

# STANDARD OPERATING PROCEDURE

**Dump and Stockpile Management**

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## DUMP AND STOCKPILE MANAGEMENT

						
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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 company 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 dump and stockpile management.

## 2.0 SCOPE AND APPLICATION

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

## 3.0 HAZARDS AND CONTROLS

- Unauthorized entry to dumps or stockpile areas.
  - Identify dumps and stockpile entrances with adequate signage.
  - Maintain and identify active dumping areas of stockpiles.
  - Physically block entrance to inactive dumps or stockpile areas.
  - All inactive dumping areas on an active stockpile are to be bermed to prevent backing to the stockpile crest. Berms will be equal to half ( $\frac{1}{2}$ ) the height of the largest tire on the haul (Alberta worksites) or three quarters ( $\frac{3}{4}$ ) the height of the largest tire on the haul (British Columbia worksites). Berms will be constructed of suitable material to withstand significant sloughing and crumbling. Mud and snow are not suitable. Where the hazard of equipment roll over or tip-over at the crest has been mitigated, a berm may not be required. Mitigation controls such as a 3:1 slope design may be considered adequate depending on type of material and total elevation of the work area (i.e. benching).
  - Inactive stockpiles that will not be used in the current mine plan shall be permanently blocked.
  - Supervisors will communicate dump and stockpile changes to all affected personnel.
  - All stockpiles not in use will be closed and only reopened after a physical inspection by the oncoming shift supervisor. A record of the inspection will be recorded.
- Equipment travelling over edges.
  - Supervisors will conduct dump and stockpile inspections at start of each shift to identify deficiencies or changes in conditions and ensure appropriate controls are implemented. Supervisors will conduct frequent inspections during the shift to monitor dump conditions.
  - 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.

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- **Supervised dumps greater than one (1) metre and less than three (3) metres** 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** 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.
- Equipment contact in a dump or stockpile.
  - Only competent operators will be assigned to operate equipment at dump and stockpile areas.
  - A crawler dozer and competent operator shall be required on each active stockpile. The dozer operator will be responsible for on-site management of the stockpile and will notify supervision if changes occur.
  - Ensure stockpile dumping areas are large enough to safely accommodate equipment (minimum of three times the width of the largest haulage unit accessing the stockpile).
  - Where practical dumps will be set up as Left Hand Drive and communicated to all operators. Crossover signs will be installed if there is any potential for confusion.
- Trucks backing on unstable ground or inadequately guarded ramps and dumps.
  - Areas of unstable ground condition or inadequate berms will be closed until conditions are corrected.
  - Haul trucks hauling dMFT or other semi-rigid material will not reverse and dump on a decline. Supervision will monitor dump conditions and ensure they are level or constructed on an incline.
- Inadequate lighting.
  - Ensure spotters are available during times of low visibility or in congested areas.
  - Ensure that adequate lighting is provided for night operations.

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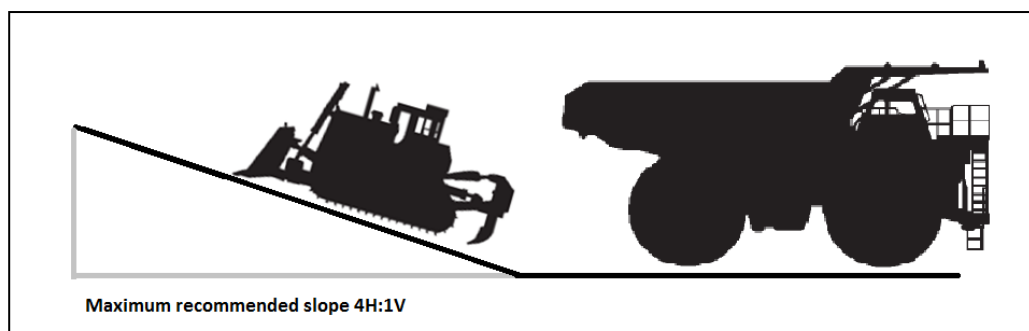
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The following section outlines **additional** hazards and controls specific to types of dump materials. The controls are specific to the material and may not apply to other types of dumps unless a hazard assessment deems the control acceptable.

### 3.1 dMFT (and other semi-rigid material) Specific Hazards & Controls

- Shifting dumps due to unstable material. Increased risk of cracking, crumbling and sloughing. Dump instability increases with warmer weather conditions and as the dump construction progresses.
  - Dump areas will be padded with a suitable spec material to increase stability for equipment.
  - If material is expected to slough as dump is constructed, dumps will be built on an incline (uphill) so that when the material settles the dump will be level and not drop off. Dump will be built to a maximum slope of 4:1.



- Berms on inactive dumps will be placed at an increased distance away from the crest and will be monitored regularly by supervision for sloughing. Distance may change depending on stability of dump. Berms will be constructed to half ( $\frac{1}{2}$ ) the height of the largest haul truck tire in the dumping area and will be built up or replaced as required.
  - Where dump conditions prevent suitable working berms from being constructed, 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.
  - Supervisors will monitor dumps regularly. When dump becomes untrafficable, the dump will be shut down to haul traffic and the area bermed until conditions have improved through freezing, padding, drying or other means.
  - Cracking will be monitored regularly. If there is a risk of the crack failing and injuring personnel or damaging equipment, the area will be closed and remediated prior to further use. Remediation methods include pushing down the slope or freezing the top.
  - Supervisors will assess dMFT material and identify separate dump locations for liquid loads and frozen loads.
- Equipment sinking or travelling over edges
    - Haul trucks will not dump on a decline near the dump face.

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- Supervisors will visually assess shifted loads to determine if they can be dumped safely. Crawler tractor operator will advise supervisor and haul truck operator if load has shifted and may become unsafe to dump.
- Soft spots and sink holes will be identified as well as communicated to all operators. They should be repaired and where repairs are not possible, marked with cones or berms. Supervision will monitor for operators entering soft areas and follow up with those that need assistance.
- Use smaller size dozers to push material off the edge when the dump edge too soft for larger dozers.
- Where dump conditions are soft and suitable berms cannot be constructed, supervisors will ensure haul trucks are spotted to a minimum of six (6) metres (20 feet) between the haul truck's rear tires and the defined edge of the dump.
- Haul trucks will spot a minimum of five (5) metres away from crawler tractor.

## 3.2 Muskeg Specific Hazards & Controls

- Equipment becoming stuck frequently due to soft spots on the dump; haul trucks sinking and becoming stuck when dumping loads.
  - Soft spots and sink holes will be identified as well as communicated to all operators. Where possible soft spots will be marked or padded to remove the hazard. Supervision will monitor for operators entering soft areas and follow up with those that need assistance.
  - Haul truck operators are permitted to use the body-up override switch to allow the truck to be pushed forward by the weight of the sliding material. This will help to prevent the truck from becoming stuck. The truck body must not sway during this process.
- Loads sticking in truck boxes.
  - If conditions are such that stuck material is accumulating in the truck boxes, the crawler tractor operator will observe the empty truck box after dumping and advise the truck operator to go to a scratching excavator if required. Loads must not be "bucked off" by reversing and spiking the brakes.
  - If material is front loaded (close to the canopy) and cannot dump fully from the truck under normal conditions, haul truck operators are permitted to dump on a small decline/ramp **under the direction of supervision**.

## 3.3 Coal Specific Hazards & Controls

- Shifting and dump settlement causing dump crests to break and crumble.
  - Ensure a designated dump attendant is assigned to monitor for hazardous conditions such as excessive cracking, berms disappearing and water running into cracks. All hazards will be reported immediately to supervision. A dump monitor may be installed to assist in determining rates of dump settlement.
  - Ensure dumping moves across entire dump area rather than concentrating in one area to reduce the possibility of dump failure.

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- Berms constructed of coal material will be placed an additional three (3) metres from edge of dump crest.

## 4.0 CHECKLIST

- Attend all preparatory meetings (IE: 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

Means North American Construction Group Ltd. (NACG) and all directly or indirectly owned subsidiary companies, including joint ventures.

### 5.2 Company Personnel

Includes the Company's employees, officers, directors, agents, associates, consultants/contractors, temporary employees, and third-party processors

### 5.3 HSE

Refers to the Health, Safety & Environment department.

## 6.0 PROCEDURE

1. Conduct a physical inspection of the stockpile or dump area prior to the start of shift and verify area is safe to work in. Complete a record of the inspection.
  - a. Area is free from cracks, sink holes and shifting material.
  - b. Adequate berms are in place.
  - c. Active dumping areas are clearly identified and areas that are inactive have been bermed off to prevent equipment backing to the crest.
2. Ensure all stockpiles or dump areas are a minimum width of three (3) times the width of the largest hauler accessing the area.
3. Ensure all stockpile or dump areas are clearly identified with proper signage.
4. Confirm each active stockpile is equipped with a crawler dozer and competent operator.
5. Designate a competent person as a spotter for trucks dumping in congested areas or areas with limited visibility.
6. Ensure entrances to all inactive areas of the stockpile are blocked with suitable materials to prevent entry.
7. Ensure active stockpiles operated at night have adequate lighting.
8. Close stockpile or dump locations with substandard conditions until such conditions can be rectified.

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- Continually monitor / inspect stockpile and dump areas throughout the shift. A documented inspection must be completed every 4 hours for active dumps in British Columbia.

## 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, Section 542 Dumping Block}
- Health Safety and Reclamation Code for Mines in British Columbia – {Part 6, Mine Design and Procedures}
- 962C-SOP-036 – {Haul Truck Dumping Procedures}

## 9.0 APPENDICES

- There are no appendices.