
</tr>
<tr>
<td>Safety glasses</td>
</tr>
<tr>
<td>Hearing protector</td>
</tr>
<tr>
<td>First aid kit</td>
</tr>
<tr>
<td>Road safety vest</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Equipment Maintenance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dipper in case of turning over</td>
</tr>
</tbody>
</table>
## TASK 4  DRIVE A GRADER

<table>
<thead>
<tr>
<th>Construction Site Machines and Accessories</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grader</td>
</tr>
<tr>
<td>Scarifier</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tools and Instruments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Combination wrench</td>
</tr>
<tr>
<td>Adjustable wrench</td>
</tr>
<tr>
<td>Laser emitter</td>
</tr>
<tr>
<td>Funnel</td>
</tr>
<tr>
<td>Sledgehammer</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Light Accessories and Equipment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adapter (for grease gun)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Raw Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diesel fuel</td>
</tr>
<tr>
<td>Mason’s line</td>
</tr>
<tr>
<td>Absorbent paper towel</td>
</tr>
<tr>
<td>Grease</td>
</tr>
<tr>
<td>Oil (diesel engine)</td>
</tr>
<tr>
<td>Hydraulic oil</td>
</tr>
<tr>
<td>Penetrating oil</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Small Tools and Accessories</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flexible hose</td>
</tr>
<tr>
<td>Teeth</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Safety Equipment and Accessories</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety boots</td>
</tr>
<tr>
<td>Hard hat</td>
</tr>
<tr>
<td>Gloves</td>
</tr>
</tbody>
</table>
## TASK 5  DRIVE A CONCRETE OR COMPACTED CONCRETE SPREADER

<table>
<thead>
<tr>
<th>Construction Site Machines and Accessories</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concrete spreader</td>
</tr>
<tr>
<td>Compacted concrete spreader</td>
</tr>
<tr>
<td>Conveyor</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tools and Instruments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Track binder adapter</td>
</tr>
<tr>
<td>Sledgehammer</td>
</tr>
<tr>
<td>Toolbox</td>
</tr>
<tr>
<td>Hand level</td>
</tr>
<tr>
<td>Combination wrench</td>
</tr>
<tr>
<td>Electronic level</td>
</tr>
<tr>
<td>Adjustable wrench</td>
</tr>
<tr>
<td>Level</td>
</tr>
<tr>
<td>Pipe wrench</td>
</tr>
<tr>
<td>Crowbar</td>
</tr>
<tr>
<td>Scaling hammer or impact hammer</td>
</tr>
<tr>
<td>Measuring tape</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Raw Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mason’s line</td>
</tr>
<tr>
<td>Oil (diesel engine)</td>
</tr>
<tr>
<td>Shop towel</td>
</tr>
<tr>
<td>Hydraulic oil</td>
</tr>
<tr>
<td>Ether (to remove moisture from sensors)</td>
</tr>
<tr>
<td>Coolant</td>
</tr>
<tr>
<td>Grease</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Small Tools and Accessories</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grease gun</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Safety Equipment and Accessories</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety boots</td>
</tr>
<tr>
<td>Fire extinguisher</td>
</tr>
<tr>
<td>Hard hat</td>
</tr>
<tr>
<td>Hearing protector</td>
</tr>
<tr>
<td>Safety glasses</td>
</tr>
<tr>
<td>Road safety vest</td>
</tr>
</tbody>
</table>
### Construction Site Machines and Accessories
- Asphalt spreader

### Tools and Instruments
<table>
<thead>
<tr>
<th>Tool/Instrument</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adjustable wrench</td>
</tr>
<tr>
<td>Toolbox</td>
</tr>
<tr>
<td>Gypsum knife</td>
</tr>
<tr>
<td>Sockets</td>
</tr>
<tr>
<td>Funnel</td>
</tr>
<tr>
<td>Long spout funnel</td>
</tr>
<tr>
<td>Scraper</td>
</tr>
<tr>
<td>Marker</td>
</tr>
<tr>
<td>Pressure gauge</td>
</tr>
<tr>
<td>Universal impact joint, square, SAE</td>
</tr>
<tr>
<td>Sledgehammer</td>
</tr>
<tr>
<td>Hand level</td>
</tr>
<tr>
<td>Electronic level</td>
</tr>
<tr>
<td>Square and narrow shovels</td>
</tr>
<tr>
<td>Electric drill</td>
</tr>
<tr>
<td>Crowbar</td>
</tr>
<tr>
<td>Curved jaw locking pliers</td>
</tr>
<tr>
<td>Impact extension</td>
</tr>
<tr>
<td>Impact extension (square)</td>
</tr>
<tr>
<td>Measuring tape</td>
</tr>
</tbody>
</table>

### Light Accessories and Equipment
<table>
<thead>
<tr>
<th>Accessory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adapter (for grease gun)</td>
</tr>
<tr>
<td>Laser system fastener</td>
</tr>
<tr>
<td>Transport chain</td>
</tr>
<tr>
<td>Mobile radio</td>
</tr>
</tbody>
</table>

### Raw Materials
<table>
<thead>
<tr>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>Battery (for electric lamp)</td>
</tr>
<tr>
<td>Diesel fuel</td>
</tr>
<tr>
<td>Mason’s line</td>
</tr>
<tr>
<td>Grease</td>
</tr>
<tr>
<td>Oil (diesel engine) / 4 litres</td>
</tr>
<tr>
<td>Gear oil</td>
</tr>
<tr>
<td>Hydraulic oil</td>
</tr>
<tr>
<td>Penetrating oil</td>
</tr>
<tr>
<td>Hand cleaner</td>
</tr>
</tbody>
</table>

### Small Tools and Accessories
<table>
<thead>
<tr>
<th>Tool/Instrument</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pin</td>
</tr>
<tr>
<td>Scraper</td>
</tr>
<tr>
<td>Steel file</td>
</tr>
<tr>
<td>Round file</td>
</tr>
<tr>
<td>Grease gun</td>
</tr>
<tr>
<td>Flat tip screwdriver</td>
</tr>
<tr>
<td>Machine screws</td>
</tr>
</tbody>
</table>

### Safety Equipment and Accessories
<table>
<thead>
<tr>
<th>Equipment/Accessory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety boots</td>
</tr>
<tr>
<td>Hard hat</td>
</tr>
<tr>
<td>Fire extinguisher</td>
</tr>
<tr>
<td>Gloves</td>
</tr>
<tr>
<td>Safety glasses</td>
</tr>
<tr>
<td>Hearing protector</td>
</tr>
<tr>
<td>First aid kit</td>
</tr>
<tr>
<td>Road safety vest</td>
</tr>
</tbody>
</table>
### TASK 7  DRIVE A STABILIZER SPRAYER

<table>
<thead>
<tr>
<th>Construction Site Machines and Accessories</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stabilizer sprayer</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tools and Instruments</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAE socket adapter</td>
</tr>
<tr>
<td>Drawplate (for threading nuts and bolts)</td>
</tr>
<tr>
<td>Impact socket adapter, SAE</td>
</tr>
<tr>
<td>Marker</td>
</tr>
<tr>
<td>Trouble light</td>
</tr>
<tr>
<td>Universal impact joint, square, SAE</td>
</tr>
<tr>
<td>Angled pry bar</td>
</tr>
<tr>
<td>Electronic ranger limiter</td>
</tr>
<tr>
<td>Combination wrench</td>
</tr>
<tr>
<td>Air hammer</td>
</tr>
<tr>
<td>Cartridge wrench</td>
</tr>
<tr>
<td>Sledgehammer</td>
</tr>
<tr>
<td>Adjustable wrench</td>
</tr>
<tr>
<td>Cutting wheel (abrasive saw)</td>
</tr>
<tr>
<td>Connector tightening wrenches</td>
</tr>
<tr>
<td>Square shovel</td>
</tr>
<tr>
<td>Toolbox</td>
</tr>
<tr>
<td>Electric drill</td>
</tr>
<tr>
<td>Calibrating compass</td>
</tr>
<tr>
<td>Crowbar</td>
</tr>
<tr>
<td>Bolt cutter</td>
</tr>
<tr>
<td>Curved jaw locking pliers</td>
</tr>
<tr>
<td>Impact socket</td>
</tr>
<tr>
<td>Measuring wheels</td>
</tr>
<tr>
<td>Deep twelve-sided socket</td>
</tr>
<tr>
<td>Measuring tape</td>
</tr>
<tr>
<td>Deep six-sided socket</td>
</tr>
<tr>
<td>Hacksaw</td>
</tr>
<tr>
<td>Universal joint sockets</td>
</tr>
<tr>
<td>AC/DC electric welder</td>
</tr>
<tr>
<td>Hex drivers</td>
</tr>
<tr>
<td>Hand winch</td>
</tr>
<tr>
<td>Oxy-acetylene set</td>
</tr>
<tr>
<td>Steel pipe (used as a boom)</td>
</tr>
<tr>
<td>Funnel</td>
</tr>
<tr>
<td>Circuit tester</td>
</tr>
<tr>
<td>Long spout funnel</td>
</tr>
<tr>
<td>Hydraulic jack</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Light Accessories and Equipment</th>
</tr>
</thead>
<tbody>
<tr>
<td>End piece</td>
</tr>
<tr>
<td>Shackle</td>
</tr>
<tr>
<td>Adapter (for grease gun)</td>
</tr>
<tr>
<td>Tire gauge</td>
</tr>
<tr>
<td>Eye bolt</td>
</tr>
<tr>
<td>Steatite carrier</td>
</tr>
<tr>
<td>Pneumatic pipe</td>
</tr>
<tr>
<td>Electrode holder</td>
</tr>
<tr>
<td>Air nozzle</td>
</tr>
<tr>
<td>Female welder plug</td>
</tr>
<tr>
<td>Welding cable</td>
</tr>
<tr>
<td>Male welder plug</td>
</tr>
<tr>
<td>Transport chain</td>
</tr>
<tr>
<td>Quick coupler</td>
</tr>
<tr>
<td>Grapple hook</td>
</tr>
<tr>
<td>Free air blowgun</td>
</tr>
</tbody>
</table>
# TASK 7  DRIVE A STABILIZER SPRAYER

## Raw Materials

<table>
<thead>
<tr>
<th>Item</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acetylene and oxygen</td>
<td>Oil (gasoline engine)</td>
</tr>
<tr>
<td>Locking adhesive (Loctite)</td>
<td>Gear oil</td>
</tr>
<tr>
<td>Light bulb (for trouble light)</td>
<td>Hydraulic oil</td>
</tr>
<tr>
<td>Battery (for electric lamp)</td>
<td>Penetrating oil</td>
</tr>
<tr>
<td>Diesel fuel</td>
<td>Gear lubricant</td>
</tr>
<tr>
<td>Covered electrode</td>
<td>Grinding wheels</td>
</tr>
<tr>
<td>Bronze-covered electrode</td>
<td>Hand cleaner</td>
</tr>
<tr>
<td>Gasoline</td>
<td>Glass cleaner</td>
</tr>
<tr>
<td>Absorbent paper towel</td>
<td>Spark lighters</td>
</tr>
<tr>
<td>Shop towel</td>
<td>Coolant</td>
</tr>
<tr>
<td>Tin (for electric soldering iron)</td>
<td>Electrical tape washer</td>
</tr>
<tr>
<td>Grease</td>
<td>Teflon washer</td>
</tr>
<tr>
<td>Oil (diesel engine)</td>
<td>Welder’s helmet glass</td>
</tr>
</tbody>
</table>

## Small Tools and Accessories

<table>
<thead>
<tr>
<th>Item</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nail claw</td>
<td>O rings</td>
</tr>
<tr>
<td>Wood block</td>
<td>Steel file</td>
</tr>
<tr>
<td>Bolts</td>
<td>Grease gun</td>
</tr>
<tr>
<td>Pin</td>
<td>Grease gun connector</td>
</tr>
<tr>
<td>Circlips</td>
<td>Grease fittings</td>
</tr>
<tr>
<td>All-purpose rings</td>
<td>Tie wrap (Ty-Rap)</td>
</tr>
<tr>
<td>Electric thimbles</td>
<td>Lock washers</td>
</tr>
<tr>
<td>Teeth</td>
<td>Flat washers</td>
</tr>
<tr>
<td>Nuts</td>
<td>Flat tip screwdriver</td>
</tr>
<tr>
<td>Dowel pins</td>
<td>Machine screws</td>
</tr>
</tbody>
</table>

## Safety Equipment and Accessories

<table>
<thead>
<tr>
<th>Item</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety boots</td>
<td>Welding gloves</td>
</tr>
<tr>
<td>Welder’s helmet</td>
<td>Safety glasses</td>
</tr>
<tr>
<td>Hard hat</td>
<td>Hearing protector</td>
</tr>
<tr>
<td>Fire extinguisher</td>
<td>Road safety vest</td>
</tr>
<tr>
<td>Gloves</td>
<td></td>
</tr>
</tbody>
</table>

## Equipment Maintenance

<table>
<thead>
<tr>
<th>Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waste oil recovery container</td>
</tr>
</tbody>
</table>
### TASK 8  DRIVE A COLD MILLING MACHINE

<table>
<thead>
<tr>
<th><strong>Construction Site Machines and Accessories</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Cold milling machine (leveller)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Tools and Instruments</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>SAE socket adapter</td>
</tr>
<tr>
<td>Impact socket adapter, SAE</td>
</tr>
<tr>
<td>Trouble light</td>
</tr>
<tr>
<td>Angled pry bar</td>
</tr>
<tr>
<td>Oil-squirt</td>
</tr>
<tr>
<td>Booster cable</td>
</tr>
<tr>
<td>Pen knife</td>
</tr>
<tr>
<td>Combination wrench</td>
</tr>
<tr>
<td>Cartridge wrench</td>
</tr>
<tr>
<td>Adjustable wrench</td>
</tr>
<tr>
<td>Connector tightening wrenches</td>
</tr>
<tr>
<td>Toolbox</td>
</tr>
<tr>
<td>Bolt cutter</td>
</tr>
<tr>
<td>Cable cutter</td>
</tr>
<tr>
<td>Impact socket</td>
</tr>
<tr>
<td>Deep twelve-sided socket</td>
</tr>
<tr>
<td>Deep six-sided socket</td>
</tr>
<tr>
<td>Universal joint sockets</td>
</tr>
<tr>
<td>Hex drivers</td>
</tr>
<tr>
<td>Oxy-acetylene set</td>
</tr>
<tr>
<td>Funnel</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Light Accessories and Equipment</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>End piece</td>
</tr>
<tr>
<td>Adapter (for grease gun)</td>
</tr>
<tr>
<td>Eye bolt</td>
</tr>
<tr>
<td>Pneumatic pipe</td>
</tr>
<tr>
<td>Air nozzle</td>
</tr>
<tr>
<td>Welding cable</td>
</tr>
<tr>
<td>Transport chain</td>
</tr>
<tr>
<td>Grapple hook</td>
</tr>
<tr>
<td>Sling</td>
</tr>
</tbody>
</table>
### TASK 8  DRIVE A COLD MILLING MACHINE

<table>
<thead>
<tr>
<th>Raw Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acetylene and oxygen</td>
</tr>
<tr>
<td>Locking adhesive (Loctite)</td>
</tr>
<tr>
<td>Light bulb (for trouble light)</td>
</tr>
<tr>
<td>Battery (for electric lamp)</td>
</tr>
<tr>
<td>Diesel fuel</td>
</tr>
<tr>
<td>Covered electrode</td>
</tr>
<tr>
<td>Bronze-covered electrode</td>
</tr>
<tr>
<td>Gasoline</td>
</tr>
<tr>
<td>Absorbent paper towel</td>
</tr>
<tr>
<td>Shop towel</td>
</tr>
<tr>
<td>Grease</td>
</tr>
<tr>
<td>Oil (diesel engine)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Small Tools and Accessories</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nail claw</td>
</tr>
<tr>
<td>Wood block</td>
</tr>
<tr>
<td>Bolts</td>
</tr>
<tr>
<td>Flexible hose</td>
</tr>
<tr>
<td>Pin</td>
</tr>
<tr>
<td>Wire rope</td>
</tr>
<tr>
<td>Nylon rope</td>
</tr>
<tr>
<td>All-purpose rings</td>
</tr>
<tr>
<td>Teeth</td>
</tr>
<tr>
<td>Nuts</td>
</tr>
<tr>
<td>Sling</td>
</tr>
<tr>
<td>Metal drill bits</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Safety Equipment and Accessories</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety boots</td>
</tr>
<tr>
<td>Welder’s helmet</td>
</tr>
<tr>
<td>Hard hat</td>
</tr>
<tr>
<td>Fire extinguisher</td>
</tr>
<tr>
<td>Gloves</td>
</tr>
<tr>
<td>Welding gloves</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Equipment Maintenance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waste oil recovery container</td>
</tr>
</tbody>
</table>
## TASK 9  DRIVE POWER COMPACTORS

### Construction Site Machines and Accessories

<table>
<thead>
<tr>
<th>Machine Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Double roller power compactor</td>
<td>Roller and pneumatic power compactor</td>
</tr>
<tr>
<td>Pneumatic power compactor</td>
<td>Sheepsfoot power compactor</td>
</tr>
</tbody>
</table>

### Tools and Instruments

<table>
<thead>
<tr>
<th>Tool Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hand level</td>
<td>Electronic level</td>
</tr>
</tbody>
</table>

### Raw Materials

<table>
<thead>
<tr>
<th>Material Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diesel fuel</td>
<td>Windshield washer fluid</td>
</tr>
<tr>
<td>Absorbent paper towel</td>
<td>Hand cleaner</td>
</tr>
<tr>
<td>Grease</td>
<td>Glass cleaner</td>
</tr>
<tr>
<td>Oil (diesel engine)</td>
<td>Coolant</td>
</tr>
<tr>
<td>Hydraulic oil</td>
<td></td>
</tr>
</tbody>
</table>

### Small Tools and Accessories

<table>
<thead>
<tr>
<th>Accessory Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flexible hose</td>
<td>Grease gun</td>
</tr>
<tr>
<td>Sprinkler filter</td>
<td>Grease gun connector</td>
</tr>
<tr>
<td>Spare sprinklers</td>
<td></td>
</tr>
</tbody>
</table>

### Safety Equipment and Accessories

<table>
<thead>
<tr>
<th>Safety Equipment</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety boots</td>
<td>Safety glasses</td>
</tr>
<tr>
<td>Hard hat</td>
<td>Hearing protector</td>
</tr>
<tr>
<td>Fire extinguisher</td>
<td>Road safety vest</td>
</tr>
<tr>
<td>Gloves</td>
<td></td>
</tr>
</tbody>
</table>
**TASK 10 LOAD AND UNLOAD A MACHINE ON A LONG-LOAD DOLLY OR A PLATFORM**

<table>
<thead>
<tr>
<th>Construction Site Machines and Accessories</th>
</tr>
</thead>
<tbody>
<tr>
<td>Truck and platform</td>
</tr>
<tr>
<td>Winch</td>
</tr>
<tr>
<td>Long-load dolly</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tools and Instruments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trouble light</td>
</tr>
<tr>
<td>Measuring tape</td>
</tr>
<tr>
<td>Broom</td>
</tr>
<tr>
<td>Load binder</td>
</tr>
<tr>
<td>Square shovel</td>
</tr>
<tr>
<td>Steel pipe (used as a boom)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Light Accessories and Equipment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transport chain</td>
</tr>
<tr>
<td>Mobile radio</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Raw Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grease</td>
</tr>
<tr>
<td>Wood block</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Small Tools and Accessories</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grease gun</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Safety Equipment and Accessories</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety boots</td>
</tr>
<tr>
<td>Safety glasses</td>
</tr>
<tr>
<td>Hard hat</td>
</tr>
<tr>
<td>Overhang signs</td>
</tr>
<tr>
<td>Fire extinguisher</td>
</tr>
<tr>
<td>Road safety vest</td>
</tr>
<tr>
<td>Gloves</td>
</tr>
</tbody>
</table>
# Annex 2

## GRID OF OCCUPATIONAL HEALTH AND SAFETY ELEMENTS

Produced by: **Serge Massé**, Consultant
Representative of the Commission de la santé et de la sécurité du travail

### Table A.2 Description of Hazards

<table>
<thead>
<tr>
<th>No.</th>
<th>Hazards</th>
<th>Effects on Health and Safety</th>
<th>Means of Prevention</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Fall hazards (persons and objects)</td>
<td>• Contusions • Fractures • Bruises • Strains • Internal injuries • Burial • Crushing • Permanent, physical and psychological after-effects • Death</td>
<td>• Keep the cab interior clean and ensure that the floor is not slippery.</td>
</tr>
<tr>
<td></td>
<td>• Sliding / losing balance (in or on the machine, or on the ground)</td>
<td></td>
<td>• Wear safety boots with anti-slip soles.</td>
</tr>
<tr>
<td></td>
<td>• A worker’s fall</td>
<td></td>
<td>• Make sure of the solidity and stability of support points to climb on or off the cab.</td>
</tr>
<tr>
<td></td>
<td>• Fall of machine components</td>
<td></td>
<td>• Wear a hard hat.</td>
</tr>
<tr>
<td></td>
<td>• Fall of material processed by the machine</td>
<td></td>
<td>• Never allow anyone to be under a machine component (shovel) or the load that is lifted and transported.</td>
</tr>
<tr>
<td></td>
<td>• Overturing / tipping over of the machine</td>
<td></td>
<td>• Avoid slopes that are too steep.</td>
</tr>
<tr>
<td></td>
<td>• Sliding of the machine in a trench, ditch or other</td>
<td></td>
<td>• Ensure the ground is solid.</td>
</tr>
<tr>
<td></td>
<td>• Ground slumping</td>
<td></td>
<td>• Do not move too near the edge of shoulders or trenches.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Use shores.</td>
</tr>
<tr>
<td>No.</td>
<td>Hazards</td>
<td>Effects on Health and Safety</td>
<td>Means of Prevention</td>
</tr>
<tr>
<td>-----</td>
<td>---------</td>
<td>-----------------------------</td>
<td>---------------------</td>
</tr>
</tbody>
</table>
| 2   | Mechanical hazards | • Fractures  
• Sprains  
• Strains  
• Cuts  
• Lacerations  
• Amputation  
• Perforations  
• Pricks  
• Crushing  
• Scrapes  
• Scratches  
• Bruises  
• Contusions  
• Open wounds  
• Irritation, including to the eyes  
• Permanent, physical and psychological after-effects  
• Death | • Wear a hard hat and safety glasses.  
• Safely use chains, steel cable and other means of attaching loads to lift them or keep them in place.  
• Drive with care and safely.  
• Check the machine and maintain it regularly.  
• Before an intervention, stop the machine (engine stop) and its parts and keep them stopped.  
• Mechanically block lifted parts.  
• Work cautiously. |
<table>
<thead>
<tr>
<th>No.</th>
<th>Hazards</th>
<th>Effects on Health and Safety</th>
<th>Means of Prevention</th>
</tr>
</thead>
</table>
| 3   | Risks related to the movement of vehicles, pedestrians or workers near the machine | • Scrapes  
• Scratches  
• Bruises  
• Contusions  
• Open wounds  
• Crushing  
• Amputation  
• Cuts  
• Lacerations  
• Fractures  
• Sprains  
• Strains  
• Internal injuries  
• Permanent, physical and psychological after-effects  
• Death | • Drive with care on construction sites.  
• Require roadwork signs.  
• Require sign observance to be monitored. |
| 4   | Electrical hazards                                                      | • Electric discharges  
• Electrical burns  
• Electrification  
• Electrocution  
• Death | • Make sure to have correct information on the presence of live underground or overhead electrical conducts.  
• Ensure that electrical conducts are turned off.  
• Observe safe distances between overhead lines and machine parts. |
| 5   | Weather hazards                                                        | • Chilblains  
• Hypothermia  
• Dehydration  
• Collisions  
• Contusions  
• Fractures  
• Bruises  
• Losing control of the vehicle or equipment (see fall hazards) | • Wear appropriate clothing.  
• Observe safety rules for preventing heat stroke (working time, rest, drinks, etc.).  
• Wear adequate boots.  
• Drink water, keep hydrated.  
• Have cab heating and air conditioning.  
• Be very vigilant.  
• Be accompanied. |
<table>
<thead>
<tr>
<th>No.</th>
<th>Hazards</th>
<th>Effects on Health and Safety</th>
<th>Means of Prevention</th>
</tr>
</thead>
</table>
| 6   | Heat and radiation hazards             | • Burns from heat (including fire, flames, hot gas) or from hot material  
• Effects of heat or light  
• Chilblains  
• Hypothermia  
• Eye irritation | • Wait for intervention areas to cool down or warm up.  
• Wear appropriate clothing.  
• Wear appropriate personal protective equipment (PPE).  
• Observe safety rules for working in hot areas (working time, rest, drinks, etc.).  
• Be supervised. |
| 7   | Noise and vibration hazards            | • Deterioration of hearing acuity and balance  
• Fatigue  
• Stress  
• Loss of vigilance  
• Discomfort (for example, numbness) | • Have the cab soundproofed.  
• Wear hearing protectors.  
• Follow noise exposure rules. |
| 8   | Chemical hazards                       | • Prolonged damage to health  
• Death  
• Chemical burns  
• Damage from fire or explosions  
• Damage to the eyes  
• Respiratory illnesses  
• Cancer | • Make sure to have correct information about the presence of gas lines and other dangerous underground products.  
• Make sure that electrical conduits are turned off, and that products transported in the conduits are cut off and drained.  
• Ensure that the premises or cab are well ventilated.  
• Wear a respirator mask (gas or dust).  
• Wear safety glasses.  
• Wear adequate gloves.  
• Observe safety rules for working in areas where hazardous products are present. |
<table>
<thead>
<tr>
<th>No.</th>
<th>Hazards</th>
<th>Effects on Health and Safety</th>
<th>Means of Prevention</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>Ergonomic hazards</td>
<td>• Physiological effects (for example, musculoskeletal disorders, or MSDs) of stressful postures, excessive or repetitive efforts, etc.</td>
<td>• Require a more suitable workstation.</td>
</tr>
<tr>
<td></td>
<td>• Posture stress</td>
<td>• Sprains</td>
<td>• Perform relaxation exercises often.</td>
</tr>
<tr>
<td></td>
<td>• Handling, lifting or moving heavy loads</td>
<td>• Hemias</td>
<td>• Use tools or request help to lift heavy loads.</td>
</tr>
<tr>
<td></td>
<td>• Task difficulty / stress</td>
<td>• Fatigue</td>
<td>• Take short breaks often.</td>
</tr>
<tr>
<td></td>
<td>• Drowsiness, losing control of the machine or having it tip over</td>
<td>• Discomfort</td>
<td>• Divide one’s work into several small steps.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Pain</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Physiologically effects (effects of mental overload, notably stress): anxiety, insomnia, exhaustion, nervousness</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Multiple injuries</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Death</td>
<td></td>
</tr>
</tbody>
</table>
Table A.3  Sources of Danger per Task ans Operation

Legend

<p>| | | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>The risk is nil</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>+</td>
<td>The risk is low</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>++</td>
<td>The risk is average</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>+++</td>
<td>The risk is high</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Risk levels are noted according to exposure to risk sources, not according to the gravity of effects on personal health and safety...

<table>
<thead>
<tr>
<th>N°</th>
<th>Operations and sub--operations</th>
<th>Fall hazards (persons and objects)</th>
<th>Mechanical hazards</th>
<th>Risks related to the movement of vehicles, pedestrians or workers near the machine</th>
<th>Electrical hazards</th>
<th>Weather hazards</th>
<th>Heat and radiation hazards</th>
<th>Noise and vibration hazards</th>
<th>Chemical hazards</th>
<th>Risques ergonomiques Ergonomic hazards</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>TASK 1  DRIVE A LOADER-BACKHOE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.1</td>
<td>Take instructions from one’s supervisor</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1.1.1</td>
<td>Obtain information about:</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>• the nature of work to be done</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• obstacles on the ground</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.1.2</td>
<td>Interpret plans, if applicable</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1.2</td>
<td>Inspect the machine and report defects</td>
<td>x</td>
<td>x</td>
<td>0</td>
<td>x</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1.2.1</td>
<td>Inspect the machine’s mechanisms and accessories</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1.2.2</td>
<td>Check oil and fluid levels</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1.2.3</td>
<td>Inspect cutting blades and the front and back buckets</td>
<td>x</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1.2.4</td>
<td>Check the condition, air pressure and rims of tires</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1.2.5</td>
<td>Check the automatic back-up horn</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1.3</td>
<td>Take safety measures and apply safety standards</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1.4</td>
<td>Plan the work</td>
<td>x</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1.4.1</td>
<td>Identify the nature of soils to work on</td>
<td>x</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>N°</td>
<td>Operations and sub-operations</td>
<td>Fall hazards (persons and objects)</td>
<td>Mechanical hazards</td>
<td>Risks related to the movement of vehicles, pedestrians or workers near the machine</td>
<td>Electrical hazards</td>
<td>Weather hazards</td>
<td>Heat and radiation hazards</td>
<td>Noise and vibration hazards</td>
<td>Chemical hazards</td>
<td>Risques ergonomiques</td>
</tr>
<tr>
<td>----</td>
<td>--------------------------------</td>
<td>----------------------------------</td>
<td>-------------------</td>
<td>----------------------------------</td>
<td>-----------------</td>
<td>----------------</td>
<td>--------------------------</td>
<td>--------------------------</td>
<td>----------------</td>
<td>-----------------</td>
</tr>
<tr>
<td>1.4.2</td>
<td>Read and interpret data written on grade skates:  - interpret grade skates  - find out about required elevation levels</td>
<td>x</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1.4.3</td>
<td>Detect underground conduits or wires</td>
<td>x</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1.5</td>
<td>Start the machine</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1.5.1</td>
<td>Put the main switch on «on» position</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1.5.2</td>
<td>Apply the startup procedure while taking the outdoor temperature into account</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1.5.3</td>
<td>Check the smoke</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1.6</td>
<td>Stabilize the machine</td>
<td>x</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1.6.1</td>
<td>Position the machine</td>
<td>x</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1.6.2</td>
<td>Lower the outriggers</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1.6.3</td>
<td>Lower the front bucket</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1.7</td>
<td>Break materials (hydraulic rock-breaker)</td>
<td>x</td>
<td>xx</td>
<td>x</td>
<td>xx</td>
<td>x</td>
<td>0</td>
<td>xx</td>
<td>xx</td>
<td>x</td>
</tr>
<tr>
<td>1.8</td>
<td>Clear the ground</td>
<td>x</td>
<td>xx</td>
<td>xx</td>
<td>0</td>
<td>xx</td>
<td>0</td>
<td>xx</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>1.9</td>
<td>Load materials or pile them</td>
<td>xx</td>
<td>xx</td>
<td>x</td>
<td>x</td>
<td>xx</td>
<td>x</td>
<td>x</td>
<td>xx</td>
<td>x</td>
</tr>
<tr>
<td>1.9.1</td>
<td>Raise back accessories to their highest level</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1.9.2</td>
<td>Place the locking detent on accessories</td>
<td>x</td>
<td>xx</td>
<td>x</td>
<td>0</td>
<td>x</td>
<td>x</td>
<td>0</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>1.9.3</td>
<td>Use the front bucket</td>
<td>xx</td>
<td>xx</td>
<td>x</td>
<td>x</td>
<td>xx</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>1.9.4</td>
<td>Maintain an equal work platform</td>
<td>x</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>x</td>
<td>xx</td>
<td>x</td>
</tr>
<tr>
<td>1.10</td>
<td>Transport materials</td>
<td>xx</td>
<td>xx</td>
<td>xx</td>
<td>x</td>
<td>xx</td>
<td>0</td>
<td>xx</td>
<td>xx</td>
<td>x</td>
</tr>
<tr>
<td>1.11</td>
<td>Pick up materials (mobile lip bucket, grapple or fork)</td>
<td>xx</td>
<td>xx</td>
<td>xx</td>
<td>0</td>
<td>xx</td>
<td>x</td>
<td>x</td>
<td>xx</td>
<td>x</td>
</tr>
<tr>
<td>1.12</td>
<td>Equalize surfaces (bucket)</td>
<td>xx</td>
<td>x</td>
<td>xx</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>xx</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>1.13</td>
<td>Dig trenches and holes and detect infrastructures</td>
<td>xx</td>
<td>xxx</td>
<td>xx</td>
<td>xx</td>
<td>xxx</td>
<td>xx</td>
<td>xxx</td>
<td>xx</td>
<td>x</td>
</tr>
<tr>
<td>1.13.1</td>
<td>Unlock the arm</td>
<td>x</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>x</td>
</tr>
<tr>
<td>№</td>
<td>Operations and sub-operations</td>
<td>Fall hazards (persons and objects)</td>
<td>Mechanical hazards</td>
<td>Risks related to the movement of vehicles, pedestrians or workers near the machine</td>
<td>Electrical hazards</td>
<td>Weather hazards</td>
<td>Heat and radiation hazards</td>
<td>Noise and vibration hazards</td>
<td>Chemical hazards</td>
<td>Risques ergonomiques</td>
</tr>
<tr>
<td>-----</td>
<td>------------------------------------------------------------------------------------------------</td>
<td>-----------------------------------</td>
<td>--------------------</td>
<td>-----------------------------------------------------------------------------------</td>
<td>-------------------</td>
<td>-----------------</td>
<td>-----------------------------</td>
<td>----------------------------</td>
<td>-----------------</td>
<td>----------------------</td>
</tr>
<tr>
<td>1.13.2</td>
<td>Extend the boom</td>
<td>0 0 xx x 0 0 0 0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.13.3</td>
<td>Open the bucket</td>
<td>0 0 x 0 0 0 0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.13.4</td>
<td>Lower the boom, retract and close the bucket</td>
<td>xx xx 0 xx xx xxx 0 xxx x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.13.5</td>
<td>Raise the boom</td>
<td>xx xxx x xx x xxx 0 xxx x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.13.6</td>
<td>Make the bucket pivot to the side</td>
<td>x xx xx xx x 0 0 xx x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.13.7</td>
<td>Unload bucket contents in a truck or on the ground</td>
<td>x xx xx 0 x 0 0 x x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.14</td>
<td>Deposit and spread materials as necessary in trenches and holes</td>
<td>xx xx xx xx x xx xx xx x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.15</td>
<td>Handle pipes, fire hydrants, sumps, etc.</td>
<td>xx xx xx x x x xx x x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.15.1</td>
<td>Check and install slings, if applicable</td>
<td>x x x 0 x 0 0 0 x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.15.2</td>
<td>Attach the equipment, if applicable</td>
<td>x x x x x x x 0 x x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.15.3</td>
<td>Place the equipment at the prescribed location</td>
<td>x xx x x x x x x x x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.16</td>
<td>Backfill the excavation</td>
<td>xx x xx x x x xx x x x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.17</td>
<td>Compact the ground (back bucket)</td>
<td>x 0 x 0 x 0 xx x x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.18</td>
<td>Sweep surfaces (mechanical broom)</td>
<td>x xx xx 0 x 0 xx x x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.19</td>
<td>Store various construction materials</td>
<td>xx xxx xx xx xx 0 xx xx xx</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.19.1</td>
<td>Choose flat dry ground located in a safe area</td>
<td>x 0 0 0 x 0 0 0 0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.19.2</td>
<td>Ensure that the area is accessible to other machines</td>
<td>0 0 0 0 0 0 0 0 0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.19.3</td>
<td>Pile the materials up</td>
<td>xx xxx xx x xx 0 x xx x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.19.4</td>
<td>Ensure the stability of materials</td>
<td>x xx 0 0 x 0 x x xx x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.20</td>
<td>Park the machine at the prescribed location</td>
<td>x 0 0 0 x 0 0 0 0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N°</td>
<td>Operations and sub-operations</td>
<td>Fall hazards (persons and objects)</td>
<td>Mechanical hazards</td>
<td>Risks related to the movement of vehicles, pedestrians or workers near the machine</td>
<td>Electrical hazards</td>
<td>Weather hazards</td>
<td>Heat and radiation hazards</td>
<td>Noise and vibration hazards</td>
<td>Chemical hazards</td>
<td>Risques ergonomiques</td>
</tr>
<tr>
<td>----</td>
<td>--------------------------------</td>
<td>-----------------------------------</td>
<td>-------------------</td>
<td>---------------------------------</td>
<td>-----------------</td>
<td>-----------------</td>
<td>--------------------------</td>
<td>--------------------------</td>
<td>----------------</td>
<td>-------------------</td>
</tr>
<tr>
<td>1.21</td>
<td>Clean the machine</td>
<td>x</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>x</td>
</tr>
<tr>
<td>1.21.1</td>
<td>Clean the anchor points</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>x</td>
</tr>
<tr>
<td>1.21.2</td>
<td>Clean the buckets</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>x</td>
</tr>
<tr>
<td>1.22</td>
<td>Maintain the machine</td>
<td>x</td>
<td>xx</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>1.22.1</td>
<td>Lubricate the components</td>
<td>x</td>
<td>xx</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>x</td>
</tr>
<tr>
<td>1.22.2</td>
<td>Replace the back bucket teeth, if applicable</td>
<td>x</td>
<td>xx</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>0</td>
<td>xx</td>
</tr>
<tr>
<td>1.22.3</td>
<td>Reclose and block the accessories</td>
<td>x</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>x</td>
</tr>
<tr>
<td>1.23</td>
<td>Stop the machine</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1.23.1</td>
<td>Lower the accessories</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1.23.2</td>
<td>Apply the closing procedure</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1.23.3</td>
<td>Put the main switch on «off» position</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1.24</td>
<td>Write reports and records and report defects</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

**TASK 2  DRIVE A FRONT-END LOADER**

| 2.1 | Take instructions from one’s supervisor | x | 0 | 0 | 0 | x | 0 | 0 | 0 | 0 |  
| 2.1.1 | Obtain information about:  
| • the nature of work to be done | x | 0 | 0 | 0 | x | 0 | 0 | 0 | 0 |  
| • obstacles on the ground | x | 0 | 0 | 0 | x | 0 | 0 | 0 | 0 |  
| 2.1.2 | Interpret plans, if applicable | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |  
| 2.2 | Inspect the machine and report defects | xx | xx | 0 | x | x | 0 | 0 | 0 | x |  
| 2.2.1 | Inspect the machine’s mechanisms and accessories | xx | xx | 0 | 0 | x | 0 | 0 | 0 | x |  
| 2.2.2 | Check oil and fluid levels | x | 0 | 0 | 0 | x | 0 | 0 | 0 | 0 |  
| 2.2.3 | Inspect the front bucket’s cutting blades | x | x | 0 | 0 | x | 0 | 0 | 0 | x |  
| 2.2.4 | Check the condition, air pressure and rims of tires | x | x | 0 | 0 | x | 0 | 0 | 0 | 0 |  

---
20. The CCQ’s Direction de l’application des conventions collectives has issued a notice to the effect that the heavy machinery mechanic is responsible for this sub-operation.
<table>
<thead>
<tr>
<th>№</th>
<th>Operations and sub-operations</th>
<th>Fall hazards (persons and objects)</th>
<th>Mechanical hazards</th>
<th>Risks related to the movement of vehicles, pedestrians or workers near the machine</th>
<th>Electrical hazards</th>
<th>Weather hazards</th>
<th>Heat and radiation hazards</th>
<th>Noise and vibration hazards</th>
<th>Chemical hazards</th>
<th>Risques ergonomiques</th>
<th>Ergonomic hazards</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.2.5</td>
<td>Check the automatic back-up horn</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2.3</td>
<td>Take safety measures and apply safety standards</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2.4</td>
<td>Plan the work</td>
<td>x</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2.4.1</td>
<td>Identify the nature of soils to work on</td>
<td>x</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2.4.2</td>
<td>Read and interpret data written on grade skates</td>
<td>x</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2.4.3</td>
<td>Adjust the balance for loading work</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2.5</td>
<td>Start the machine</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2.5.1</td>
<td>Put the main switch on «on» position</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2.5.2</td>
<td>Apply the startup procedure while taking the outdoor temperature into account</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2.5.3</td>
<td>Check the smoke</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2.6</td>
<td>Clear the ground</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2.7</td>
<td>Load materials or pile them</td>
<td>xx</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>0</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>0</td>
</tr>
<tr>
<td>2.8</td>
<td>Pick up materials (fork)</td>
<td>xx</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>0</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>2.9</td>
<td>Transport materials</td>
<td>xx</td>
<td>x</td>
<td>xx</td>
<td>x</td>
<td>x</td>
<td>0</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>2.10</td>
<td>Equalize surfaces</td>
<td>xx</td>
<td>x</td>
<td>x</td>
<td>xx</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>xx</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>2.11</td>
<td>Deposit and spread materials as necessary in trenches and holes</td>
<td>xx</td>
<td>x</td>
<td>0</td>
<td>xx</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>2.12</td>
<td>Handle pipes, fire hydrants, sumps, etc.</td>
<td>xx</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>xx</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>2.12.1</td>
<td>Check and install slings, if applicable</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>x</td>
</tr>
<tr>
<td>2.12.2</td>
<td>Attach the equipment, if applicable</td>
<td>xx</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>0</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>2.12.3</td>
<td>Place the equipment at the prescribed location</td>
<td>xx</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>xx</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>No</td>
<td>Operations and sub-operations</td>
<td>Full hazards (persons and objects)</td>
<td>Mechanical hazards</td>
<td>Risks related to the movement of vehicles, pedestrians or workers near the machine</td>
<td>Electrical hazards</td>
<td>Weather hazards</td>
<td>Heat and radiation hazards</td>
<td>Noise and vibration hazards</td>
<td>Chemical hazards</td>
<td>Risques ergonomiques</td>
<td>Ergonomic hazards</td>
</tr>
<tr>
<td>----</td>
<td>--------------------------------</td>
<td>-----------------------------------</td>
<td>-------------------</td>
<td>----------------------------------</td>
<td>-------------------</td>
<td>----------------</td>
<td>------------------------</td>
<td>------------------------</td>
<td>----------------</td>
<td>----------------------</td>
<td>----------------------</td>
</tr>
<tr>
<td>2.13</td>
<td>Spread gravel on the shoulder (body/spreader)</td>
<td>xx</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>xx</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>2.14</td>
<td>Sweep surfaces (mechanical broom)</td>
<td>x</td>
<td>xx</td>
<td>xx</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>xx</td>
<td>xx</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>2.15</td>
<td>Park the machine at the prescribed location</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>2.16</td>
<td>Clean the machine</td>
<td>x</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>2.16.1</td>
<td>Clean the anchor points</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>2.16.2</td>
<td>Clean the bucket</td>
<td>x</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>2.17</td>
<td>Stop the machine</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>2.17.1</td>
<td>Lower the accessories</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>2.17.2</td>
<td>Apply the closing procedure</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>2.17.3</td>
<td>Put the main switch on «off» position</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>2.18</td>
<td>Maintain the machine</td>
<td>x</td>
<td>xx</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>x</td>
<td>0</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>2.18.1</td>
<td>Lubricate the components</td>
<td>x</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>x</td>
<td>0</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>2.19</td>
<td>Write reports and records and report defects</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

**TASK 3 DRIVE A BULLDOZER**

<p>| 3.1 | Take instructions from one’s supervisor | x | 0 | 0 | 0 | x | 0 | 0 | 0 | 0 |
| 3.2 | Inspect the machine and report defects | xx | xx | 0 | x | x | 0 | 0 | 0 | x |
| 3.2.1 | Inspect the machine’s mechanisms and accessories | xx | xx | 0 | 0 | x | 0 | 0 | 0 | x |
| 3.2.2 | Check oil and fluid levels | x | 0 | 0 | 0 | x | 0 | 0 | 0 | x |
| 3.2.3 | Check the fuel | x | 0 | 0 | 0 | x | 0 | 0 | 0 | x |
| 3.2.4 | Inspect the cutting blades | x | xx | 0 | 0 | x | 0 | 0 | 0 | x |
| 3.2.5 | Check the automatic back-up horn | 0 | 0 | 0 | x | 0 | 0 | 0 | 0 | 0 |
| 3.3 | Take safety measures and apply safety standards | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3.4 | Plan the work | x | 0 | x | 0 | x | 0 | 0 | 0 | 0 |
| 3.4.1 | Identify the nature of soils to work on | x | 0 | x | 0 | x | 0 | 0 | 0 | 0 |</p>
<table>
<thead>
<tr>
<th>N°</th>
<th>Operations and sub-operations</th>
<th>Fall hazards (persons and objects)</th>
<th>Mechanical hazards</th>
<th>Risks related to the movement of vehicles, pedestrians or workers near the machine</th>
<th>Electrical hazards</th>
<th>Weather hazards</th>
<th>Heat and radiation hazards</th>
<th>Noise and vibration hazards</th>
<th>Chemical hazards</th>
<th>Risques ergonomiques Ergonomic hazards</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>3.4.2 Read and interpret data written on grade skates</td>
<td>x</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>• Interpret grade skates</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Find out about required elevation levels</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Adjust electronic grading instruments</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.5</td>
<td>Start the machine</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>3.5.1</td>
<td>Put the main switch on «on» position</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>3.5.2</td>
<td>Apply the startup procedure while taking the outdoor temperature into account</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>3.6</td>
<td>Install and check the electronic system, if applicable</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>x</td>
</tr>
<tr>
<td>3.6.1</td>
<td>Adjust compensation settings, if applicable</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>x</td>
</tr>
<tr>
<td>3.7</td>
<td>Grub fields</td>
<td>xx</td>
<td>xxx</td>
<td>x</td>
<td>0</td>
<td>xx</td>
<td>0</td>
<td>xx</td>
<td>x</td>
<td>xx</td>
</tr>
<tr>
<td>3.7.1</td>
<td>Use the winch</td>
<td>xx</td>
<td>xxx</td>
<td>0</td>
<td>0</td>
<td>xx</td>
<td>0</td>
<td>x</td>
<td>x</td>
<td>xx</td>
</tr>
<tr>
<td>3.7.2</td>
<td>Use the cutting blade</td>
<td>xx</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>3.8</td>
<td>Rip hard surfaces (ripper)</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>xx</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>3.8.1</td>
<td>Adjust the ripper’s tooth according to the work to be done</td>
<td>x</td>
<td>xx</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>x</td>
</tr>
<tr>
<td>3.8.2</td>
<td>Move forward while gradually lowering the tooth</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>3.9</td>
<td>Clear the ground</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>3.9.1</td>
<td>Back up to the prescribed location</td>
<td>x</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>3.9.2</td>
<td>Lower and curve the blade</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>3.9.3</td>
<td>Move forward while raising the blade</td>
<td>x</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>3.9.4</td>
<td>Spread the materials or pile them</td>
<td>x</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>3.10</td>
<td>Scarify the work platform</td>
<td>xx</td>
<td>xx</td>
<td>x</td>
<td>0</td>
<td>xx</td>
<td>0</td>
<td>xx</td>
<td>xx</td>
<td>x</td>
</tr>
<tr>
<td>N°</td>
<td>Operations and sub-operations</td>
<td>Fall hazards (persons and objects)</td>
<td>Mechanical hazards</td>
<td>Risks related to the movement of vehicles, pedestrians or workers near the machine</td>
<td>Electrical hazards</td>
<td>Weather hazards</td>
<td>Heat and radiation hazards</td>
<td>Noise and vibration hazards</td>
<td>Chemical hazards</td>
<td>Risques ergonomiques</td>
</tr>
<tr>
<td>-----</td>
<td>-----------------------------------------------------------------------------------------------</td>
<td>-----------------------------------</td>
<td>-------------------</td>
<td>----------------------------------------------------------------------------------</td>
<td>-------------------</td>
<td>-----------------</td>
<td>---------------------------</td>
<td>--------------------------</td>
<td>----------------</td>
<td>----------------------</td>
</tr>
<tr>
<td>3.11</td>
<td>Shape the construction while observing foundation profiles</td>
<td>xx</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>xx</td>
<td>xx</td>
<td>x</td>
</tr>
<tr>
<td>3.11.1</td>
<td>Continually adjust the blade’s horizontal and vertical angles</td>
<td>xx</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>xx</td>
<td>xx</td>
<td>x</td>
</tr>
<tr>
<td>3.11.2</td>
<td>Continually adjust blade elevation to ensure uniform grading</td>
<td>xx</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>xx</td>
<td>xx</td>
<td>x</td>
</tr>
<tr>
<td>3.11.3</td>
<td>Estimate the required quantity of equipment</td>
<td>xx</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>xx</td>
<td>xx</td>
<td>x</td>
</tr>
<tr>
<td>3.11.4</td>
<td>Spread and grade materials</td>
<td>xx</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>xx</td>
<td>xx</td>
<td>x</td>
</tr>
<tr>
<td>3.11.5</td>
<td>Ensure that elevation levels are observed</td>
<td>xx</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>xx</td>
<td>xx</td>
<td>x</td>
</tr>
<tr>
<td>3.12</td>
<td>Spread and grade materials</td>
<td>xx</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>xx</td>
<td>xx</td>
<td>x</td>
</tr>
<tr>
<td>3.12.1</td>
<td>Determine cutting blade angles</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>3.12.2</td>
<td>Adjust cutting blade angles</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>3.13</td>
<td>Dig trenches for conduits or wires (mole or torpedo)</td>
<td>xxx</td>
<td>xx</td>
<td>x</td>
<td>xx</td>
<td>x</td>
<td>0</td>
<td>xx</td>
<td>xx</td>
<td>xx</td>
</tr>
<tr>
<td>3.14</td>
<td>Handle pipes (side boom)</td>
<td>xx</td>
<td>xx</td>
<td>x</td>
<td>xx</td>
<td>0</td>
<td>xx</td>
<td>xx</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>3.15</td>
<td>Backfill the terrain</td>
<td>xx</td>
<td>x</td>
<td>x</td>
<td>xx</td>
<td>0</td>
<td>xx</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>3.16</td>
<td>Check elevation levels</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>3.17</td>
<td>Push other machines</td>
<td>xx</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>xx</td>
<td>xx</td>
<td>xx</td>
</tr>
<tr>
<td>3.17.1</td>
<td>Slowly approach the other machine</td>
<td>xx</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>3.17.2</td>
<td>Move in position</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>3.17.3</td>
<td>Move forward</td>
<td>xx</td>
<td>x</td>
<td>x</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>3.18</td>
<td>Tow other machines (winch)</td>
<td>xx</td>
<td>xx</td>
<td>0</td>
<td>0</td>
<td>xx</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>x</td>
</tr>
<tr>
<td>3.18.1</td>
<td>Ask for assistance from another worker to run the cable</td>
<td>xx</td>
<td>x</td>
<td>0</td>
<td>xx</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>3.18.2</td>
<td>Apply the machine’s brakes</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>3.18.3</td>
<td>Ensure that no workers are near the cable when the winch is used</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>3.19</td>
<td>Park the machine at the prescribed location</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>№</td>
<td>Operations and sub-operations</td>
<td>Fall hazards (persons and objects)</td>
<td>Mechanical hazards</td>
<td>Risks related to the movement of vehicles, pedestrians or workers near the machine</td>
<td>Electrical hazards</td>
<td>Weather hazards</td>
<td>Heat and radiation hazards</td>
<td>Noise and vibration hazards</td>
<td>Chemical hazards</td>
<td>Risques ergonomiques</td>
</tr>
<tr>
<td>-----</td>
<td>----------------------------------------------------------------------------------------------</td>
<td>-----------------------------------</td>
<td>--------------------</td>
<td>-----------------------------------------------------------------------------------</td>
<td>-------------------</td>
<td>-----------------</td>
<td>---------------------------</td>
<td>-----------------------------</td>
<td>----------------</td>
<td>----------------------</td>
</tr>
<tr>
<td>3.20</td>
<td>Remove the electronic system, if applicable</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>3.21</td>
<td>Clean the machine</td>
<td>xx</td>
<td>xx</td>
<td>0</td>
<td>0</td>
<td>xx</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>xx</td>
</tr>
<tr>
<td>3.21.1</td>
<td>Clean the running gear</td>
<td>xx</td>
<td>xx</td>
<td>0</td>
<td>0</td>
<td>xx</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>xx</td>
</tr>
<tr>
<td>3.21.2</td>
<td>Clean the blade</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>xx</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>x</td>
</tr>
<tr>
<td>3.22</td>
<td>Maintain the machine</td>
<td>x</td>
<td>xx</td>
<td>0</td>
<td>x</td>
<td>xx</td>
<td>x</td>
<td>x</td>
<td>0</td>
<td>x</td>
</tr>
<tr>
<td>3.22.1</td>
<td>Lubricate the components</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>3.22.2</td>
<td>Clean the cab and windows</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>x</td>
</tr>
<tr>
<td>3.23</td>
<td>Stop the machine</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>3.23.1</td>
<td>Lower the accessories</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>3.23.2</td>
<td>Apply the closing procedure</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>3.23.3</td>
<td>Put the main switch on «off» position</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>3.24</td>
<td>Write reports and records and report defects</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

**TASK 4 DRIVE A GRADER**

<p>| 4.1  | Take instructions from one’s supervisor                                                      | x                                 | 0                  | 0                                                                                 | 0                 | x               | 0                         | 0                           | 0             | 0                    |                  |
| 4.2  | Inspect the machine and report defects                                                       | x                                 | x                  | 0                                                                                 | x                 | x               | 0                         | 0                           | 0             | 0                    | x                |
| 4.2.1| Inspect the machine’s mechanisms and accessories                                             | x                                 | x                  | 0                                                                                 | 0                 | x               | 0                         | 0                           | 0             | 0                    | x                |
| 4.2.2| Check oil and fluid levels                                                                  | x                                 | 0                  | 0                                                                                 | x                 | 0               | 0                         | 0                           | 0             | 0                    |                  |
| 4.2.3| Inspect the cutting blades                                                                  | x                                 | x                  | 0                                                                                 | x                 | 0               | 0                         | 0                           | 0             | 0                    | x                |
| 4.2.4| Check the condition, air pressure and rims of tires                                         | x                                 | x                  | 0                                                                                 | 0                 | x               | 0                         | 0                           | 0             | 0                    | 0                |
| 4.2.5| Check the automatic back-up horn                                                            | 0                                 | 0                  | 0                                                                                 | x                 | 0               | 0                         | 0                           | 0             | 0                    | 0                |
| 4.3  | Take safety measures and apply safety standards                                              | 0                                 | 0                  | 0                                                                                 | 0                 | 0               | 0                         | 0                           | 0             | 0                    |                  |
| 4.4  | Plan the work                                                                               | x                                 | 0                  | x                                                                                 | 0                 | 0               | 0                         | 0                           | 0             | 0                    | 0                |
| 4.4.1| Identify the nature of soils to work on                                                       | x                                 | 0                  | x                                                                                 | 0                 | 0               | 0                         | 0                           | 0             | 0                    | 0                |</p>
<table>
<thead>
<tr>
<th>No</th>
<th>Operations and sub-operations</th>
<th>Fall hazards (persons and objects)</th>
<th>Mechanical hazards</th>
<th>Risks related to the movement of vehicles, pedestrians or workers near the machine</th>
<th>Electrical hazards</th>
<th>Weather hazards</th>
<th>Heat and radiation hazards</th>
<th>Noise and vibration hazards</th>
<th>Chemical hazards</th>
<th>Risques ergonomiques Ergonomic hazards</th>
</tr>
</thead>
</table>
| 4.4.2 | Read and interpret data written on grade skates:  
- interpret grade skates  
- find out about required elevation levels  
- adjust electronic grading instruments | x | 0 | x | 0 | x | 0 | 0 | 0 | 0 | 0 |
<p>| 4.5 | Start the machine | 0 | 0 | 0 | x | 0 | 0 | 0 | 0 | 0 | 0 |
| 4.5.1 | Put the main switch on «on» position | 0 | 0 | 0 | x | 0 | 0 | 0 | 0 | 0 | 0 |
| 4.5.2 | Apply the startup procedure while taking the outdoor temperature into account | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4.6 | Install and check the electronic system, if applicable | x | 0 | 0 | 0 | x | 0 | 0 | 0 | 0 | 0 |
| 4.6.1 | Adjust compensation settings, if applicable | x | 0 | 0 | 0 | x | 0 | 0 | 0 | 0 | 0 |
| 4.7 | Scarify the work platform | xx | 0 | x | 0 | x | 0 | xx | x | x | xx |
| 4.8 | Shape the construction while observing foundation profiles | x | 0 | x | 0 | x | 0 | xx | x | x | xx |
| 4.8.1 | Continually adjust the blade’s horizontal and vertical angles | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4.8.2 | Continually adjust blade elevation to ensure uniform grading | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4.8.3 | Estimate the required quantity of equipment | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4.8.4 | Spread and grade materials | x | 0 | x | 0 | x | 0 | xx | x | x | xx |
| 4.8.5 | Ensure that elevation levels are observed | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 4.9 | Do the finish grading | x | 0 | x | 0 | x | 0 | x | x | x | xx |
| 4.9.1 | Continually adjust the blade’s horizontal and vertical angles | x | 0 | x | 0 | x | 0 | x | x | xx | xx |
| 4.9.2 | Continually adjust blade elevation to ensure uniform grading | x | 0 | x | 0 | x | 0 | x | x | x | xx |</p>
<table>
<thead>
<tr>
<th>No</th>
<th>Operations and sub-operations</th>
<th>Fall hazards (persons and objects)</th>
<th>Mechanical hazards</th>
<th>Risks related to the movement of vehicles, pedestrians or workers near the machine</th>
<th>Electrical hazards</th>
<th>Weather hazards</th>
<th>Heat and radiation hazards</th>
<th>Noise and vibration hazards</th>
<th>Chemical hazards</th>
<th>Risques ergonomiques</th>
<th>Ergonomic hazards</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.9.3</td>
<td>Estimate the required quantity of equipment</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>4.9.4</td>
<td>Ensure that materials are discharged beyond the passage of the machine’s rear wheels</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>4.9.5</td>
<td>Spread and grade materials</td>
<td>x</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>4.9.6</td>
<td>Ensure that elevation levels are observed</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>4.10</td>
<td>Spread gravel on the shoulder (body/spreader)</td>
<td>xx</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>xx</td>
<td>0</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>4.11</td>
<td>Report detected abnormalities in the aggregate and the structure profiles</td>
<td>x</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>4.11.1</td>
<td>Check whether the aggregate is too dry or too moist</td>
<td>x</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>4.11.2</td>
<td>Check the possibility of incorrect surveying reference points</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>4.11.3</td>
<td>Notify the persons concerned</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>4.12</td>
<td>Park the machine at the prescribed location at the end of work</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>4.13</td>
<td>Remove the electronic system, if applicable</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>4.14</td>
<td>Clean the machine</td>
<td>xx</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>4.14.1</td>
<td>Clean the windows</td>
<td>xx</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>4.15</td>
<td>Maintain the machine</td>
<td>xx</td>
<td>xxx</td>
<td>0</td>
<td>x</td>
<td>xx</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>4.15.1</td>
<td>Lubricate the components</td>
<td>xx</td>
<td>x</td>
<td>0</td>
<td>x</td>
<td>xx</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>4.16</td>
<td>Stop the machine</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>4.16.1</td>
<td>Lower the blade</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>4.16.2</td>
<td>Apply the closing procedure</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>4.16.3</td>
<td>Put the main switch on «off» position</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>4.17</td>
<td>Write reports and records and report defects</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>N°</td>
<td>Operations and sub-operations</td>
<td>Fall hazards (persons and objects)</td>
<td>Mechanical hazards</td>
<td>Risks related to the movement of vehicles, pedestrians or workers near the machine</td>
<td>Electrical hazards</td>
<td>Weather hazards</td>
<td>Heat and radiation hazards</td>
<td>Noise and vibration hazards</td>
<td>Chemical hazards</td>
<td>Risques ergonomiques Ergonomic hazards</td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>TASK 5 DRIVE A CONCRETE AND COMPACTED CONCRETE SPREADER</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.1</td>
<td>Take instructions from one’s supervisor</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5.2</td>
<td>Inspect the machine and report defects</td>
<td>x</td>
<td>x</td>
<td>0</td>
<td>x</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>xx</td>
<td></td>
</tr>
<tr>
<td>5.2.1</td>
<td>Check oil and fluid levels</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>5.2.2</td>
<td>Check the water level</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>5.2.3</td>
<td>Check the tracks adjustment</td>
<td>x</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>5.2.4</td>
<td>Check the automatic back-up horn</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>5.3</td>
<td>Take safety measures and apply safety standards</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5.3.1</td>
<td>Check whether the work area is secured</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5.3.2</td>
<td>Ensure the presence of signs</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5.4</td>
<td>Plan the work</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5.4.1</td>
<td>Read and interpret data written on grade skates:  • interpret grade skates  • find out about required elevation levels  • adjust electronic grading instruments</td>
<td>x</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5.4.2</td>
<td>Determine the starting and arrival points</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5.5</td>
<td>Install and check the electronic system, if applicable</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5.5.1</td>
<td>Adjust compensation settings, if applicable</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.6</td>
<td>Start the machine</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5.7</td>
<td>Use an escort to move the machine to its work area and position the machine</td>
<td>x</td>
<td>0</td>
<td>xx</td>
<td>x</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>N°</td>
<td>Operations and sub-operations</td>
<td>Fall hazards (persons and objects)</td>
<td>Mechanical hazards</td>
<td>Risks related to the movement of vehicles, pedestrians or workers near the machine</td>
<td>Electrical hazards</td>
<td>Weather hazards</td>
<td>Heat and radiation hazards</td>
<td>Noise and vibration hazards</td>
<td>Chemical hazards</td>
<td>Risques ergonomiques Ergonomic hazards</td>
<td></td>
</tr>
<tr>
<td>-----</td>
<td>------------------------------------------------------------------------------------------------</td>
<td>-----------------------------------</td>
<td>-------------------</td>
<td>--------------------------------------------------------------------------------</td>
<td>------------------</td>
<td>----------------</td>
<td>--------------------------</td>
<td>---------------------------</td>
<td>----------------</td>
<td>---------------------------------</td>
<td></td>
</tr>
<tr>
<td>5.8</td>
<td>Prepare the machine for operations</td>
<td>x</td>
<td>xx</td>
<td>x</td>
<td>0</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>5.8.1</td>
<td>Adjust the electronic system:</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>5.8.2</td>
<td>Ensure that all work team members are in position</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>5.8.3</td>
<td>Spray vegetable oil on the mould, the screw, etc.</td>
<td>x</td>
<td>xx</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>5.8.4</td>
<td>Order the machine’s hopper to be loaded</td>
<td>x</td>
<td>xx</td>
<td>x</td>
<td>0</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>5.8.5</td>
<td>Make sure to have a sufficient volume of concrete before it is laid</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>5.9</td>
<td>Lay the concrete</td>
<td>x</td>
<td>xx</td>
<td>xx</td>
<td>x</td>
<td>xx</td>
<td>0</td>
<td>xx</td>
<td>xx</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>5.9.1</td>
<td>Depending on surface configuration (road, parking lot, intersection, etc.), adjust:</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• the machine’s speed</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• paving thickness</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• paving width (concrete paver only)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.10</td>
<td>Monitor the safety of personnel on the ground</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>5.11</td>
<td>Mettre la machine en position d’arrêt Put the machine in the stop position</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>5.12</td>
<td>Remove the electronic system, if applicable</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>5.13</td>
<td>Clean the machine</td>
<td>xx</td>
<td>xx</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>xx</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>5.13.1</td>
<td>Wash with water</td>
<td>x</td>
<td>xx</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>x</td>
<td>xx</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>5.13.2</td>
<td>If the concrete is set, scratch or break it with a sledgehammer</td>
<td>xx</td>
<td>xx</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>x</td>
<td>xx</td>
<td>xx</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>5.14</td>
<td>Maintain the machine</td>
<td>x</td>
<td>xx</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>xx</td>
<td>0</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>5.14.1</td>
<td>Lubricate the gantry and the endless screw, or check and activate the automatic lubrication system</td>
<td>x</td>
<td>xx</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>x</td>
<td>xx</td>
<td>0</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>Operations and sub--operations</td>
<td>Fall hazards (persons and objects)</td>
<td>Mechanical hazards</td>
<td>Risks related to the movement of vehicles, pedestrians or workers near the machine</td>
<td>Electrical hazards</td>
<td>Weather hazards</td>
<td>Heat and radiation hazards</td>
<td>Noise and vibration hazards</td>
<td>Chemical hazards</td>
<td>Risques ergonomiques</td>
<td>Ergonomic hazards</td>
</tr>
<tr>
<td>-----</td>
<td>---------------------------------</td>
<td>-----------------------------------</td>
<td>-------------------</td>
<td>---------------------------------</td>
<td>------------------</td>
<td>-----------------</td>
<td>-----------------------------</td>
<td>-----------------------------</td>
<td>----------------</td>
<td>---------------------</td>
<td>------------------</td>
</tr>
<tr>
<td>5.15</td>
<td>Use an escort to move the machine to its parking platform</td>
<td>x</td>
<td>0</td>
<td>xx</td>
<td>x</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>x</td>
</tr>
<tr>
<td>5.15.1</td>
<td>Start the machine</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5.15.2</td>
<td>Go to the parking platform</td>
<td>x</td>
<td>0</td>
<td>xx</td>
<td>x</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5.16</td>
<td>Stop the machine</td>
<td>x</td>
<td>x</td>
<td>0</td>
<td>x</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>5.16.1</td>
<td>Apply the closing procedure</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5.16.2</td>
<td>Put the main switch on «off» position</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>5.16.3</td>
<td>Install security bars</td>
<td>x</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>x</td>
</tr>
<tr>
<td>5.17</td>
<td>Write reports and records and report defects</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5.17.1</td>
<td>Enter the machine’s hours of use</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

**TASK 6   DRIVE AN ASPHALT SPREADER**

<p>| 6.1 | Take instructions from one’s supervisor | x | 0 | 0 | 0 | x | 0 | 0 | 0 | 0 | 0 |
| 6.2 | Inspect the machine and report defects | xx | xx | 0 | x | x | 0 | 0 | 0 | x |
| 6.2.1 | Inspect the machine’s mechanisms and accessories (conveyors, screws, doors, etc.) | x | xx | 0 | 0 | x | 0 | 0 | 0 | x |
| 6.2.2 | Inspect the table | xx | 0 | 0 | 0 | x | 0 | 0 | 0 | 0 | x |
| 6.2.3 | Check the fuel | x | 0 | 0 | 0 | x | 0 | 0 | 0 | 0 | x |
| 6.2.4 | Check oil and fluid levels | x | 0 | 0 | 0 | x | 0 | 0 | 0 | 0 | x |
| 6.2.5 | Check the vibrators | x | x | 0 | 0 | x | 0 | 0 | 0 | 0 | x |
| 6.2.6 | Check the condition, air pressure and rims of tires | x | x | 0 | 0 | x | 0 | 0 | 0 | 0 | 0 |
| 6.2.7 | Check the automatic back-up horn | 0 | 0 | 0 | x | 0 | 0 | 0 | 0 | 0 | 0 |
| 6.3 | Take safety measures and apply safety standards | x | 0 | x | 0 | x | 0 | 0 | 0 | 0 | 0 |
| 6.3.1 | Check whether the work area is secured | x | 0 | x | 0 | x | 0 | 0 | 0 | 0 | 0 |
| 6.3.2 | Ensure the presence of signs | x | 0 | x | 0 | x | 0 | 0 | 0 | 0 | 0 |</p>
<table>
<thead>
<tr>
<th>No</th>
<th>Operations and sub-operations</th>
<th>Fall hazards (persons and objects)</th>
<th>Mechanical hazards</th>
<th>Risks related to the movement of vehicles, pedestrians or workers near the machine</th>
<th>Electrical hazards</th>
<th>Weather hazards</th>
<th>Heat and radiation hazards</th>
<th>Noise and vibration hazards</th>
<th>Chemical hazards</th>
<th>Risques ergonomiques</th>
<th>Ergonomic hazards</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.4</td>
<td>Start the machine</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>6.5</td>
<td>Heat the smoothing bar</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>6.5.1</td>
<td>Start the table's heating system</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>6.5.2</td>
<td>Check the table's temperature</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>6.6</td>
<td>Install and check the electronic system, if applicable</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>0</td>
</tr>
<tr>
<td>6.6.1</td>
<td>Adjust the table's compensation settings, if applicable</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>0</td>
</tr>
<tr>
<td>6.7</td>
<td>Plan the work</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>6.7.1</td>
<td>Read and interpret data written on grade skates:</td>
<td>x</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>6.7.2</td>
<td>Determine the starting and arrival points</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>6.8</td>
<td>Use an escort to move the machine to its work area and position the machine</td>
<td>x</td>
<td>0</td>
<td>xx</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>x</td>
</tr>
<tr>
<td>6.9</td>
<td>Prepare the machine for operations</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>6.9.1</td>
<td>Adjust the electronic system:</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>6.9.2</td>
<td>Activate the chain drive and spreading screws for laying the plant mix</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>6.9.3</td>
<td>Ensure that all work team members are in position</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>x</td>
</tr>
<tr>
<td>6.9.4</td>
<td>Install the thickness guide</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>6.9.5</td>
<td>Lower the smoothing bar</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>No</td>
<td>Operations and sub-operations</td>
<td>Fall hazards (persons and objects)</td>
<td>Mechanical hazards</td>
<td>Risks related to the movement of vehicles, pedestrians or workers near the machine</td>
<td>Electrical hazards</td>
<td>Weather hazards</td>
<td>Heat and radiation hazards</td>
<td>Noise and vibration hazards</td>
<td>Chemical hazards</td>
<td>Risques ergonomiques</td>
<td>Ergonomic hazards</td>
</tr>
<tr>
<td>----</td>
<td>--------------------------------</td>
<td>----------------------------------</td>
<td>-------------------</td>
<td>---------------------------------</td>
<td>-----------------</td>
<td>---------------</td>
<td>------------------------</td>
<td>------------------------</td>
<td>----------------</td>
<td>----------------------</td>
<td>---------------------</td>
</tr>
<tr>
<td>6.9.6</td>
<td>Adjust the alignment guide</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>6.9.7</td>
<td>Adjust the approach angle of the smoothing bar</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>6.9.8</td>
<td>Order the machine’s hopper to be loaded</td>
<td>0</td>
<td>x</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Make sure to have a sufficient volume of plant mix before it is laid</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>x</td>
<td>0</td>
</tr>
<tr>
<td>6.10</td>
<td>Lay the plant mix</td>
<td>x</td>
<td>x</td>
<td>xx</td>
<td>x</td>
<td>xx</td>
<td>xx</td>
<td>xx</td>
<td>xx</td>
<td>xx</td>
<td>xx</td>
</tr>
<tr>
<td>6.10.1</td>
<td>Depending on surface configuration (road, parking lot, intersection, etc.), adjust:</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>• machine speed</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>• paving thickness</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>• paving width</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>• slope percentages</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>6.11</td>
<td>Monitor the safety of personnel on the ground</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>x</td>
</tr>
<tr>
<td>6.12</td>
<td>Remove the electronic system, if applicable</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>6.13</td>
<td>Put the machine in the stop position</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>0</td>
</tr>
<tr>
<td>6.14</td>
<td>Clean the machine</td>
<td>xx</td>
<td>xxx</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>xx</td>
<td>0</td>
<td>xx</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>6.14.1</td>
<td>Stop the machine</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>6.14.2</td>
<td>Clean the machine of any plant mix</td>
<td>xx</td>
<td>xx</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>xx</td>
<td>0</td>
<td>xx</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>6.14.3</td>
<td>Spray the hopper, screw feeder, spreading screws and smoothing bar with a washing agent</td>
<td>xx</td>
<td>xxx</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>xx</td>
<td>0</td>
<td>xx</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>6.14.4</td>
<td>Leave the smoothing bar raised and fasten it</td>
<td>x</td>
<td>xx</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>6.15</td>
<td>Maintain the machine</td>
<td>x</td>
<td>xx</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>xx</td>
<td>0</td>
<td>x</td>
<td>xx</td>
<td></td>
</tr>
<tr>
<td>6.15.1</td>
<td>Lubricate the gantry and the endless screw, or check and activate the automatic lubrication system</td>
<td>x</td>
<td>xx</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>Operations and sub-operations</td>
<td>Fall hazards (persons and objects)</td>
<td>Mechanical hazards</td>
<td>Risks related to the movement of vehicles, pedestrians or workers near the machine</td>
<td>Electrical hazards</td>
<td>Weather hazards</td>
<td>Heat and radiation hazards</td>
<td>Noise and vibration hazards</td>
<td>Chemical hazards</td>
<td>Ergonomic hazards</td>
<td></td>
</tr>
<tr>
<td>-----</td>
<td>-------------------------------</td>
<td>-----------------------------------</td>
<td>-------------------</td>
<td>------------------------------------------------</td>
<td>-----------------</td>
<td>----------------</td>
<td>-----------------------------</td>
<td>-----------------------------</td>
<td>-----------------</td>
<td>-----------------</td>
<td></td>
</tr>
<tr>
<td>6.16</td>
<td>Use an escort to move the machine to its parking platform</td>
<td>x</td>
<td>x</td>
<td>xx</td>
<td>x</td>
<td>x</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>6.16.1</td>
<td>Start the machine</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>6.16.2</td>
<td>Go to the parking platform</td>
<td>x</td>
<td>0</td>
<td>xx</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>6.17</td>
<td>Stop the machine</td>
<td>x</td>
<td>xx</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>6.17.1</td>
<td>Apply the closing procedure</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>6.17.2</td>
<td>Put the main switch on «off» position</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>6.17.3</td>
<td>Install security bars</td>
<td>x</td>
<td>xx</td>
<td>x</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>6.18</td>
<td>Write reports and records and report defects</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>6.18.1</td>
<td>Enter the machine’s hours of use</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

**TASK 7  DRIVE A STABILIZER SPRAYER**

| 7.1 | Take instructions from one’s supervisor | x | 0 | 0 | 0 | x | 0 | 0 | 0 | 0 |
| 7.2 | Inspect the machine and report defects | x | xx | 0 | 0 | x | 0 | 0 | 0 | x |
| 7.2.1 | Check oil and fluid levels | x | 0 | 0 | 0 | x | 0 | 0 | 0 | x |
| 7.3 | Take safety measures and apply safety standards | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7.4 | Start the machine | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7.5 | Inspect the drum and teeth | xx | xx | 0 | 0 | x | 0 | 0 | 0 | xx |
| 7.6 | Plan the work | x | 0 | x | 0 | x | 0 | 0 | 0 | 0 |
| 7.6.1 | Inspect the path (manholes, rail, expansion joint, other obstacles) | x | 0 | x | 0 | x | 0 | 0 | 0 | 0 |
| 7.6.2 | Mark obstacles with paint | x | 0 | x | 0 | x | 0 | 0 | 0 | 0 |
| 7.7 | Use an escort to move the machine to its work area and position the machine | x | 0 | xx | x | x | 0 | x | 0 | x |
| 7.8 | Prepare the machine for operations to be performed | x | xx | 0 | x | x | 0 | x | x | x |
| 7.8.1 | Activate the drum | 0 | 0 | 0 | 0 | 0 | 0 | x | 0 | 0 |
### Operations and sub-operations

<table>
<thead>
<tr>
<th>No</th>
<th>Operations and sub-operations</th>
<th>Fall hazards (persons and objects)</th>
<th>Mechanical hazards</th>
<th>Risks related to the movement of vehicles, pedestrians or workers near the machine</th>
<th>Electrical hazards</th>
<th>Weather hazards</th>
<th>Heat and radiation hazards</th>
<th>Noise and vibration hazards</th>
<th>Chemical hazards</th>
<th>Risques ergonomiques</th>
<th>Ergonomic hazards</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.8.2</td>
<td>Gradually lower the drum to the desired cutting depth</td>
<td>x</td>
<td>xx</td>
<td>0</td>
<td>x</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>7.8.3</td>
<td>Adjust the binder's flow rate, if applicable</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>7.9</td>
<td>Carry out the work</td>
<td>xx</td>
<td>xx</td>
<td>xx</td>
<td>0</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>xx</td>
<td>xx</td>
<td></td>
</tr>
<tr>
<td>7.9.1</td>
<td>Adjust the machine’s advance according to the nature of work to be done</td>
<td>x</td>
<td>xx</td>
<td>xx</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>x</td>
<td>xx</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>7.9.2</td>
<td>Gradually raise the drum back up</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>7.9.3</td>
<td>Disengage the drum</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>7.9.4</td>
<td>Check the wear of the teeth, teeth holders and drum</td>
<td>xx</td>
<td>xx</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>x</td>
<td>xx</td>
<td>xx</td>
<td></td>
</tr>
<tr>
<td>7.10</td>
<td>Use an escort to move the machine to its parking platform</td>
<td>x</td>
<td>0</td>
<td>xx</td>
<td>x</td>
<td>x</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>7.11</td>
<td>Clean the machine</td>
<td>xx</td>
<td>xx</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>xx</td>
<td>0</td>
<td>x</td>
<td>xx</td>
<td></td>
</tr>
<tr>
<td>7.12</td>
<td>Clean the machine</td>
<td>xx</td>
<td>xx</td>
<td>0</td>
<td>x</td>
<td>x</td>
<td>xx</td>
<td>0</td>
<td>x</td>
<td>xx</td>
<td></td>
</tr>
<tr>
<td>7.12.1</td>
<td>Replace teeth and teeth holders</td>
<td>xx</td>
<td>xx</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>xx</td>
<td></td>
</tr>
<tr>
<td>7.12.2</td>
<td>Arc weld (SMAW) the teeth holders&lt;sup&gt;21&lt;/sup&gt;</td>
<td>xx</td>
<td>xx</td>
<td>0</td>
<td>x</td>
<td>x</td>
<td>xx</td>
<td>0</td>
<td>x</td>
<td>xx</td>
<td></td>
</tr>
<tr>
<td>7.13</td>
<td>Stop the machine</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>7.14</td>
<td>Write reports and records and report defects</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

### TASK 8  DRIVE A COLD MILLING MACHINE (LEVELLER)

| 8.1   | Take instructions from one's supervisor                                                       | x                                 | 0                  | 0                                | 0                 | 0              | 0                           | 0                           | 0              |
| 8.2   | Inspect the machine and report defects                                                        | x                                 | 0                  | 0                                | 0                 | 0              | 0                           | 0                           | 0              |
| 8.2.1 | Check oil and fluid levels                                                                   | x                                 | 0                  | 0                                | 0                 | x              | 0                           | 0                           | 0              |
| 8.3   | Take safety measures and apply safety standards                                               | 0                                 | 0                  | 0                                | 0                 | 0              | 0                           | 0                           | 0              |
| 8.4   | Start the machine                                                                            | 0                                 | 0                  | 0                                | 0                 | 0              | 0                           | 0                           | 0              |

<sup>21</sup> The CCQ's Direction de l’application des conventions collectives has issued a notice to the effect that the heavy machinery mechanic is responsible for sub-operations 7.12.1 and 7.12.2.
<table>
<thead>
<tr>
<th>No</th>
<th>Operations and sub-operations</th>
<th>Fall hazards (persons and objects)</th>
<th>Mechanical hazards</th>
<th>Risks related to the movement of vehicles, pedestrians or workers near the machine</th>
<th>Electrical hazards</th>
<th>Weather hazards</th>
<th>Heat and radiation hazards</th>
<th>Noise and vibration hazards</th>
<th>Chemical hazards</th>
<th>Risques ergonomiques Ergonomic hazards</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.5</td>
<td>Install and check the electronic system, if applicable</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>8.5.1</td>
<td>Adjust compensation settings, if applicable</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>8.6</td>
<td>Inspect the drum and teeth</td>
<td>xx</td>
<td>xx</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>x</td>
</tr>
<tr>
<td>8.7</td>
<td>Fill the tank with water to be sprayed</td>
<td>xx</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>x</td>
</tr>
<tr>
<td>8.8</td>
<td>Check the operation of water sprinklers</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>x</td>
</tr>
<tr>
<td>8.9</td>
<td>Plan the work</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>8.9.1</td>
<td>Inspect the path (manholes, rail, expansion joint, other obstacles)</td>
<td>x</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>8.9.2</td>
<td>Mark obstacles with paint</td>
<td>x</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>8.10</td>
<td>Use an escort to move the machine to its work area and position the machine</td>
<td>x</td>
<td>0</td>
<td>xx</td>
<td>x</td>
<td>xx</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>8.11</td>
<td>Prepare the machine for operations to be performed</td>
<td>x</td>
<td>xx</td>
<td>xx</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>8.11.1</td>
<td>Activate the drum countersink</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>8.11.2</td>
<td>Activate the conveyor and place it over the bed of the truck</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>8.11.3</td>
<td>Gradually lower the drum countersink to the desired depth</td>
<td>x</td>
<td>xx</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>8.11.4</td>
<td>Adjust the water flow rate</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>8.12</td>
<td>Monitor the safety of personnel on the ground</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>8.13</td>
<td>Carry out the work</td>
<td>x</td>
<td>xx</td>
<td>xx</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>8.13.1</td>
<td>Adjust the machine’s advance according to the nature of work to be done</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>8.13.2</td>
<td>Gradually raise the drum countersink back up</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>8.13.3</td>
<td>Disengage the drum countersink</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>N°</td>
<td>Operations and sub-operations</td>
<td>Fall hazards (persons and objects)</td>
<td>Mechanical hazards</td>
<td>Risks related to the movement of vehicles, pedestrians or workers near the machine</td>
<td>Electrical hazards</td>
<td>Weather hazards</td>
<td>Heat and radiation hazards</td>
<td>Noise and vibration hazards</td>
<td>Chemical hazards</td>
<td>Risques ergonomiques Ergonomic hazards</td>
</tr>
<tr>
<td>-----</td>
<td>-------------------------------</td>
<td>-----------------------------------</td>
<td>--------------------</td>
<td>-------------------------------------------------</td>
<td>------------------</td>
<td>-----------------</td>
<td>--------------------------</td>
<td>---------------------------</td>
<td>----------------</td>
<td>-------------------------------</td>
</tr>
<tr>
<td>8.13.4</td>
<td>Check the wear of the teeth, teeth holders and drum</td>
<td>xx</td>
<td>xx</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>x</td>
</tr>
<tr>
<td>8.14</td>
<td>Remove the electronic system, if applicable</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>8.15</td>
<td>Park the machine at the cleaning location</td>
<td>x</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>8.16</td>
<td>Clean the machine</td>
<td>xx</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>x</td>
<td>0</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>8.17</td>
<td>Use an escort to move the machine to its parking platform</td>
<td>x</td>
<td>0</td>
<td>xx</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>8.18</td>
<td>Maintain the machine</td>
<td>xxx</td>
<td>xx</td>
<td>0</td>
<td>x</td>
<td>x</td>
<td>xx</td>
<td>0</td>
<td>x</td>
<td>xx</td>
</tr>
<tr>
<td>8.18.1</td>
<td>Replace teeth and teeth holders</td>
<td>xxx</td>
<td>xx</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>xx</td>
<td>0</td>
<td>x</td>
<td>0</td>
</tr>
<tr>
<td>8.18.2</td>
<td>Arc weld (SMAW) the teeth holders22</td>
<td>x</td>
<td>x</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>xx</td>
<td>0</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>8.19</td>
<td>Stop the machine</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>8.20</td>
<td>Write reports and records and report defects</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

**TASK 9  DRIVE POWER COMPACTORS**

(DOUBLE DRUM, COMBINED AND PNEUMATIC)

| 9.1 | Take instructions from one’s supervisor | x | 0 | 0 | 0 | x | 0 | 0 | 0 | 0 |
| 9.2 | Inspect the machine and report defects | x | x | 0 | x | x | 0 | 0 | 0 | x |
| 9.2.1 | Check oil and fluid levels | x | 0 | 0 | 0 | x | 0 | 0 | 0 | x |
| 9.2.2 | Check the condition of tires and rims | x | 0 | 0 | 0 | x | 0 | 0 | 0 | 0 |
| 9.2.3 | Check the automatic back-up horn | 0 | 0 | 0 | x | 0 | 0 | 0 | 0 | 0 |
| 9.3 | Take safety measures and apply safety standards | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9.4 | Plan the work | x | 0 | 0 | 0 | x | 0 | 0 | 0 | 0 |
| 9.5 | Start the machine | 0 | 0 | 0 | x | 0 | 0 | 0 | 0 | 0 |
| 9.5.1 | Put the main switch on «on» position | 0 | 0 | 0 | x | 0 | 0 | 0 | 0 | 0 |

22. The CCQ’s Direction de l’application des conventions collectives has issued a notice to the effect that the heavy machinery mechanic is responsible for sub-operations 8.18.1 and 8.18.2.
<table>
<thead>
<tr>
<th>№</th>
<th>Operations and sub-operations</th>
<th>Fall hazards (persons and objects)</th>
<th>Mechanical hazards</th>
<th>Risks related to the movement of vehicles, pedestrians or workers near the machine</th>
<th>Electrical hazards</th>
<th>Weather hazards</th>
<th>Heat and radiation hazards</th>
<th>Noise and vibration hazards</th>
<th>Chemical hazards</th>
<th>Risques ergonomiques Ergonomic hazards</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.5.2</td>
<td>Apply the startup procedure while taking the outdoor temperature into account</td>
<td>0 0 0 0 0 0 0 0 0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.6</td>
<td>Install the electronic system, if applicable</td>
<td>x 0 0 0 x 0 0 x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.7</td>
<td>Fill the water tank for spraying (plant mix)</td>
<td>x 0 0 0 x 0 0 x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.8</td>
<td>Check the operation of water sprinklers (plant mix)</td>
<td>x x 0 0 x 0 0 x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.9</td>
<td>Move the machine to the place of work</td>
<td>x x xx x x 0 x 0 x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.10</td>
<td>Select vibration amplitude and frequency (plant mix and aggregate)</td>
<td>0 0 0 0 0 0 x 0 0 0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.11</td>
<td>Select the tire pressure and speed (plant mix)</td>
<td>0 0 0 0 0 0 0 0 0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.12</td>
<td>Proceed to compaction</td>
<td>xx x xx 0 xx xx xx xx xxx</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.12.1</td>
<td>Adjust the rolling speed and vibration according to the pattern</td>
<td>x 0 0 0 x 0 x x x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.12.2</td>
<td>Make sure of the required moisture level</td>
<td>0 0 0 0 x 0 x x x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.12.3</td>
<td>Make the required number of passes</td>
<td>xx 0 xx 0 xx 0 x x xx</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.12.4</td>
<td>Adjust the amplitude, speed and vibration</td>
<td>x 0 0 0 x x x x x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.12.5</td>
<td>Take the mix’s temperature and behaviour into account</td>
<td>0 0 0 0 0 x x x x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.12.6</td>
<td>Compact</td>
<td>xx x xx 0 xx xx xx xxx</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.12.7</td>
<td>Make the required number of passes</td>
<td>xx 0 xx 0 xx xx xx xx xxx</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.13</td>
<td>Disengage the vibration system before each change in direction (plant mix and aggregate)</td>
<td>0 0 0 0 0 0 0 0 0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>Operations and sub-operations</td>
<td>Fall hazards (persons and objects)</td>
<td>Mechanical hazards</td>
<td>Risks related to the movement of vehicles, pedestrians or workers near the machine</td>
<td>Electrical hazards</td>
<td>Weather hazards</td>
<td>Heat and radiation hazards</td>
<td>Noise and vibration hazards</td>
<td>Chemical hazards</td>
<td>Risques ergonomiques</td>
</tr>
<tr>
<td>----</td>
<td>--------------------------------</td>
<td>----------------------------------</td>
<td>-------------------</td>
<td>-------------------------------------------------</td>
<td>-----------------</td>
<td>----------------</td>
<td>--------------------------</td>
<td>---------------------------</td>
<td>----------------</td>
<td>---------------------</td>
</tr>
<tr>
<td>9.14</td>
<td>Park the machine at the prescribed location</td>
<td>x</td>
<td>0</td>
<td>xx</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>9.15</td>
<td>Remove the electronic system, if applicable</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>9.16</td>
<td>Clean the machine</td>
<td>xx</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>9.16.1</td>
<td>Clean the windows</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>9.16.2</td>
<td>Clean roller scrapers</td>
<td>xx</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>9.17</td>
<td>Stop the machine</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>9.18</td>
<td>Maintain the machine</td>
<td>xx</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>9.18.1</td>
<td>Lubricate the components</td>
<td>x</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>9.18.2</td>
<td>In cold weather, drain the pumps and fill them with antifreeze</td>
<td>xx</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>x</td>
<td>x</td>
<td>0</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>9.19</td>
<td>Write reports and records and report defects</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

**TASK 10  LOAD AND UNLOAD A MACHINE ON A LONG-LOAD DOLLY OR A PLATFORM**

This task was not matched with a description of sub-operations or clarifications by the participants.

| Load and unload a machine on a long-load dolly or a platform | xxx | xx | x | x | xx | x | 0 | 0 | x |