

# STANDARD OPERATING PROCEDURE

<b>Haul Truck Dumping Procedures</b>		Document Number: 962C-SOP-036
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## HAUL TRUCK DUMPING PROCEDURES

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BR

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*The following is a step by step procedure on how to complete a specific task or meet a facility specific requirement. Standard Operating Procedures (SOPs) are written for all identified critical tasks. By virtue of the hazard or complexity associated with critical tasks it is paramount that the SOP be followed as written. SOPs contain a listing of high-level hazards associated with the task, for detailed hazard analysis reference the applicable Task Hazard Assessments. SOPs do not replace the requirements contained in the NACG Standards, Codes, and Processes nor does it replace the need to comply with required legislation. Section 8.0 references documentation that the worker shall understand before work commences.*

## 1.0 PURPOSE

- To establish a Company standard to safely and effectively carry out work as it applies to dumping haul trucks and working on a dump.

## 2.0 SCOPE AND APPLICATION

- This document applies to all Company Heavy Construction and Mining operations. Ensure all site specific requirements are being met or exceeded before performing the task.

## 3.0 HAZARDS AND CONTROLS

- Equipment contact when entering a dump area, staging or backing to dump a load.
  - Haul truck operators will confirm with dozer operator/spotter or area supervisor if the haul truck is required to spot to a dozer/spotter, spot at a previously dumped load or free dump prior to staging on an active dump.
  - Dump traffic patterns will be identified by the area supervisor or their designate, documented on a hazard assessment and clearly communicated to all affected operators. Haul truck operators will follow designated traffic patterns.
    - Dump traffic patterns may be Left Hand Drive (LHD) or Right Hand Drive (RHD) based on dump conditions. Left Hand Drive is the preferred traffic pattern; however, situations such as (but not limited to) size of dump area and ground conditions may not be suitable for left hand drive therefore a right hand drive traffic pattern may be used.
  - On Left Hand Drive (LHD) dumps, haul truck operators will crossover to left hand drive at a designated point and travel clockwise on the dump in order to approach the spotting dozer from the left prior to staging. Refer to Appendix A – Dump Traffic Patterns.
  - On Right Hand Drive (RHD) dumps, haul truck operators will travel counterclockwise on the dump. Refer to Appendix A – Dump Traffic Patterns.
  - Haul truck operators will wait until other haul trucks have cleared the dump pocket before turning to stage for backing up.

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- Haul trucks will face the dozer and maintain a minimum distance of two (2) truck lengths or 20 metres from the dozer (spotter) until the dozer stops working and provides an acceptance signal to the haul truck.
  - On LHD dumps, the haul truck will turn to the right (blind side turn), keeping the dozer in view, and position themselves to spot to the dozer. Blind side turn callout is not required.
  - On RHD dumps, the haul truck will drive past the dozer, turn to the left (good side turn) and position themselves to spot to the dozer.
- Haul trucks will NOT reverse to spot to the dozer unless the dozer is clearly visible in the haul truck's good side (left side) mirror. Haul truck operators will check both mirrors to confirm the spotting dozer is visible on the good side (left side) and no additional hazards are present prior to reversing. **If, at any time, visual contact with the dozer/spotter is lost, the haul truck operator will immediately stop and contact dozer operator/spotter for further instruction.**
- Crossover to left hand drive should take place no further than 200 meters from the dozer or spotter. Crossover signage may be used if there is any potential for confusion. If signage is used, crossover will take place after the sign.
- Haul trucks leaving the Left Hand Drive work area crossing over to regular drive, have right of way over haul trucks entering the dump unless otherwise directed by a supervisor or client procedure.
- Haul trucks will never travel behind a working dozer. Haul trucks must maintain a distance of three (3) truck lengths or 30 metres if travelling behind a working dozer otherwise positive radio communication is required to obtain permission to travel behind the dozer.
- Dozer operators will use acceptance signals to communicate with haul truck operators when they are ready to receive the haul truck. An acceptance signal includes ALL of the following:
  1. Dozer has stopped pushing material.
  2. Dozer has set up in the correct orientation to support cab to cab spotting.
  3. Dozer blade has been lowered to the ground.

Additional acceptance signals may also include but are not limited to spotting lights, flashing lights, radio communication and horn sounds. Additional acceptance signals must be identified by the area supervisor or their designate, documented on a hazard assessment and clearly communicated to all affected operators.

- Dozer operators or spotters will continually monitor the work area for haul trucks staging or spotting or other equipment entering the work area.
- **Dozer operators will always shoulder check before reversing** machine to confirm there is no obstruction behind them.

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- Once a dozer operator or spotter has issued a haul truck acceptance signal, the dozer operator or spotter will continually monitor the haul truck through mirrors and shoulder checks to ensure the haul truck is spotting correctly and that there is no potential for contact.
- The dozer operator or spotter will use the radio and horn signals to stop the haul truck if they are spotting incorrectly and there is a potential for contact. If the dozer operator is unable to stop the haul truck, the dozer operator will attempt to clear the area.
- Dozer operator will not travel greater than 30 metres in reverse on an active dump. Dozer operators may travel up to 50 metres in reverse on an inactive dump where there is no expectation of equipment entering the dump. Dozer operators will always shoulder check while reversing to confirm there are no hazards behind them.
- Haul truck operators will reverse, parallel to the dozer, maintaining a minimum of 3 metres (10 feet) between dozer and haul truck when spotting into position. Distance may increase depending on ground conditions, visibility, equipment size and material composition. Haul truck operators will stop reversing when any of the following conditions have been met:
  - Haul truck cab to dozer cab has been achieved (cab to cab spotting).
  - Dozer or spotter issues a stop signal. Stop signal can include but is not limited to single horn blast, spotting lights, radio communication. Stop signals will be communicated by the dozer operator or area supervisor or their designate and will be documented on a hazard assessment.
  - Haul truck operator loses sight of dozer operator or spotter.
- Supervisor will ensure adequate communication methods are established and followed in all dumps. Operators will confirm radios, spotting lights and / or horns are working.
- **Haul truck operators will never back towards a dozer or spotter without receiving an acceptance signal.**
- When parking equipment temporarily (i.e. during breaks) on an active dump, dozer operators will park the equipment sideways (blade perpendicular to dump face) and a safe distance ((10) ten metres) from the dump face. This will temporarily close the work area to haul trucks.
- Material contacting spotter while being dumped.
  - Once haul truck is in position and prior to raising the box, the spotter (dozer) will retreat from the area.
- Inadequate communication between dozer/spotter and haul truck operator.
  - All operators will confirm communication methods prior to entering dump.
  - Ensure the proper radio channel is used and make positive communication (visual or verbal) with spotter before backing to dump area.

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- Communicate radio messages clearly and acknowledge transmission.
- When using hand signals, maintain visual line of sight with spotter at all times. If visual communication is lost, stop haul truck immediately until visual is regained.
- Dumping on unstable or sloped ground resulting in equipment upset or equipment becoming stuck.
  - Spotters will look for cracks or sink holes in dump floors. Report unstable ground conditions to supervision immediately.
  - Haul trucks will not back over dump areas that are unstable, sloughing or cracking. **If ground conditions create an unstable dumping platform for the haul truck, STOP and reposition truck.**
  - Avoid backing down a slope to dump. Where possible, position the haul truck on a level surface before dumping. Do not 'spike' or forcefully apply service or emergency brakes while reversing.
  - If dump conditions are soft or unstable, haul trucks will dump short and the dozer will push material into position.
- Equipment travelling over edges.
  - Haul trucks will not use dump berms as a stop block.
  - Dump berms will be constructed of suitable material to withstand significant sloughing and crumbling. Material consisting of snow and mud is not suitable.
  - **Supervised dumps greater than one (1) metre and less than three (3) metres in height** will have a minimum one (1) metre marker berm along the edges of the dump. When dumping to a spotter, haul trucks will maintain a minimum of three (3) metres (10 feet) between the haul truck's rear tires and the bermed edge of the dump. Distance may increase based on dump conditions. Sloughing, cracking or unstable dump edges will require an increased distance. Distance may decrease if a safety berm equal to half (½) the height of the largest haul truck tire dumping in the area is erected.
  - **Supervised dumps greater than three (3) metres in height** will have a safety berm equal to half (½) the height of the largest haul truck tire dumping in the area. Where dump conditions prevent suitable berms from being constructed (i.e. wet MFT), haul trucks will increase spotting / stopping distance to a minimum of six (6) metres (20 feet) between the haul truck's rear tires and the defined edge of the dump.
  - **Unsupervised dumps** will have a safety berm equal to half (½) the height of the largest haul truck tire dumping in the area. The berm will be maintained around the entire dump face. Haul trucks will use "spotting piles" when free dumping on unsupervised dumps. Spotting piles will be placed no closer than six (6) metres (20 feet) from the bermed edge of dump.
- Congested work area with other equipment or obstructions present.

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- Visually scan dump area on approach to become familiar with other equipment and obstacles in the area (i.e. light vehicles, light plants, ground personnel, etc.).
- **Operators must stop and ask for assistance if they lose sight of obstacles or other equipment.**
- Poor ground conditions resulting in tire damages, personal injuries and equipment damages.
  - Avoid driving over lumps, rocks, and through soft spots.
  - Report any lumps, rocks, obstructions or soft spots to supervision for removal, repair or barricading.
- Adverse weather conditions reducing visibility and creating slippery surfaces.
  - Drive to road conditions. Reduce speed in icy, muddy, dusty conditions. Stop if conditions are deemed unsafe.
  - Reduce speed and use radio communication if visibility becomes poor due to fog, steam, rain, snow, etc. Stop if conditions are deemed unsafe.
- Load sticking in box while being dumped resulting in personal injuries and/or equipment damages.
  - Haul truck operators must be alert, seated in an upright position and seatbelt applied; operators must be prepared for unexpected movement of the haulage truck during dumping so as to avoid musculoskeletal injuries (sprain/strain injuries to the back and neck).
  - Continue to raise haul truck box; the load will release as the box angle increases.
  - Contact supervision to have haul truck box cleaned if a portion of the material remains in the box and causes it to lower at an excessive rate.
  - **Do NOT “spike” brakes** or stop suddenly to eject material from haul truck box.
- Loads shifting or not centered in dump body causing increased weight on tail end of box which can increase the potential for front wheels to lift off the ground when dumping.
  - Loads are to be centered in dump body prior to leaving the loading area.
  - Semi-rigid materials such as dMFT have a higher potential to shift while the haul truck is travelling. Dozer operators will visually confirm load is safe to dump and notify supervision if it appears unsafe to dump.
  - Haul truck operators will control speed while travelling to limit shifting of load and will identify if the load has shifted or is off centre prior to dumping.

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- Haul truck operators will communicate to dozer operator if load has shifted and requires further inspection. Dozer operators will notify supervision if load appears unsafe to dump. In a free dump set up, haul truck operators will communicate to supervision if the load requires further inspection.
- Haul truck operators will control dumping of shifted or off centered loads by slowing down into the designated dump point to minimize weight transfer off of front tires when stopping.
- Haul trucks that have been “tail loaded” or have material that has shifted to the rear of the dump body will not dump on a decline. If the load cannot be safely dumped an excavator may be used to empty the dump body.
- Loads sticking or freezing in dump body when haul truck has been parked loaded for an extended period of time. This increases the risk of the truck becoming unstable and the front wheels coming off the ground during dumping which can result in serious injury or equipment damage.
  - If a truck is parked with a load on, the risk of the load sticking to the box increases with time, cold temperature and moisture in the material. Where possible do not leave haul trucks parked loaded for an extended period of time.
  - If a load has been identified that is at risk of freezing to the box, the operator should contact the foreman to determine whether it is safe to dump or if it must be loaded out with an excavator. If the decision is made to dump the load, a dozer operator or foreman should observe that the load begins to slide off normally as the box is raised. If the load appears to be sticking, the box should be lowered and the load removed with an excavator.
- Contact with overhead power lines when raising boxes or fly spreading material (spreading material while travelling with the box raised).
  - Supervisor must inspect area for overhead hazards prior to commencing work. Proper permits must be in place if power lines are present. Additional controls such as adequately labeled power lines, use of spotter and communication with electrical company/power line owner should also be in place.
- Damage to haul truck hoist cylinders and truck components when fly spreading material (spreading material while travelling with the box raised).
  - Area supervisor or designate will inspect area to ensure fly spreading can be conducted safely and to confirm area is free from overhead obstructions and soft, undulating ground conditions or ruts. Haul truck operator will continue to closely observe for any hazards including power lines, power cable, soft, uneven ground etc.
  - Fly spreading will only be conducted on level or downhill grades.
  - Haul truck operators will maintain truck speed around 10 km/hr. Haul truck operators will not exceed first gear at any time when fly spreading.

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## 4.0 CHECKLIST

- Attend all preparatory meetings (i.e. daily PSI; job scope; review of JSA's and SOP's for the job).
- Complete FLRA cards before starting the work.
- Ensure all personnel involved in the task are aware of the hazards and the controls to be used, as identified in the SOP's; JSA's; and FLRA's.
- Conduct a pre-job inspection of all equipment to be worked on and tools to be used.
- Standard of Training required for working on this job: On-the job training.**

## 5.0 DEFINITIONS

### 5.1 Company

North American Construction Group (NACG) divisions, departments or subsidiaries.

## 6.0 PROCEDURE

### 6.1 General Procedure for all Dump Areas

- All operators will conduct a thorough walk around of the machine and observe area for any hazards before operating. Report any defective components.
- Complete FLRA before commencing work and any time conditions change.
- Ensure operator's seat is properly positioned for optimal visibility and comfort. Seatbelt fastened.
- Always sound horn and wait 5-10 seconds before moving equipment. Where possible, ensure the first move is in the forward direction.
- Light vehicles will announce entry on the radio prior to entering an active dump.
- Dump areas will be sufficiently illuminated for operator visibility. Light plants will be positioned out of travel path and protected from equipment contact. Light plants will not create an additional visibility hazard by directing the lights at the operators.
- Where possible haul trucks will dump on level ground.
- Dozer operators will monitor material location in dump body. Material that has been "tail loaded" or shifted to the rear and appears unsafe to dump will require a supervisor to assess. The supervisor will determine if the truck is safe to proceed to dump.
- It is the responsibility of the dozer operator/spotter at the dump area to continually monitor the area for conditions which might become hazardous to any personnel or equipment (i.e. soft ground conditions). Deficiencies will be corrected and communicated to haul truck operators and supervision immediately.
- If frozen material builds up in the dump body of a haul truck refer to 962C-SOP-017 Removal of Material Build Up in Haul Trucks.

### 6.2 Dumping with a Spotter

- 1) Supervisor or designate to identify and communicate to all operators if dump traffic pattern is left hand or right hand drive.
- 2) Haul truck operators will follow designated dump traffic pattern and enter the dump. Crossover signs may be used to indicate where equipment will crossover to left hand drive.



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- 3) If more than one dozer or spotter is in the dump area, haul truck operators will identify the dozer or spotter they are dumping to and travel to the dozer work area to stage. Identification will be made via radio, spotting signals or a pre-established communication method.
- 4) Haul truck operator will confirm with dozer operator or spotter if haul truck is spotting to the dozer or a previously placed pile.
- 5) Haul truck will maintain a distance of two (2) haul truck lengths away from dozer when staging. Haul truck will not turn to stage if there is another truck dumping at the dozer. Haul truck will not enter the track path of the dozer.
- 6) Haul truck operator will turn into position and reverse to dozer or spotter once dozer has provided an acceptance signal. The acceptance signal will include the dozer being stopped, set up in position to receive the truck and blade on the ground. Additional acceptance signals may be used as identified in the Hazard and Controls section of this SOP.
- 7) Haul truck operator will confirm sight of dozer in good side (left) mirror prior to reversing.
- 8) Haul truck operator will reverse parallel to dozer operator, maintaining a minimum distance of three (3) metres from dozer operator.
- 9) Haul truck operator will stop reversing when haul truck cab is beside dozer cab or when dozer operator provides a previously identified stop signal.
- 10) Dozer operator will continually monitor haul truck operator to ensure operator is spotting correctly and there is no potential for contact.
- 11) Dozer operator will stop the haul truck operator using the stop signal if the haul operator is in dump position, there is potential for contact, or the haul truck needs to reposition. Dozer operator will provide instructions to haul truck operator if required.
- 12) Dozer operator will retreat from area once haul truck is in dumping position.
- 13) Haul truck operator will raise dump body, reducing RPMs at final stage of hoist cylinder extension, and dump material. If the load does not clear dump body, haul truck operator will pull forward slightly until load clears the dump body. Haul truck operator will not power down hoist to clear load.
- 14) Haul truck operator will leave area and lower dump body within three (3) truck lengths of dumping position.
- 15) Dozer operator will begin moving material, once haul truck has left the work area.
- 16) If a haul truck is overloaded and cannot dump, the operator may reposition the haul truck on slight decline on the dump area, if one exists, and attempt to re-hoist load. If this is unsuccessful, the operator will return to the loading unit to have material removed from the dump body or reference 962C-SOP-009 Removal of Material Build Up in Haul Trucks, without hoisting dump body.

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## 6.3 Dumping without a Spotter – Free Dumping

- 1) Haul truck operator will cross over to left hand drive at entrance to dump area, unless otherwise directed by area supervisor or their designate.
- 2) Haul truck operator will spot to a previously dumped pile or, if it is the first load, haul truck operator will spot to a spotter.
- 3) Haul truck operators will dump from right to left from the start point, when facing crest of the dump.
- 4) Area supervisor or their designate will ensure an approved safety berm is maintained at all times. Berm heights will be equal to half ( $\frac{1}{2}$ ) the height of the largest haul truck tire dumping in the area. Spotting piles will be placed no closer than six (6) metres (20 feet) from the bermed edge of dump.
- 5) A waiting loaded haul truck will stop and face the action of the dump until the dumping haul truck has cleared the dumping area.

## 6.4 Drive over Dumping

- 1) Haul truck operator will approach the dozer from behind staying on the dozer operator's right side.
- 2) Haul truck operator will slowly drive over the end of the dump and stop when rear wheels are completely off the dump lift.
- 3) Area supervisor or their designate will ensure that there is a maximum dump lift of 2/3 metre for drive over dumping.
- 4) Dozer operator will retreat once haul truck has been spotted into dumping position.
- 5) Haul truck operator will raise dump body, reducing RPMs at final stage of hoist cylinder extension.
- 6) If the load does not clear dump body, the haul truck operator will pull forward slightly until load clears the dump body. Haul truck operator will not power down hoist to clear load.
- 7) Haul truck operator will leave area and lower dump body within three (3) truck lengths of dumping position.

## 6.5 Fly Spreading (spreading material while traveling with the box raised)

- 1) Area supervisor or designate will inspect area to ensure fly spreading can be conducted safely and to confirm area is free from overhead obstructions and soft, undulating ground conditions or ruts. Haul truck operator will continue to closely observe for any hazards including power lines, power cable, etc. Fly spreading will be performed on level or decline surfaces only. Fly spreading will not be performed when travelling up a grade.

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- 2) Area supervisor or their designate will implement traffic control to stop other traffic from entering the roadway where the fly spreading is being conducted.
- 3) Haul truck operator will bring truck to a complete stop and then slowly raise the dump body until material begins to fall from dump body.
- 4) Haul truck operator will travel forward, maintaining truck speed around 10 km/hr. Haul truck operator will not exceed first gear when fly spreading.
- 5) Haul truck operator will continue to travel forward and raise dump body until dump body is empty.

## 7.0 NOTES

If this task is to be done by a method different than described in this SOP, the work must **STOP** and the alternate method must be **DOCUMENTED** with an adequate hazard assessment tool such as a JSA. The document must be **APPROVED** by a supervisor before such procedures are implemented.

## 8.0 REFERENCES

- Alberta Occupational Health and Safety Act, Regulation and Code – {Part 36 Mining}
- Health, Safety and Reclamation Code for Mines in British Columbia
- 962-SOP-017 {Removal of Material Build up in Haul Trucks}
- 962C-SOP-002 {Dump & Stockpile Management}
- 962C-SOP-035 {Haul Truck Loading Procedures}

## 9.0 APPENDICES

- Appendix A – Dump Traffic Patterns

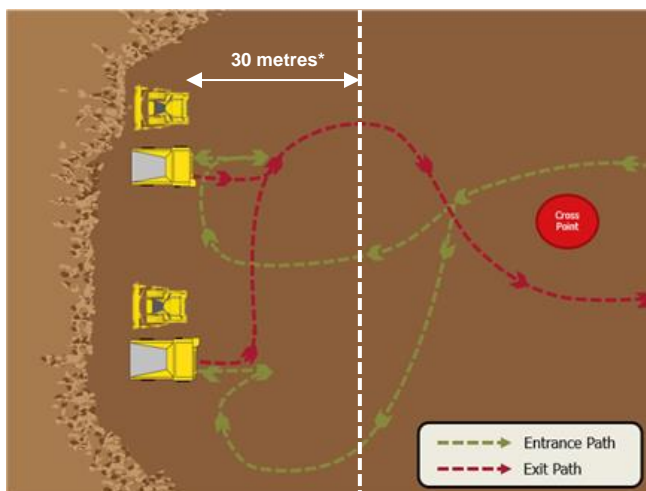
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## Appendix A Dump Traffic Patterns

### Left Hand Drive Dump:



\*30 metres = working area of dozer

### Right Hand Drive Dump:

