

# STANDARD OPERATING PROCEDURE

**TRACK FRAME INSTALLATION - SHOP OR FIELD**

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## TRACK FRAME INSTALLATION – SHOP OR FIELD

						
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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 installing track frames in the shop or field.

## 2.0 SCOPE AND APPLICATION

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

## 3.0 HAZARDS AND CONTROLS

- Equipment failure/malfunctioning or rigging failure resulting in personal injury and/or property damage.
  - The operator will complete a visual inspection of the equipment used to install the track frame (i.e., forklift, loader, skid steer, crane etc.).
  - Know the weight of the track frames being lifted and remember, mud and material build up will affect the overall weight of the track frames.
  - Approximate weights of different model track frames are listed below. Always reference manufacturer / OEM procedures to identify specific weights for each model and manufacturer of equipment.
    - CAT D8T - 10,360lbs
    - CAT D9T - 9,600lbs
    - CAT D9R - 12,520lbs
    - CAT D10T - 16,020lbs
    - CAT D11T - 25,000lbs
  - Ensure all rigging, including shackles, hooks and slings are rated and/or exceeds the lifting capacity required for the load to be lifted.
  - Thoroughly inspect all rigging components prior to use (i.e., lifting lugs located on the track frames, shackles, slings, cables ext.) (see Appendix C for example of lifting lugs).
  - Only competent personnel will rig and signal loads.

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- All personnel will maintain a safe distance of at least 1.83 meters (6 feet) from the suspended load. No worker shall stand or pass under a raised load.
- Tagline(s) will be used on all suspended loads.
- Pinching, crushing and line of fire hazards.
  - Stay out of the areas between the front idler and the blade as well as the track frame and push arm when installing the track frame.
  - Keep fingers/hands away from pinch points when taking up tension on slings and come along.
  - Ensure everyone involved in the task is aware of pinching, crushing and line of fire hazards.
- Heavy manual lifting resulting in musculoskeletal injuries (sprains/strains).
  - Always stretch before and during the task. Take micro breaks as required when working in awkward body positions.
  - Assess and identify the weight of the load. Be sure you can lift the load without overexertion. Do not lift if you cannot handle the load safely.
  - Do not lift any load greater than 50 lbs. without assistance from another person or a mechanical lifting aid. Follow 962C-SOP-009 Manual Lifting and Carrying Heavy Objects.
  - Use proper body mechanics when lifting (i.e., shoulders and feet square to load, lift with your legs from squat position, keep back straight, and use proper footing).
  - Inspect travel route prior to task; remove tools, dunnage, cords/cables, and other tripping hazards from lift/travel area.
- Bogie assembly separating from track frame.
  - Use engineered or manufacturer approved bogie strap/suspension strap to secure suspension to track frame (see Appendix A – for examples of bogie straps).
- Unintentional movement of the equipment causing personal injury and/or property damage.
  - Isolate hazardous energy and lockout/tagout equipment when removing the track frames (refer to 950C-C-028 Hazardous Energy Isolation Code).
  - Flag and tag the area to warn others of the hazards. Use good communication with workers in the area (refer to 960C-SOP-004-Flagging Tagging and Barricading Hazardous Areas).
  - Use jacks and stands certified for the weight to be lifted and supported.

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## 4.0 CHECKLIST

- Attend all preparatory meetings (IE: daily PSI; job scope; review of JSA's and SOPs 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

### 6.1 Track Frame Installation – Shop

- 1) Complete hazard assessment (i.e. FLRA) for task. Notify supervision if unsure of task and if there are any hazards outside of the worker's control.
- 2) Inspect all rigging components prior to lifting this including but not limited to lifting lugs located on the track frames, shackles, rigging, and the equipment use to hoist track frames (see Appendix C for example of lifting lug).
- 3) Clean the pivot shaft, threaded holes, and mounting pivot shaft seal surface and lubricate all.
- 4) Inspect hard bar seals and bearings, clean up and lubricate.
- 5) Inspect the mounting "O" ring on the track frame mounting plate. Clean the track frame hard-bar mounting pin bores and bolt holes. Lubricate the "O" ring.
- 6) Do a lift study and match the lifting components to the track frame. Attach a certified and sized lifting bracket to the track frame. Watch for materials on the fender and ensure the cab door is closed so they will not be damaged by the bracket as it moves inward.
- 7) Install bogie strap/suspension strap to secure suspension to track frame.
- 8) Restrain the pivot shaft so it will not push through.

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- 9) Install the track frame and bolt the pivot shaft seal holder to the body.
- 10) Install the pivot shaft spacer, the end retainer plate, and bolts. Torque to specs.
- 11) Install the sealed end plate and lock.
- 12) Install the hard-bar pin.
- 13) Install the bolts, washers, and nuts for the hard-bar pin lock.
- 14) Install a spacer between the hard-bar and the body on the other side of the machine to keep the hard-bar level.
- 15) Remove the lifting bracket.
- 16) Remove the pivot shaft retainer bar.
- 17) Install the next track frame following steps 1 through 12.
- 18) Remember to remove the hard-bar spacers.
- 19) Remove all the vent plugs for the pivot shaft and fill the shaft from the reservoir with the recommended oil. Top up the reservoir as needed. Replace each vent plug once the oil is oozing out. The last vents should be those on the ends of the shaft. Top up the reservoir.
- 20) Attach a sling to one push arm and move it to the trunnion ball.
- 21) Install the trunnion ball and torque to specs.
- 22) Install spacers and the trunnion cap; remove spacers if needed to obtain proper spacing, repeat this installation for other side.
- 23) Note: If the distance is too large between trunnion ball and the push arm, raise the blade a little and slowly push the arm until it butts up to the trunnion ball.

## 6.2 Track Frame Installation – Field

- 1) This installation may be done exactly the same in the field, except if a lifting bracket is not available, a forklift may be used to lift the frame assembly. Ensure the frame is stable on the forks so it will not roll over and off the forks.

## 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.

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## 8.0 REFERENCES

- Alberta Occupational Health and Safety Act, Regulation and Code – Part 21 Rigging
- Alberta Occupational Health and Safety Act, Regulation and Code – Part 6 Cranes, Hoists and Lifting Devices
- Manufacturer's / OEM Procedures (EG: CAT Service Manual)
- 950C-C-022 General Housekeeping Code
- 950C-C 025 Hand Tools Code
- 950C-C-028 Hazardous Energy Isolation Code
- 950C-C-008 Cranes, Hoists and Rigging Code
- 960C-SOP-004 Flagging, Tagging and Barricading Hazardous areas
- 960C-SOP-019 Slip Trip and Fall Hazard Prevention
- 960C-SOP-105 Track Frame Removal - Shop or Field
- 960C-SOP-110 Track Frame Rebuild
- 960C-SOP-112 Compressed Air and Air Hoses
- 960C-SOP-401 Raising, Blocking and Lowering Dozers Using Hydraulic Attachments
- 960C-SOP-403 Crane Operation - Shop Bridge & Jib Cranes
- 960C-SOP-506 Press Tooling Use Of
- 962C-SOP-008 Signaling Equipment
- 962C-SOP-009 Manual Lifting and Carrying Heavy Objects

## 9.0 APPENDICES

- Appendix A - Example of Bogie Straps
- Appendix B - Examples of Cables Used to Tie Back the Front Frame Assembly
- Appendix C - Lifting Lug Inspection

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## Appendix A Example of Bogie Straps

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Bogie straps installed on a D8 track frame



Bogie straps installed on a D9 track frame.



Bogie straps installed on a D10 track frame.



Bogie straps installed on a D11 track frame.



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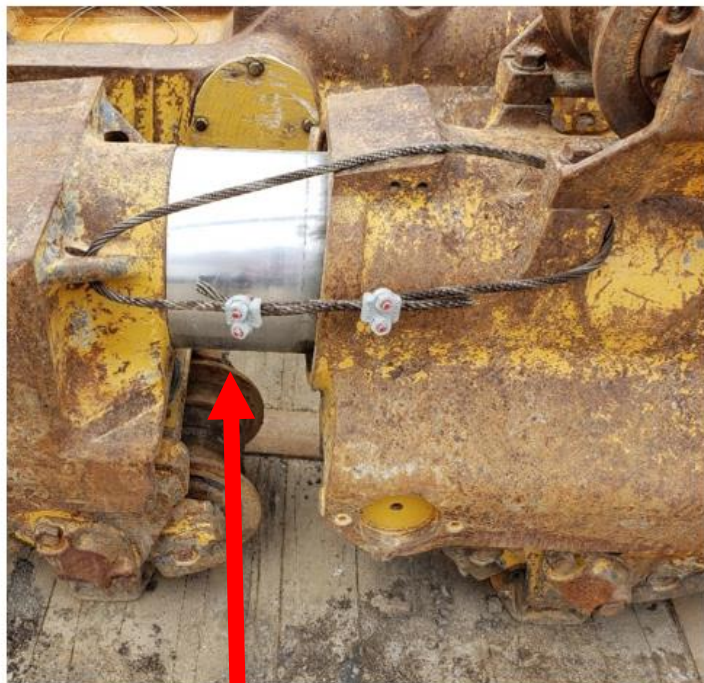
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## Appendix B Cables Used to Tie Back the Front Frame Assembly

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**Cables Used to Tie Back the Front Frame Assembly**

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## Appendix A Lifting Lug Inspection

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Inspect the lifting lug located on the center of the track frame. Ensure to clean up any built-up material. Look for cracks, broken welds, bent lugs, discoloration, and any other structural defects that may cause the lifting lug to fail.



Example of a good lifting lug.



Example of a lifting lug failing during lifting operations.