

# Job Safety Analysis

Use These Forms Before You Begin Any Job to Alert You of Any Hazards That May Exist

Page 1 of 12

## TCC2500 Tele-Crawler Assembly

<b>Customer Name:</b> Mortenson	<b>Job Location:</b>	<b>Unit #:</b>	<b>Job#:</b>
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<b>REQUIRED PERSONAL PROTECTION EQUIPMENT:</b>	<b>MSDS(s) ASSOCIATED WITH THE JOB:</b>
Hard hat, ear plugs (as needed), safety glasses with side shields, gloves, Safety boots (lace-up), fall protection & all other required site-specific personal protective equipment.	Chemicals are usually used on the crane or stored on Service trucks, the technician, and the A/D mobile device's mobile app.

*To improve the readability and comprehension of this field document, we have detailed all common hazards and the recommendations for safe work at the beginning of this JSA. It is understood and assumed that any or all these hazards may become relevant at any time during the assembly of this crane. **This JSA is to be used in conjunction with the operator's manual. If there is a discrepancy between the two, the operator's manual takes precedence.***

Common Hazards	Safe Job Practices
<ul style="list-style-type: none"> <li>• <b>Slips, Trips, and Falls</b></li> </ul>	<ul style="list-style-type: none"> <li>• A personal fall protection system is mandated when employees are exposed to falls greater than 6 feet.</li> <li>• Fall protection will be assessed per task if working in or around rotating equipment or the draw works.</li> <li>• Walkways and platforms can be slippery when wet and oil or grease spilled on them. <b>Keep walkways and platforms clean and dry to prevent slipping on them.</b> When non-skid material wears out, reapply it.</li> <li>• Clean any mud or debris from shoes before entering the crane cab or climbing onto the crane.</li> <li>• Please do not use the top of the mast, boom, or jib as walkways (unless they have optional catwalks).</li> <li>• Use <b>both hands</b> and handrails, steps, and ladders provided to climb onto and off the crane.</li> <li>• Lift tools and other equipment that cannot be carried in pockets or tool belts onto and off cranes with hand lines or hoists.</li> <li>• Boom and gantry are not intended as ladders. <b>DO NOT</b> climb the boom or gantry to get to maintenance points.</li> </ul>
<ul style="list-style-type: none"> <li>• <b>Crushing Injury Hazard</b></li> </ul>	<ul style="list-style-type: none"> <li>• Post Signage on all accessible areas to crane so personnel cannot be struck or crushed when upperworks is swung.</li> <li>• Do not access the crane while the crane is being swung or the crane is being traveled.</li> <li>• Signal operator that you need to access the crane. Confirm acknowledgment from the operator.</li> <li>• Operator: do not swing or travel while personnel are on crane. Stop swing and travel motions. Apply the swing brake and turn on the Travel Brake.</li> <li>• Use dedicated spotters (To be identified during the JHA) and signal persons when flying objects with cranes.</li> <li>• Use of tag lines for all crane picks.</li> </ul>
<ul style="list-style-type: none"> <li>• <b>Struck By/ Caught Between/Pinch Point Hazards</b></li> </ul>	<ul style="list-style-type: none"> <li>• Hard Hats and Safety Glasses shall always be worn during the assembly/disassembly of this crane.</li> <li>• Always wear gloves to prevent being cut by broken wires.</li> <li>• Do not attempt to maintain or repair any part of the crane while the engine is running unless necessary.</li> <li>• If the engine must be run, keep your clothing and all parts of your body away from moving parts. <b>Maintain constant verbal communication between the control person and those performing maintenance or repair procedures.</b></li> <li>• Do not use your hands to check for air and hydraulic oil leaks</li> <li>• Relieve pressure before disconnecting air, coolant, and hydraulic lines and fittings.</li> <li>• Do not attempt to lift anything heavier than 50 lbs, which is difficult in configuration or placement. Use a hoist, jacks, team lifts, or blocking to lift components.</li> </ul>

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	<ul style="list-style-type: none"> <li>• All pin connections are pinch points.</li> <li>• A&amp;D director to Store tools, oil cans, spare parts, and other necessary equipment in toolboxes. Do not allow these items to lie loose in the operator's cab or on walkways and stairs.</li> <li>• Use of dedicated spotters to direct and signal all vehicle traffic.</li> <li>• Before a crew member goes to a location that is out of view of the operator and is either in, on, or under the equipment or near the equipment (or load) where the crew member could be injured by the movement of the equipment (or load), another crew member will be designated as a "watch" to inform the operator that they are going to that location. Where the operator knows that a crew member went to an area covered by the above sentence, the operator must not move any part of the equipment (or load) until the operator is informed by the "watch" that the crew member is in a safe position.</li> </ul>
<ul style="list-style-type: none"> <li>• <b>Tip over hazard</b></li> </ul>	<ul style="list-style-type: none"> <li>• The A&amp;D director will select a suitable location for disassembly. It must be firm, level, and free of obstructions. It should have enough open space to accommodate the crane.</li> <li>• After deploying outrigger jacks, ensure the safety pins are installed correctly, securing the jack to the frame.</li> <li>• When booming up, do not exceed 60 degrees. This could cause an imbalance and cause the crane to tip.</li> <li>• Do not exceed the manufacturer's radius when picking the counterweights or tracks during assembly</li> <li>• Always refer to the manual during the assembly procedure.</li> </ul> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p>STORED POSITION</p> </div> <div style="text-align: center;">  <p>SELF ASSEMBLY POSITION</p> </div> </div> <div style="display: flex; justify-content: space-between; margin-top: 10px;"> <div style="width: 45%;"> <ol style="list-style-type: none"> <li>1. Jack Pin With Lock Pin (Stored Pin Position)</li> <li>2. Jack Pin With Lock Pin (Self Assembly Pin Position)</li> </ol> </div> <div style="width: 45%;"> <ol style="list-style-type: none"> <li>3. Beam Pin (Stored Pin Position)</li> <li>4. Beam Pin (Self Assembly Pin Position)</li> </ol> </div> </div> <p><b>Figure 1—172 Position Lifting Jacks and Beams</b></p>

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Page 3 of 12

## TCC2500 Tele-Crawler Assembly

<ul style="list-style-type: none"> <li>• <b>Designate Assembly Area</b></li> </ul>	<ul style="list-style-type: none"> <li>• Ensure ground conditions are firm, level, and uniformly supportive.</li> <li>• Select an area large enough and free of any underground or overhead obstructions or hazards to accommodate the crane, assist the crane, select boom and jib length, and the movement of trailers.</li> <li>• The erection area should not interfere with or pose a hazard to other onsite personnel. Erection area to be marked and barricaded.</li> <li>• There should be at least 2 feet of clearance between the counterweights and the nearest obstacle.</li> <li>• A&amp;D to confirm the quantities of solid timber blocking to support the boom when assembled.</li> <li>• Ground support, as specified in the erection drawings, is complete and in compliance with the stated requirements.</li> </ul>
<ul style="list-style-type: none"> <li>• <b>Assist Crane Requirements (if required)</b></li> </ul>	<ul style="list-style-type: none"> <li>• The assist crane shall be sized per applicable lift plans. <b>WHEN NEEDED</b></li> <li>• Site conditions and matting must be suitable for maximum loading of the assist crane.</li> <li>• The assist crane will assembled per the manufacturer's instructions.</li> </ul>
<ul style="list-style-type: none"> <li>• <b>Rigging Failure</b></li> </ul>	<ul style="list-style-type: none"> <li>• Rigging shall be inspected per applicable OSHA/ASME standards, at a minimum, daily, and before use. Examples of unserviceable rigging include bird caging, kinks, and broken wires.</li> </ul>
<ul style="list-style-type: none"> <li>• <b>Electrical Shock Hazard</b></li> </ul>	<ul style="list-style-type: none"> <li>• Ensure adequate clearance from power lines is continuously maintained per OSHA 1926.1408</li> </ul>
<ul style="list-style-type: none"> <li>• <b>Operational Test Loads (if required)</b></li> </ul>	<ul style="list-style-type: none"> <li>• Test loads shall not exceed 100% of the manufacturer's load rating.</li> <li>• Test loads must be freely suspended using an approved load.</li> <li>• All rigging must be inspected and approved before load testing.</li> <li>• The weight and radius of the load test shall be determined by:             <ul style="list-style-type: none"> <li>-Manufacturers' load chart.</li> <li>-Site Conditions.</li> <li>-Winch line pull (i.e., the test load must be lifted while staying within the line pull capacity of the drum being utilized).</li> </ul> </li> </ul>

***Note: At no time will a trainee, apprentice, or an oiler operate any crane during the assembly, reconfiguration, and/or disassembly process or while the crane is in bypass.***

# Job Safety Analysis

Use These Forms Before You Begin Any Job to Alert You of Any Hazards That May Exist

Page 4 of 12

## TCC2500 Tele-Crawler Assembly

### Crane Assembly

BASIC JOB STEPS	POTENTIAL HAZARDS	SAFE JOB PRACTICES
<ul style="list-style-type: none"> <li>Prepare for removal from trailer.</li> <li>Check for proper rigging.</li> <li>Place crane in rigging mode</li> </ul>	<p>See Common Hazards Above</p> <p>Carbody must not be more than 3 degrees out of level while jacking. Take extreme care not to hit jacks with trailer.</p>	<p>See Safe Job Practices Above</p> <p>Refer to operator's manual for detailed procedures.</p> <p>A/D Director to monitor levels. Ensure correct placement of mating. Ensure cribbing and base are level. Use of designated spotter to direct truck drivers (Spotter to be identified during assembly).</p>
<ul style="list-style-type: none"> <li>Remove Safety pins and deploy outriggers.</li> <li>Install safety pins into the outrigger jacks.</li> </ul> <p><b>HOLD POINT – Pins Installed. _____</b></p> <ul style="list-style-type: none"> <li>Extend outriggers to the ground. *Just touching the ground no weight</li> </ul>	<p>Do not hit jacks with trailer.</p> <p>NOTE Carbody must not be out of level when extending or retracting outrigger jacks. Refer to operator's manual for detailed procedures.</p>	<p>Refer to operator's manual for detailed procedures.</p> <p>Use of designated spotter (identified during assembly) to direct truck drivers.</p> <p>Monitor levels. Ensure cribbing and base are level.</p>
<ul style="list-style-type: none"> <li>Boom crane up to 55 degrees.</li> <li>Unsecure the crane from the trailer by removing all tie-downs.</li> <li>Double check all pins and outrigger placement.</li> </ul>	<p>See Common Hazards Above</p> <p>NOTE Do not exceed 60 Degrees when booming up. Refer to operator's manual for detailed procedures.</p>	<p>See Safe Job Practices Above</p> <p>Refer to operator's manual for detailed procedures.</p>
<ul style="list-style-type: none"> <li>Begin raising the crane on the outriggers.</li> <li>Ensure level raising of the crane.</li> <li>Once cleared removed trailer from under crane.</li> <li>Lower crane to assembly height.</li> </ul>	<p>See Common Hazards Above</p> <p><b>Tip over hazard!</b></p>	<p>See Safe Job Practices Above</p> <p>Refer to operator's manual for detailed procedures.</p> <p>Read and thoroughly understand boom raising instructions.</p> <p>Select and confirm rigging MODE (Operator and A/D Director to have verbal confirmation and visual confirmation) before raising and using the boom.</p>

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Use These Forms Before You Begin Any Job to Alert You of Any Hazards That May Exist

Page 5 of 12

## TCC2500 Tele-Crawler Assembly

BASIC JOB STEPS	POTENTIAL HAZARDS	SAFE JOB PRACTICES
<ul style="list-style-type: none"> <li>Install the car body weights.</li> </ul> <p><b>HOLD POINT – Carbody Weights</b> _____</p> <ul style="list-style-type: none"> <li>Install Safety pins on both Carbody weights.</li> </ul>	<p>See Common Hazards Above</p> <p>Carbody Damage!</p> <p>Outrigger damage!</p> <p>Cab Damage!</p>	<p>See Safe Job Practices Above</p> <p>Refer to the operator's manual for detailed procedures.</p> <p>so counterweights do not strike the side of the crane or the outriggers.</p> <p>*Weights are side specific. Please refer to the manual for proper placement.</p>
<ul style="list-style-type: none"> <li><b>Install Crawlers</b></li> <li>*Tracks are side specific. Please refer to the manual for proper placement.</li> <li>Deploy hydraulic pin to secure track to the body.</li> <li>*Safety pins to be installed into the hydraulic pins.</li> <li>Repeat the other side.</li> </ul>	<p>See Common Hazards Above</p> <p>Tipping Hazard!</p> <p>Pinch Points!</p>	<p>See Safe Job Practices Above</p> <p>Refer to the operator's manual for detailed procedures.</p> <p>Use a designated spotter.</p>
<ul style="list-style-type: none"> <li><b>Lower crane onto tracks.</b></li> <li>Remove the outrigger jack pins.</li> <li>Fold the outrigger jack back to Carbody.</li> <li>Install pins to secure outrigger jacks to the body.</li> </ul> <p><b>HOLD POINT – Outrigger Jack Pins</b> _____</p> <ul style="list-style-type: none"> <li>Repeat the other side</li> </ul>	<p>See Common Hazards Above</p> <p>Tipping Hazard!</p>	<p>See Safe Job Practices Above</p> <p>Refer to the operator's manual for detailed procedures.</p>

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Page 6 of 12

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BASIC JOB STEPS	POTENTIAL HAZARDS	SAFE JOB PRACTICES
<ul style="list-style-type: none"> <li>Hook up Hydraulic lines to the tracks</li> </ul>	<p>See Common Hazards Above</p> <p>Crushing Injury Hazard!</p>	<p>See Safe Job Practices Above</p> <p><i>Refer to the operator's manual for detailed procedures.</i></p> <p><i>Note: The Crane is not to be operated or moved during the connection of the hydraulic lines.</i></p>
<ul style="list-style-type: none"> <li><b>Lift the counterweight tray with a crane and place it on the Carbody weight.</b></li> <li><b>Install counterweights.</b></li> <li>After installation of counterweights, swing the crane around to drop the cylinder into the tray.</li> <li>Slowly swing the crane to align the cylinders in the tray.</li> <li>After aligning, raise the counterweight tray into the operational position.</li> <li>Extend hydraulic safety pins to secure counterweight tray.</li> </ul> <p><b>HOLD POINT – Tray Pins. _____</b></p> <ul style="list-style-type: none"> <li>Double check assembly steps before operation. Remove the crane from rigging mode</li> </ul>	<p>See Common Hazards Above</p> <p>Crushing Injury Hazard!</p> <p>Falling Load Hazard!</p> <p>Pinch points!</p> <p>Crushing Injury Hazard!</p>	<p>See Safe Job Practices Above</p> <p><i>Refer to the operator's manual for detailed procedures.</i></p> <p><i>Make counterweights are rigged properly using lifting points.</i></p> <p><i>Before raising counterweights, warn personnel.</i></p> <p><i>*Place one counterweight on each side at a time for safety</i></p> <p><i>*Trays are side specific. Please refer to the manual for proper placement.</i></p>

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**Additional Comments (include any other observations or comments on this job task below)**

All personnel shall review the job safety analysis before work activity and sign below. The perimeter of the work area shall have yellow caution or red warning tape installed to prevent any unnecessary jobsite personnel from being exposed to these hazards.

SAMPLE

PRINT

SIGNATURE

PRINT	SIGNATURE

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Assembly/Disassembly Director: \_\_\_\_\_ Date: \_\_\_\_\_

SAMPLE